



**FINAL STATUS SURVEY REPORT
Buffalo Materials Research Center
The State University of New York
University at Buffalo**

Nuclear Regulatory Commission
Facility Operating License R-77

**Revision 0
January 9, 2017**

**Prepared for:
The State University of New York
Office of Environment, Health, and Safety Services**

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SUMMARY OF CHANGES

Revisions to this report will be tracked when revisions are issued. Changed sections will be identified by special demarcation in the margin. A summary description of each revision will be noted in the following table.

Revision Number	Date	Description of Change
0	1/9/2017	Initial issue.

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LIST OF ACRONYMS AND ABBREVIATIONS

$\mu\text{R/hr}$	microRem per hour
AEC	Atomic Energy Commission
Ag-108m	Silver-108m
ALARA	As Low As Reasonably Achievable
BMRC	Buffalo Materials Research Center
C&D	Construction and Demolition
Cs-137	Cesium-137
CFR	Code of Federal Regulations
cm^2	square centimeters
Co-60	Cobalt-60
cpm	counts per minute
D&D	Decontamination and Decommissioning
DCGL	Derived Concentration Guideline Level
DOC	Decommissioning Oversight Contractor
DOT	Department of Transportation
DP	Decommissioning Plan
dpm	disintegrations per minute
E_i	instrument efficiency
E_s	surface efficiency
E_t	total instrument efficiency
FSS	Final Status Survey
GPS	Global Positioning System
HVAC	Heating, Ventilation, and Air Conditioning
LLRW	Low-Level Radioactive Waste
MARSSIM	NUREG-1575, Multi-Agency Radiation Survey and Site Investigation Manual
MDC	Minimum Detectable Concentration
mR/hr	millirem per hour
MWt	Megawatt thermal
N-16	Nitrogen-16
NaI	Sodium Iodide
NIST	National Institute of Standards and Technology
NRC	U.S. Nuclear Regulatory Commission
ORAU	Oak Ridge Associated Universities
OSHA	Occupational Safety and Health Administration
pCi/g	picocuries per gram
PULSTAR	Pulse Training Assembly Reactor
ROCs	Radionuclides of Concern
RWP	Radiation Work Permit
SOF	Sum-of-Fractions
SSCs	Systems, Structures, and Components
$\mu\text{R/hr}$	MicroR per hour
SUNY	The State University of New York

TEDE	Total Effective Dose Equivalent
VSP	Visual Sample Plan [®]
α	alpha emission
β	beta emission
γ	gamma emission

EXECUTIVE SUMMARY

The Buffalo Materials Research Center (BMRC) reactor was located on the south campus of The State University of New York (SUNY) at Buffalo in the city of Buffalo, New York. During the period of operation, the BMRC had multiple uses, including training and education, transient fuel performance testing, materials radiation damage research, isotope production, neutron activation analysis, radiography, and delayed fission assay.

SUNY was licensed by the U.S. Nuclear Regulatory Commission (NRC) to possess radioactive materials within the BMRC.

The reactor was defueled in 2005. Following removal of the spent fuel, the BMRC entered Decontamination and Decommissioning (D&D) with the goal of NRC license termination.

In 2009 ENERCON was hired by the University at Buffalo to provide Decommissioning scope, schedule and pricing. In 2010, SUNY selected Enercon Services, Inc. (ENERCON) as the Decommissioning Oversight Contractor (DOC). During the winter of 2011 ENERCON performed a characterization of the BMRC. July of 2011 the University awarded a contract to Energy Solutions to remove, transport and dispose of stored LLRW from the containment building of BMRC. June of 2012 the University awarded a contract to Mark Cerrone to complete interference removal prior to the start of the main Decommissioning contract. The scope of work consisted of asbestos and lead abatement along with removal of PCB caulk. Concurrent with these contracts ENERCON developed a Decommissioning Plan and Final Status Survey Plan which were submitted and approved by the NRC. October 30, 2012 the University awarded a contract to LVI Environmental Services, Inc. (LVI), to complete the D&D contract to implement the (DP).. The reactor bridge and control rod drive were removed in January 2013. The reactor core assembly (core, reflector, grid plates, and stand) was removed in February 2013 with the subsequent removal of activated portions of the bioshield. Auxiliary systems within the BMRC were removed, and the BMRC was decontaminated where necessary to support a full radiological release survey prior to overall demolition. The DOC performed the release survey and, following a confirmatory survey by the NRC, a few discrete embedded items were identified for removal and disposal during overall building demolition. Following removal of these embedded items, a detailed survey was performed to ensure all material met release criteria prior to facility demolition. The building release survey was submitted to the NRC June 5, 2014.

LVI's Demolition Work Plan was accepted October of 2014. The administration building and containment building were demolished in late 2014. Backfill and surface restoration of the excavation cavity were

completed in October of 2015. From December 2014 through October 2015, a Final Status Survey (FSS) was conducted of the soil within the building footprint and surrounding area per the NRC-approved FSS Plan. The FSS included radiological scans and soil samples. The FSS results support an unrestricted release of the NRC license.

1.0 INTRODUCTION

This report presents the results of post-remediation FSS (i.e., radiological survey and sampling) activities that were conducted following decontamination and demolition of the BMRC facility. This FSS Report is in support of a DP developed in accordance with Chapter 17 of NUREG-1537 Part 1, *Guidance for Preparing and Reviewing Applications for Licensing of Non-Power Reactors* and NUREG-1757, *Consolidated Decommissioning Guidance*. The original Decommissioning Plan (Revision 0) was submitted February 6, 2013 and the final Decommissioning Plan (Revision 1) was submitted May 31, 2012. The Final Status Survey Plan (Revision 0) was submitted June 12, 2012. Both the Decommissioning Plan and the Final Status Survey Plan are filed on the NRC's ADAMS.

During construction minor variations from the Decommissioning Plan were addressed with Operating Committee approved Work Plans. Appendix I contains copies of the work plans and a summary of the variations from the Decommissioning Plan.

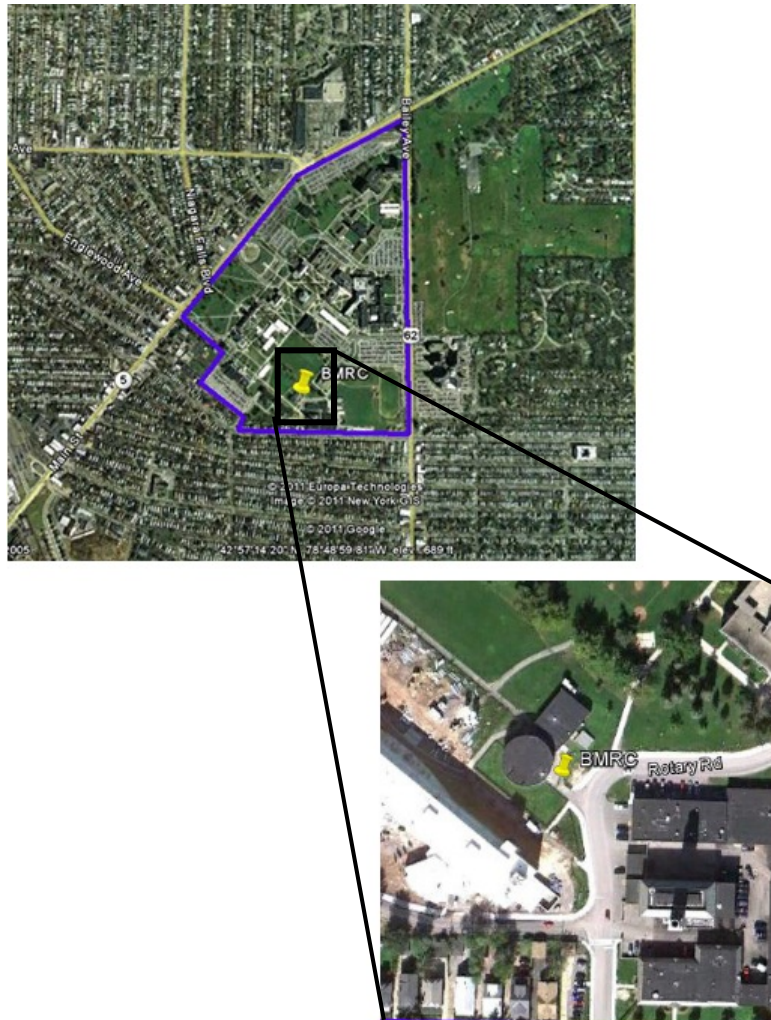
1.1 Purpose

The purpose of the FSS is to demonstrate that the radiological conditions at the BMRC satisfy the release criteria presented in the approved DP, thus supporting a request to the NRC to terminate the NRC license. For the purpose of this demonstration, the area is divided into survey units, with each survey unit being independently evaluated.

1.2 Project Background

The BMRC reactor was located on the south campus of SUNY at Buffalo in the city of Buffalo, New York, as shown on Figure 1-1.

Figure 1-1: Location of Former BMRC



The facility was constructed in 1959, went into operation on March 24, 1960, and was operated by The Western New York Nuclear Research Center, Inc., a subsidiary of SUNY, under Atomic Energy Commission (AEC) License R-77. The facility licensee was changed to the Nuclear Science and Technology Center in 1973, and then changed to the BMRC in 1985.

The reactor at the BMRC was placed into operation in 1961 under AEC License R-77 and operated until 1963 with materials testing reactor-type fuel elements with a maximum steady-state power level of 1 Megawatt thermal (MWt). In 1963, the reactor was shut down and the core and control systems were modified so that the reactor could operate with Pulse Training Assembly Reactor (PULSTAR)-type fuel at power levels of up to 2 MWt. In 1964, the facility was re-issued Operating License R-77 for its newly modified reactor. The operating license was subsequently renewed for a period of 20 years in 1984. The reactor operated with PULSTAR-type fuel until the facility was shut down in 1994. The reactor facility

has undergone several name changes over the years. The Office of Environment, Health and Safety at SUNY at Buffalo is currently the organization that is responsible for maintaining the BMRC and its decommissioning.

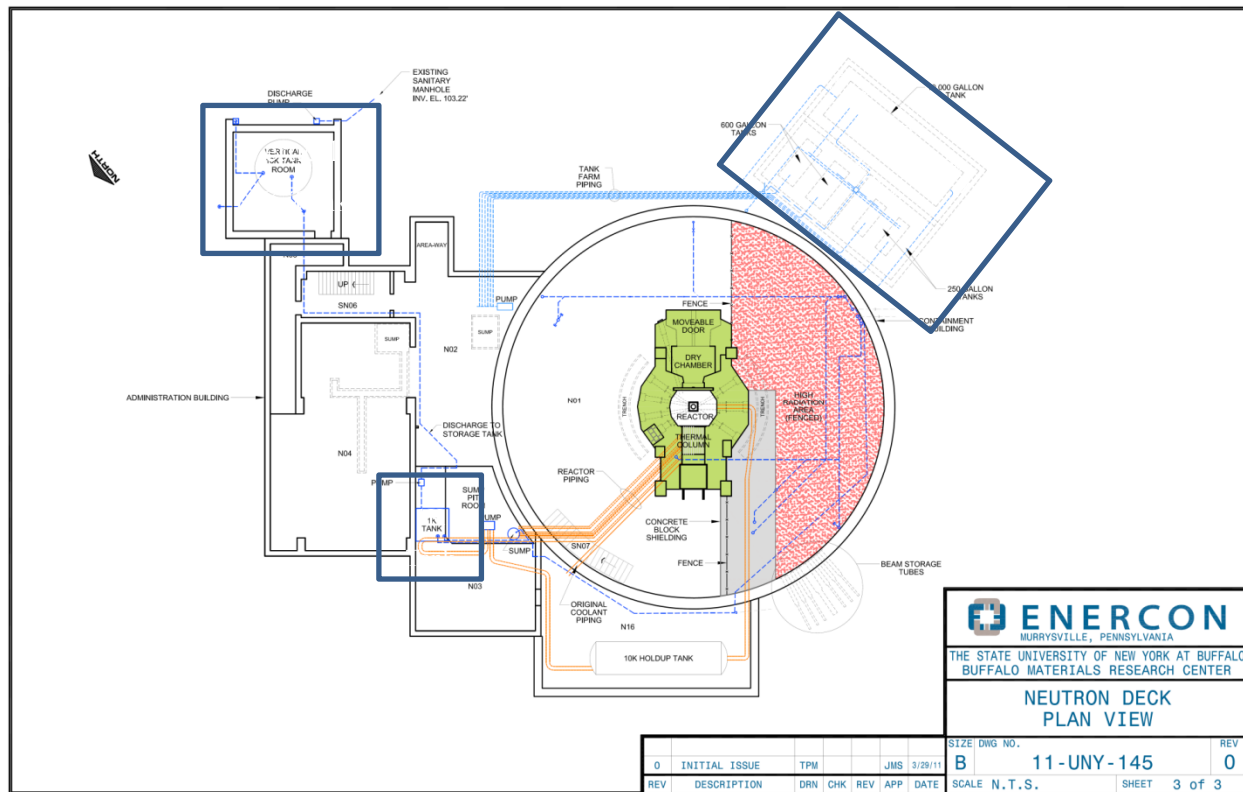
The reactor was defueled in 2005. Following removal of the spent fuel, the BMRC entered D&D with the goal of NRC license termination.

The BMRC building was comprised of an administrative/laboratory wing (administrative wing) and a containment building with three levels in each. The three levels were: neutron deck (lowest level, i.e., subgrade), gamma deck (second level, i.e., middle level), and control deck (top floor). The neutron deck of the administrative wing (known as the subbasement) housed numerous systems, structures, and components (SSCs) that support operation of the reactor. The remainder of the administrative wing contained 20 rooms which were a mixture of offices, laboratories, utility rooms, and classrooms.

The reactor core was located in a pool-type tank that was 29 feet deep with horizontal dimensions of 13 feet by 7 feet, located in the containment building of the BMRC. The tank contained approximately 13,700 gallons of demineralized water. The reactor fuel consisted of zircalloy-clad PULSTAR fuel elements.

Prior to 1984, liquid waste from the hot cell drain, hot chemistry laboratory, and service area drains was collected in the two 250-gallon tanks located in the tank farm (see Figure 1-2). The tank farm is an underground facility located southeast of the Containment Building. Liquid waste from the Gamma Deck and Control Deck laboratories, change area sinks, and Truck Lock door drain were collected in the two 600-gallon tanks located in the tank farm. In 1984 this system was placed into layup and a new 10,000 gallon vertical tank was installed on the east side of the building, see Figure 1-2.

Figure 1-2: Tank Farm Location



Several events occurred at the BMRC during its operational history that led to the determination that the buildings, structures, and immediate surrounding soils were impacted from historical operations at BMRC. Additional details of the reactor, the site, licensing history, and operational history are documented in the BMRC Historical Site Assessment and the DP.

In 2009 ENERCON was hired to provide decommissioning scope, schedule and pricing. In 2010, SUNY selected ENERCON as the DOC. Prior to the start of the decommissioning contract in November of 2012 two preliminary contracts were released by the University. The first contract was for the removal of stored LLRW from the neutron deck of the containments building. In the summer of 2011, the team began removing the legacy waste from the BMRC. The second was for interference removal, which primarily consisted of asbestos, lead and PCB abatement. LVI, a D&D contractor, was selected to implement the DP. The reactor bridge and control rod drive were removed in January 2013. The reactor core assembly (core, reflector, grid plates, and stand) was removed in February 2013, with the subsequent removal of activated portions of the bioshield. Auxiliary systems within the BMRC were removed, and the BMRC was decontaminated where necessary to support a full radiological release survey.

A release survey of the building was performed and, following a confirmatory survey by the NRC, a few discrete embedded items were identified for removal and disposal during overall building demolition. Information regarding these embedded items is included in Appendix A. Following removal of these embedded items, a detailed survey was performed to ensure all remaining material met the release criteria prior to facility demolition. The building release survey was submitted to the NRC June 5, 2014.

The administration building and containment building were demolished in late 2014. Backfill and surface restoration of the excavation cavity were completed in October 2015.

From December 2014 through October 2015, an FSS was conducted in the soils of the building footprint and surrounding area per the NRC-approved FSS Plan. In addition to this, surveys were performed in LLRW and clean backfill storage areas. The FSS included radiological scanning and soil sampling as described in the following sections.

1.3 Radionuclides of Concern

During characterization of the site, a list of radionuclides of concern (ROCs) was developed based on analytical results of soil samples, waste tank liquid samples, and removable activity wipes (smears) collected for 10 Code of Federal Regulations (CFR) Part 61 waste characterization data. The analytical results of the soils and wipe test did not provide indications of BMRC-derived ROCs; therefore, the selected ROCs for soils were based on the analytical results from the waste tanks and the Part 61 data. Details of the analysis can be found in Part 3.1 of the July 30, 2011 BMRC Characterization Report.

The following table provides the comprehensive list of the ROCs for the BMRC and the applicable area/media where the radionuclide was of concern.

Table 1-1: BMRC Radionuclides of Concern

Radionuclide	Half Life (yr)	Emission	Area(s) of Concern
Ag-108m	4.38E+02	β , γ	Soil; Tank Water; SSCs
Am-241	4.32E+02	α , γ	Tank sediment
C-14	5.73E+03	β	Laboratory areas
Co-60	5.27E+00	β , γ	Soil; SSCs; Bioshield
Cs-137	3.01E+01	β , γ^*	Soil; SSCs; Bioshield
Eu-152	1.36E+01	β , γ	Soil; SSCs; Bioshield
Eu-154	8.59E+00	β , γ	Soil; SSCs; Bioshield
H-3	1.23E+01	β	Soil; Bioshield and Tank Water
Ni-63	1.00E+02	β	Soil; SSCs; Bioshield
Pu-238	8.78E+01	α , γ	Tank sediment

Radionuclide	Half Life (yr)	Emission	Area(s) of Concern
Pu-239	2.41E+04	α , γ	Tank sediment
Pu-240	6.60E+03	α , γ	Tank sediment
Sr-90	2.88E+01	β	SSCs; Ventilation systems; Soil

* γ emission from Ba-137m progeny.

1.4 Decommissioning Activities

Decommissioning included numerous tasks involving remediation, dismantlement, and demolition of various SSCs with a constant focus on safety and limiting radiation dose to the on-site staff. This section details the results of these tasks. The final project collective Total Effective Dose Equivalent (TEDE) to personnel was 0.393 person-rem. The DP estimated the collective project dose to be 6.7 person-rem.

1.4.1 Removal of the Operating Platform

The operating platform was located above the reactor. It was removed to allow better access to the reactor and its components. The operating platform was removed and disposed based on the release criteria in the DP.

1.4.2 Removal of Reactor Components

Reactor core components included, but were not limited to, the following: the core frame, plenum, core blades and shrouds, thermal column frame, and sleeve for the fission chamber. Reactor components, irradiation facility tubes for experiments, and other items located within approximately three feet of the core for extended periods of time were activated to levels that required removal and disposal as Low-Level Radioactive Waste (LLRW). The upper portion of reactor components, i.e., control blade drives, irradiation facility tubes, and instrumentation housings, were surveyed and released.

Removal of the reactor components was performed with water still in the reactor pool to provide shielding, thus keeping exposure as low as reasonably achievable (ALARA). Long-handle tools and remotely operated equipment were used to disassemble the components. The components were lifted using the overhead crane and were placed in LLRW containers with appropriate shielding to keep dose rates ALARA and within Department of Transportation (DOT) and disposal facility acceptance limits.

1.4.3 Water Removal from the Reactor Tank

The water in the reactor tank was drained, filtered, and discharged to the sanitary sewer system in accordance with the existing discharge permit and, as approved by the EHS Department, using the existing liquid waste system. Radioactive sediments on the bottom of the tank were removed by agitating the sediments to remove them during pumping, for subsequent filtering. The tank water was filtered to remove

the suspended solids, stored, and sampled according to approved procedures to allow discharge of the water to the sanitary system. Water from any ancillary systems, such as the water purification system or water in the tanks in the tank farm, was processed in the same manner.

Dose rates were carefully monitored as the tank was drained and did not exceed the limits set in the Radiation Work Permit (RWP).

1.4.4 Removal of Activated Portions of the Reactor Tank Liner

In the rebuild completed in 1991, a liner was installed in the bottom half (neutron deck level) of the reactor tank. Both the tank and the liner were made of an aluminum alloy (6061-T6). The aluminum liner was removed prior to destructive dismantling of the bioshield. The inner and outer liners were disposed as Class A LLRW at Energy Solutions. Since the bioshield was poured around the completed reactor tank, it was not feasible to remove the original tank separately from the bioshield.

1.4.5 Removal of Reactor Bioshield, Dry Cell, and Hot Cell

After the activated core components were removed, the concrete associated with the reactor bioshield, dry cell, and hot cell was removed by destructive methods. As described in the DP, the bioshield, the dry cell, and the walls/ceiling of the hot cell were poured independently from the containment building floors and walls. The concrete waste from the demolition of the portions of these structures between the neutron deck and the bottom of the gamma deck was disposed as Class A LLRW at Energy Solutions.

The bioshield concrete was cut into blocks less than 10 tons each using air-cooled diamond core drills, water-cooled track saws, and diamond wire saws. With these specialized cutting tools, dust and debris were controlled. A recycling system utilizing a “Slurry Fox” filter press was used to filter the water before circulating it back to the cutting tools. The resulting slurry from the filtered cutting water was drummed and shipped offsite as LLRW for processing and disposal.

The dry cell and hot cell walls were also primarily removed by diamond wire cutting, but limited portions were removed by other demolition methods such as hand tools.

Cut points were verified by a New York licensed professional engineer to ensure the structural integrity of the BMRC was not compromised. Concrete dust from destructive removal operations was continuously monitored and adequately controlled for industrial hygiene and radiological concerns.

1.4.6 Removal of the Heating, Ventilation, and Air Conditioning System and Other Impacted Systems

The heating, ventilation, and air conditioning (HVAC) system was removed and disposed as Class A LLRW prior to demolition of the containment building. Radioactively impacted systems were disposed as Class A LLRW at Energy Solutions. Any systems that had been maintained to support decommissioning activities were de-energized at this stage to prepare for demolition of the containment building. The storm water and sanitary systems were removed up to the junction point where they tie into other south campus systems. The tanks used in the current and former liquid waste management systems were disposed as LLRW. The soil and gravel under the tanks, along with the concrete enclosure and berms, were disposed as LLRW waste.

1.4.7 Waste Systems Removal

The waste systems original consisted of a subsurface tank farm located southeast of the containment building. In 1984 this system was replaced with a smaller 1,000-gallon holding tank in the subbasement that was in line with a 10,000-gallon vertical waste holding tank located on the east side of the building. Figure 1-2 shows the location of all the tanks. The removal of the waste systems included the removal of the original subsurface tanks and the newer 1k and 10k tanks. All piping associated with both waste systems were removed. The tanks were size reduced by industry standard methods and disposed as Class A LLRW at Energy Solutions.

1.4.8 Demolition of Containment Building

The containment building was safely demolished following completion of work described in Sections 2.3.1.2.1 through 2.3.1.2.7 of the DP. The activated concrete was removed and disposed of as Class A LLRW. Building surfaces were remediated where necessary to meet the limits specified in Section 2.2.3.2 of the DP. The demolition debris, i.e., concrete and rebar, was sent to a local construction and demolition (C&D) landfill. During this process, several discrete embedded items were identified and disposed as LLRW.

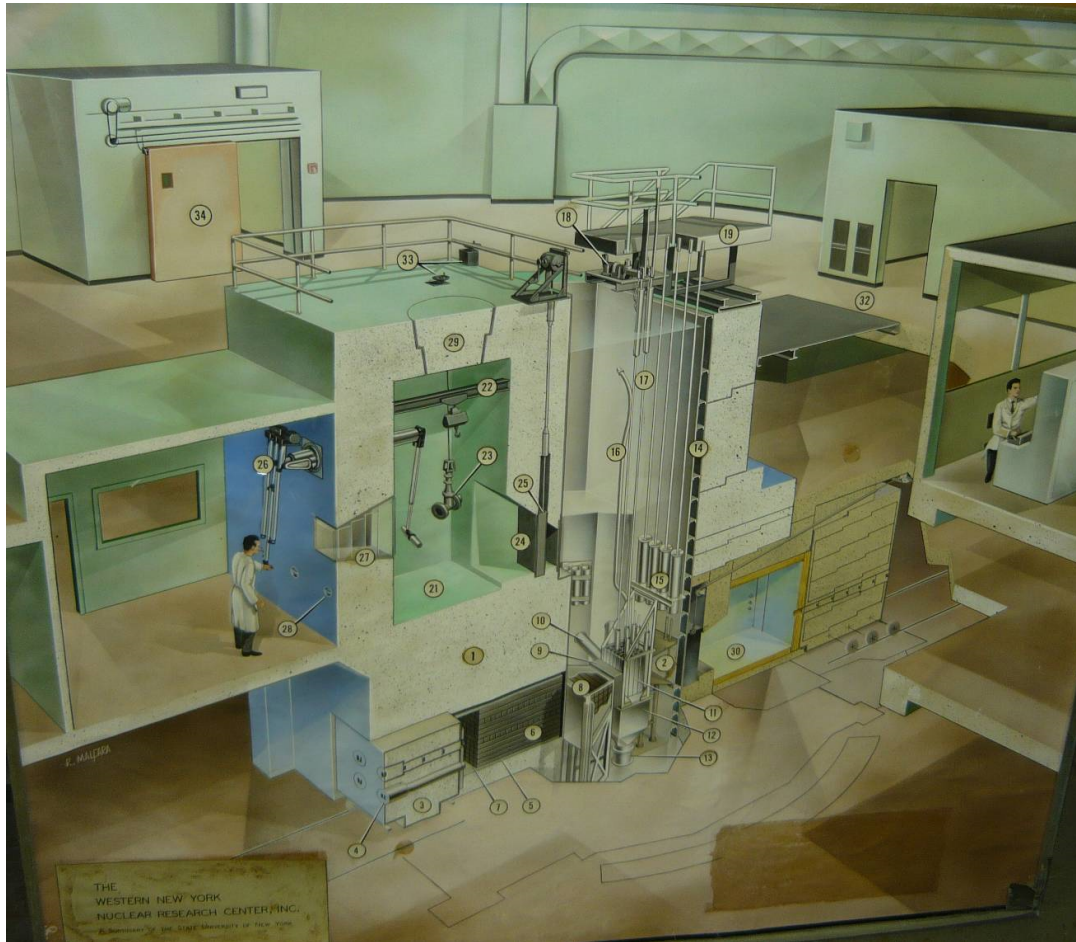
1.4.9 Demolition of Administration Building

The administration building was demolished in conjunction with the containment building as there was no future need for the BMRC. Embedded radioactive piping was removed from the waste treatment system during the demolition process. These materials were segregated and disposed as LLRW. Areas adjacent to the piping were re-surveyed and verified to meet release criteria. The building was mostly composed of concrete and masonry construction materials so a majority of the waste was rubble. The demolition debris was disposed of to a C&D landfill in the same manner as the containment building.

1.4.10 Embedded Items

A few discrete embedded items were removed for LLRW disposal during demolition of the containment and administration buildings. Information regarding these embedded items is included in Appendix A.

Figure 1-3: Artist's rendering – Interior Cut Away View of the Reactor and Containment



Legend:

- | | |
|-----------------------------------|---|
| 1. Bioshield | 20. NA |
| 2. Reactor Plenum | 21. Hot Cell |
| 3. Thermal Column Plug | 22. Hot Cell Crane and Rail |
| 4. Beam Tube | 23. Pass Tube Isolation Valve |
| 5. Thermal Column Support | 24. Hot Cell Lead Shutter |
| 6. Thermal Column Graphite Blocks | 25. Hot Cell Lead Shutter Drive Mechanism |
| 7. Thermal Column Support Plate | 26. Hot Cell Remote Manipulators |
| 8. Thermal Column | 27. Radiation Shielding Window |
| 9. Flux Trap | 28. Hot Cell Instrumentation Access Port |
| 10. Beam Tube Chamber | 29. Hot Cell Removable Access Plug |
| 11. Reactor | 30. Dry Chamber |
| 12. Coolant Outlet Plenum | 31. NA |
| 13. Coolant Outlet Piping | 32. Removable Metal Plate Floor Opening Cover |
| 14. Reactor Pool Lining | 33. Pass Tube Isolation Valve Hand Wheel |
| 15. Vertical Standpipe | 34. Control Deck Airlock (Access to/from Administration Building) |
| 16. Pneumatic Conveyor Tube | |
| 17. Isotope Tube | |
| 18. Isotope Tube Drive Mechanism | |
| 19. Operating Platform | |

2.0 FINAL STATUS SURVEY METHODOLOGY

The FSS provides data demonstrating the BMRC facility site complies with the radiological criteria for unrestricted use in 10 CFR 20.1402 of 25-mrem per year TEDE. In meeting the radiological criteria listed in the DP, as approved by the NRC, the data show this unrestricted use criterion has been met. The FSS was designed in accordance with the NRC-approved FSS Plan in order to demonstrate that the BMRC site complies with the radiological release criteria stated in Section 3.1. The FSS Plan described the process for survey preparation, survey design, data collection, data evaluation, and documentation of survey results. The FSS included gross gamma scans and collection of soil samples analyzed via gamma spectroscopy for the radionuclides of concern and analyzed for hard to detect radionuclides. Also static alpha and beta measurement were taken as described in section 3.0.

2.1 Release Criteria

2.1.1 Volumetric Derived Concentration Guideline Level

The NRC approved the site Derived Concentration Guideline Levels (DCGLs) for soil as provided in Table 2-1. The DCGLs are the screening levels for radionuclide concentrations in soils in picocuries per gram (pCi/g) as provided in Table B.2 of NUREG-1757 (Reference 10). When applying the DCGLs in Table 2-1, the sum-of-fractions (SOF) rule applies; that is, the sum of the ratios of the radionuclide concentrations to the DCGLs must be less than 1.0.

Table 2-1: DCGLs for Primary Radionuclides of Concern in Soil

Radionuclide	NRC Screening Value for Surface Soils (pCi/g)	Selected DCGL Value (pCi/g)*
Ag-108m	None	8.2
Am-241	None	2.1
C-14	12	12
Co-60	3.8	3.8
Cs-137	11	11
Eu-152	8.7	6.9 [§]
Eu-154	8	8
H-3	110	110
Ni-63	2,100	2,100
Pu-238	2.5	2.5
Pu-239/240	2.3	2.3
Sr-90	1.7	1.7

*Source: *Decommissioning Plan, Buffalo Materials Research Center*, February 2012.

[§] Taken from EPA MOU

Release criteria for the bedrock materials used the NRC screening values for building surfaces as found in Table B.1 of NUREG-1757 (Reference 10) and presented in Table 2-2. Release criteria for radionuclides that are not in Table 2-2 were consistent with the Regulatory Guide 1.86 values stated in Section 2.2.3.1 of the DP. The bedrock was prepared prior to the FSS by removing loose materials, i.e., concrete dust, pieces, and soil in excess of one quarter inch. The stated DCGLs assume that less than 10 percent of the measured radioactive material is removable radioactivity. Removable activity wipes were collected in conjunction with static measurement to ensure that the concentration of removable radioactive materials does not exceed 10 percent of the release criteria.

Table 2-2: NRC License Termination Screening Levels for Building (Bedrock) Surfaces

Radionuclide	NRC Screening Value (dpm/100 cm²)*
Ag-108m	17,000
C-14	3,700,000
Co-60	7,100
Cs-137	28,000
H-3	120,000,000
Ni-63	1,800,000
Sr-90	8,700

*Source: *Decommissioning Plan, Buffalo Materials Research Center*, February 2012.

2.1.2 Gross Beta Derived Concentration Guideline Level

A potential exposure scenario for the bedrock could be an exposed crawl space or subbasement of a building constructed in the area where the BMRC once stood. In this case, the bedrock would be similar to a surface-contaminated concrete floor for exposure pathways. For building surfaces such as concrete, gross beta measurements are typically performed. Since the bedrock is similar to concrete, gross beta measurements were collected on the bedrock surfaces in addition to volumetric samples. The data were evaluated as if the bedrock were a building surface.

Performing surveys to address the presence of multiple radionuclides requires a knowledge of the expected distribution of the radionuclides, although it was expected that the bedrock would not exhibit indications of any residual radioactive materials at or above the release criteria. Characterization data collected beneath the floor of the neutron deck support this assumption. Consequently, a radionuclide distribution was not calculated. As a conservative assumption, all detectable beta/gamma surface activity was assumed to be Cobalt-60 (Co-60) since it has the most conservative screening level of 7,100 disintegrations per minute per 100 square centimeters (dpm/100 cm²).

Investigation of an area was performed when a measurement exceeded the gross beta DCGL, i.e., 7,100 dpm/100 cm². The investigation consisted of a detailed scan of the area immediately surrounding the elevated measurement to determine the extent of the elevated area. Static measurements were performed if additional elevated areas were detected. Volumetric sampling was performed, if necessary, to determine the specific isotopic content.

Area classification in accordance with Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM) protocols ensured that the number of measurements and the scan coverage were commensurate with the potential for residual contamination to exceed the approved release criteria. The classification of an area was based on characterization measurements and historical use of the area. Areas that had no reasonable potential for residual contamination because there was no known impact from site operations were classified as non-impacted areas. Non-impacted areas were not required to be surveyed beyond what was completed as part of site characterization to confirm the area's non-impacted classification.

Areas that may have contained residual radioactivity from licensed activities were considered impacted areas. Based on the levels of residual radioactivity present, impacted areas were further divided into Class 1, Class 2, or Class 3 designations. Class 1 areas have the greatest potential for residual activity, while Class 3 areas have the least potential for residual contamination. Each classification was bounded by areas classified one step lower to provide a buffer zone around the higher class. Survey units are shown by classification on Figure 2-1.

The BMRC footprint was comprised of four Class 1 survey units: the Nitrogen-16 (N16) vault, containment, subbasement, and tank farm areas. The side slope area surrounding the excavation was a single Class 2 survey unit. The 10,000-gallon tank area was also categorized as Class 2.

The remainder of the project area was classified as a single Class 3 survey unit.

2.1.3 Class 1 Excavation Area

The bottom of the excavated area consisted of four Class 1 survey units based on MARSSIM recommendations. MARSSIM recommends that exterior Class 1 survey units be limited to 2,000 square meters. The DOC performed a 100 percent walkover using 2x2 Sodium Iodide (NaI) detectors, direct measurements were made, and soil samples were collected at predetermined locations using a random start grid pattern. Area exposure rates were taken one meter above ground surfaces at the location of each sample point using an exposure rate meter measuring in units of microR per hour (μR/hr).

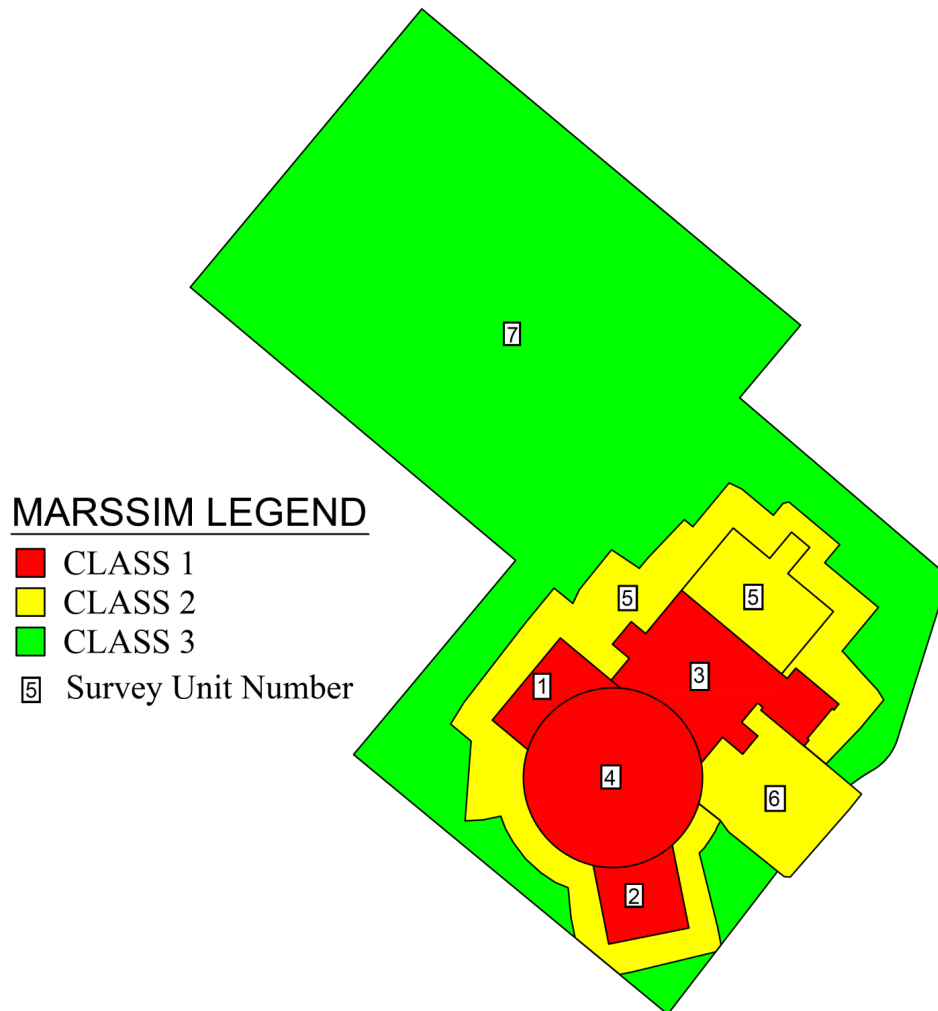
2.1.4 Class 2 Area

The side slopes of the excavation and 10,000-gallon tank areas were Class 2 survey units and received a minimum 25 percent walkover scan using 2x2 NaI detectors, direct measurements were made, and soil samples were collected at predetermined locations using a random start grid pattern. Radiation measurements and sample collection, preparation, and analysis were prescribed in specific survey packages or FSS procedures. Area exposure rates were taken at one meter above ground surfaces at the location of each sample point using an exposure rate meter measuring in units of $\mu\text{R/hr}$.

2.1.5 Class 3 Area

The remaining property of the BMRC project area was a single Class 3 survey unit and received a minimum 10 percent scan using the NaI detectors, direct measurements were made, and soil samples were collected at predetermined locations using randomly selected sample locations. Radiation measurements and sample collection, preparation, and analysis were prescribed in specific survey packages. Area exposure rates were taken at one meter above ground surfaces at the location of each sample point using an exposure rate meter measuring in units of $\mu\text{R/hr}$.

Figure 2-1: Survey Units by Classification



2.1.6 Measurement and Sample and Location Identification

Visual Sample Plan[®] (VSP) was used to plot the survey locations to the nearest 0.1 meter. Figures of the survey locations are included in Appendix B. The development of measurement locations within a survey unit was accomplished using Version 6.0 of the VSP software. VSP has been developed by Pacific Northwest National Laboratory to aid in the development, generation, and evaluation of sampling locations to meet various regulatory guidance documents and is regularly used by the NRC's Independent Verification Contractor, Oak Ridge Associated Universities (ORAU).

Measurement locations within each survey unit were clearly identified and documented for purposes of reproducibility. Actual measurement locations were located by global positioning system (GPS). Sample points for Class 1 and Class 2 survey units were based on a systematic triangular grid throughout the survey

unit by randomly selecting a start point coordinate. VSP generates a random number to determine the start point of the grid pattern. Random measurement locations were chosen for Class 3 survey units using VSP.

Measurement locations selected that did not fall within the actual survey unit boundary or that could not be surveyed due to site conditions were relocated to the nearest location that could be surveyed within the survey unit.

2.2 Types and Methods of Surveys

Survey measurements were performed by personnel trained and qualified in accordance with the FSS Plan. FSS measurements included a 100 percent walkover gamma survey of the Class 1 survey unit using 2x2 NaI gamma scintillation detectors. The Class 2 survey units received a 25 percent walkover survey and Class 3 a 10% walkover survey. Direct one-minute gamma measurements were also made at each sample point in the Class 1 (56 points) and Class 2 (28 points) survey units.

2.3 Survey Instrumentation

2.3.1 Instrument Models

The FSS consisted of walkover surveys with gamma scintillation detectors and soil sampling with off-site analysis. The instruments used during the FSS and their applications are provided in Table 2-3.

Table 2-3: FSS Instrumentation

Instrument	Detector Type	Radiation Detected	Calibration Source	Use
Ludlum Model 2221	Ludlum Model 44-10 2" x 2" NaI	Gamma	Cs-137	Gamma Walkover Surveys
Ludlum Model 19	Internal NaI	Gamma	Cs-137	General area exposure rates
Ludlum Model 2360	Ludlum Model 43-93	Alpha/Beta	Th-230/Tc-99	Alpha/beta surveys
Ludlum Model 2929	Ludlum Model 43-10-1	Alpha/Beta	Th-230/Tc-99	Removable contamination

Technical data sheets for each instrument and detector used are provided in Appendix C.

2.3.2 Instrument Calibration

The survey instruments were calibrated prior to use for the FSS. All instruments were calibrated using National Institute of Standards and Technology (NIST)-traceable standards by MJW Technical Services located in Olean, New York. ENERCON maintained copies of the calibration data in the on-site project file. Instruments were checked at the beginning of each day to ensure they were operating properly. The daily check also reassures the validity of the previous day's measurements. The daily checks included a background measurement and a source check. These were performed in the field office adjacent to the project site. Instrument records, including dates of use, efficiencies, calibration due dates, and source

traceability, were maintained in accordance with established procedures. Appendix D provides the calibration records for the instruments used.

2.3.3 Pre-Operational Checks

Background readings for counting instruments were conducted daily during instrument use. Any instrument that used a battery had a daily battery check performed before instrument operation. An appropriate initial source response as determined by a comparison with calibration information to the appropriate on-site check source was obtained prior to the instrument being placed into service for the project.

Each day an instrument was used, the instrument received an operational check that consisted of a background reading (observed response rate for rate meters and one-minute static count for scalers) and a count of a known check source (observed response rate for rate meters and one-minute static count for scalers) with the detector in contact with the source in its holder to provide a consistent source to detector distance. If at any time an instrument exceeded its calibration due date or fell outside of the ± 10 percent of the established initial source response, the instrument was removed from service, repaired, and/or recalibrated and a new initial source check was performed. This information was recorded on a Daily Source Check Log form.

2.3.4 Instrument Efficiency

The efficiency of the detection capabilities for each instrument was calculated using the following formula:

$$\text{Instrument Efficiency (E}_i\text{)} = \frac{(C_s - C_b)}{S}$$

Where:

C_s = Measured source count in counts per minute (cpm)
 C_b = Measured background count in cpm
 S = 2 pi source activity value in dpm

$$\text{Total Instrument Efficiency (E}_t\text{)} = E_i * E_s$$

Where:

E_i = Instrument efficiency
 E_s = Surface efficiency (0.25 for beta emitters < 400 keV β_{\max})

The total instrument efficiency (E_t) is a product of the instrument detection efficiency (E_i) and the surface efficiency (E_s) and is used to convert the raw instrument counts into standardized units. The surface efficiency utilized follows the recommendations in ISO-7503-1, which makes recommendations for default surface efficiencies. A surface efficiency of 0.25 is recommended for beta emitters with maximum energies less than 400 keV (NUREG 1507); therefore, the surface efficiency used for the FSS was 0.25 based on a beta energy maximum of 318 keV for Co-60.

2.3.5 Minimum Detectable Concentration

The minimum detectable concentration (MDC) is the concentration of radioactivity that an instrument can be expected to detect at a 95 percent confidence level. For instruments performing direct measurements and for laboratory analyses, the MDC goal is 10 to 50 percent of applicable release criteria.

For static (direct) surface measurements, with conventional detectors, the MDC was calculated using the formula:

$$\text{MDC (dpm/100 cm}^2\text{)} = \left[\frac{3 + 3.29 \sqrt{(R_b)(T_s)(1 + T_s / T_b)}}{(T_s)(\mathcal{E}_i)} \right]$$

Where:

- R_b = Background count rate (cpm)
- T_b = Background count time (min)
- T_s = Sample count time (min)
- \mathcal{E} = Total instrument efficiency (MARSSIM Section 6.6.1)

A list of the survey instruments used is provided in Table 3-2 of Section 3.1.3. Table 3-2 includes average background cpm results, detection efficiency, and average MDC for each instrument.

3.0 FINAL STATUS SURVEY RESULTS

3.1 Overview of Final Status Survey Results

The following summarizes the process utilized to obtain the FSS measurements and the validation of the data results.

3.1.1 Surface Preparation

To address concerns over site conditions during final surveying and sampling of soil and bedrock surfaces the following controls were utilized.

A. Water Control:

- 1) The deepest section of the excavation was diked off, pumped dry and surveyed.
- 2) Once the lowest section of the excavation was scanned and surveyed water was diverted into this section of the excavations utilizing dikes to create a sump area and minimize any water collection in other areas of the excavation.
- 3) Pumps were utilized throughout the survey process to ensure that areas being surveyed were sufficiently dry.

B. Soil and Snow Coverage on Bedrock

- 1) Soil thickness over bedrock was limited to less than one (1) inch.
- 2) Excess soil in survey areas was allowed to be removed and spread over adjacent areas.
- 3) Snow was removed from the static survey and sampling points.

C. Locating Points of Survey

- 1) To accurately locate survey points 3-4 permanent benchmarks were established and recorded with the Trimble Instruments.
- 2) Survey points were marked with labeled bricks and conditions photographically documented.

Photographs of typical survey locations for bedrock and soil, respectively, are shown below in Figures 3-1 and 3-2.

Figure 3-1: Bedrock Sample Location



Figure 3-2: Soil Sample Location



3.1.2 Determination of Survey and Sample Point Locations

Sample point locations are depicted on the figures included in Appendix B. The number of survey/sample point locations within each survey unit was provided in the FSS Plan. For each survey unit, VSP was used to establish the location of the points using a random start with a triangular grid for both Class 1 (SU1 through SU4) and Class 2 (SU5 and SU6) areas. The coordinates established by VSP were then imported to other codes to transform the coordinates into the system used on the site and the ArcGIS code in order to plot the sample locations on the site maps. For SU1, this process modified the triangular grid, which resulted in the sample locations looking more like random placements. This discrepancy was investigated and the specific cause was not established but is most likely due to field location methods. The sample density within each of the Class 1, Class 2 and Class 3 survey units are presented in Table 3-1.

Table 3-1: Sampling Density for Survey Units

Survey Unit	MARSSIM Class	Survey Unit Area (m²)	Number of Sample Locations	Sampling Density (m²/Sample)
SU1	1	90	18	5.0
SU2	1	105	30	3.5
SU3	1	300	29	10.3
SU4	1	420	29	14.5
SU5	2	1230	20	61.5
SU6	2	105	29	3.6
SU7	3	2420	14	172.9

Although the grid for SU1 is not strictly a triangular grid, the sample locations were established based on a random start point, and sampling density within SU1 are consistent with the other Class 1 survey units. Based on this evaluation, the sampling of SU1 meets the intent of MARSSIM, and resampling of SU1 was not required.

The location of the survey points in the field was established using the coordinates provided in the approved survey package and a portable GPS unit to locate the corresponding point. When deemed appropriate, the location was measured from nearby points using a tape measure.

3.1.3 Radiological Survey Instruments Used

Table 3-2 provides the list of the radiological survey instruments used during the FSS. Specific instructions for the survey requirements were provided in the survey package applicable to the survey units. The six survey units were grouped into two survey packages. The first package covered the Class 1 bedrock

surfaces (SU1 through SU4), and the second package covered the Class 2 soil areas (SU5 and SU6). The third package covered Class 3 Unit SU7.

Table 3-2: List of Radiological Survey Instruments

Instrument Model / Serial Number	Use	Calibration Due	Probe Model / Serial Number	Probe Area (cm ²)	Total Alpha Efficiency (%)	Average Alpha Background (cpm)	Average Alpha MDA (dpm/100 cm ²)	Total Beta Efficiency (%)	Average Beta Background (cpm)	Average Beta MDA (dpm/100 cm ²)
Ludlum 19 / 69363	Gamma dose rate	8/20/2015	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Ludlum 19 / 13476	Gamma dose rate	3/12/2014	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Ludlum 2221 / 190173	Gross gamma (static and scan)	1/13/2016	44-10 / PR206809	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Ludlum 2221 / 211772	Gross gamma (static and scan)	9/8/2015	44-10 / PR2163994	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Ludlum 2221 / 211808	Gross gamma (static and scan)	8/6/2015	44-10 / PR196032	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Ludlum 2360 / 248132	Alpha and beta static	6/3/2015	43-93 / PR236970	100	8.7	0	34	3.1	58	955
Ludlum 2360 / 267525	Alpha and beta static	7/1/2015	43-93 / PR236970	100	9.5	2	83	3.0	81	1135
Ludlum 2360 / 267533	Alpha and beta static	8/6/2015	43-93 / PR236970	100	5.8	0	52	6.1	93	595
Ludlum 2929 / 180832	Removable alpha and beta	4/2/2015	43-10-1 / PR203056	(area wiped)	38.4	0.1	6	36.1	59.2	77

3.1.4 Field Data for Survey Units

Spreadsheets, including all data collected for each survey unit, are included in Appendix F.

3.1.5 Radiological Measurements for Bedrock Surfaces (SU1 through SU4)

The acceptance criteria for the bedrock surfaces are based on the combination of gross static beta activity measurements using the 43-93 probe and 100 percent scans using the 2x2 NaI detectors. Other measurements were made, including wipe samples counted for gross alpha and beta activity, gross alpha static activity measurements, static gamma activity measurements, and gamma dose rate measurements. However, these additional measurements have only been used for qualitative evaluations and were not part of the evaluation determining whether the survey unit met the acceptance criteria.

Due to weather conditions, it was impossible to completely eliminate all snow and ice from the bedrock surfaces. Where appropriate, soil samples were collected at the bedrock sample locations before static measurements were made. For the static measurements, the bedrock surface was cleared of soil, snow, and ice first. MicroShield calculations were made to evaluate the impact of the presence of various thicknesses of soil on the bedrock surface on the scan sensitivity. Based on this evaluation, a 50.59 change process was approved for the use of the 2x2 NaI detector to perform the scan surveys of the bedrock surfaces allowing a soil layer up to one-inch thick. This permitted the FSS to continue under the winter weather conditions without undue effort being required to completely expose the bedrock. The computer output reports for the MicroShield calculations are attached and are summarized in Table 3-3 for the dose rate in millirem per hour (mR/hr) at varied thickness of soil shielding.

During a visit from ORAU several in-process observations were made. A summary of the observations is listed below. All deficiencies were immediately corrected, field staff received additional training and the survey continued according to the FSS Plan and applicable work instructions.

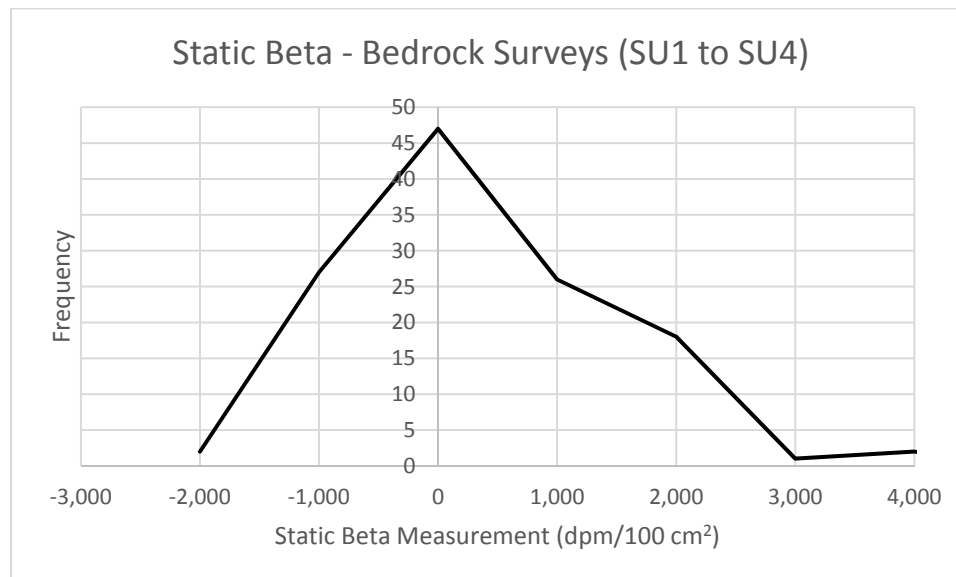
1. Incorrect surface area for handheld detector used.
2. Inappropriate background readings in SU-3.
3. Improper standoff distance while using 2x2 NaI probe
4. Improper sequencing with regards to scan, sampling and static measurements.
5. ORAU was unable to further investigate areas of elevated background due to tarps and snow.
These areas were further investigated and no areas of elevated activity were noted.

Table 3-3: Results of MicroShield Calculations for Bedrock Surface Scans (mR/hr)

Radionuclide	Thickness of soil Layer (cm)			
	0	1.25	2.5	15
Co-60	2.112E-2	7.313E-3	5.494E-3	1.328E-3
Ag-108m	4.432E-2	Not calculated	1.038E-2	1.680E-3

The DCGL for the static gross beta activity measurements was conservatively set at 7,100 dpm/100 cm² in accordance with Table 3-2 of the FSS Plan. The investigation level for the static measurements (greater than DCGL) was not exceeded for any measurement. The maximum static gross beta result for the bedrock surfaces was 3,095 dpm/100 cm². Figure 3-3 shows the frequency of the static gross beta measurements for the bedrock surfaces within Survey Units 1 through 4.

Figure 3-3: Frequency of Gross Beta Static Measurements for Bedrock Surfaces



In accordance with Table 3-11 of the FSS Plan, the scan investigation level was established as greater than DCGL_{emc} using an area factor of 5 (Section 3.11.3 of FSS Plan) and a DCGL of 7,100 dpm/100 cm². For Co-60 and a 2.5 cm layer of covering soil, the dose rate at the DCGL is 5.494E-3 mR/hr (5.494 µR/hr). Using a 2x2 NaI detector with a response of 430 cpm per µR/hr, the response at the DCGL_{emc} would be:

$$5.49 \times 5 \times 430 = 11,805 \text{ cpm above background}$$

The average scan background for the bedrock surfaces was 6,813 cpm, so:

$$\text{Scan Investigation Level} = 11,805 + 6,813 = 18,618 \text{ cpm}$$

Thus, the scan investigation level (greater than DCGL_{emc}) was 18,618 cpm based on conservatively assuming that the bedrock surface is covered by a one-inch-thick layer of soil or ice. The maximum scan count rate for the bedrock surfaces was 11,923 cpm, so no scan reading exceeded the investigation level.

Figure 3-4 shows the frequency distribution of the gross scan data for the bedrock surfaces, and Figure 3-5 shows the frequency distribution of the net scan data for the bedrock surfaces.

Figure 3-4: Frequency Distribution for Scan Gross cpm for Bedrock Surfaces

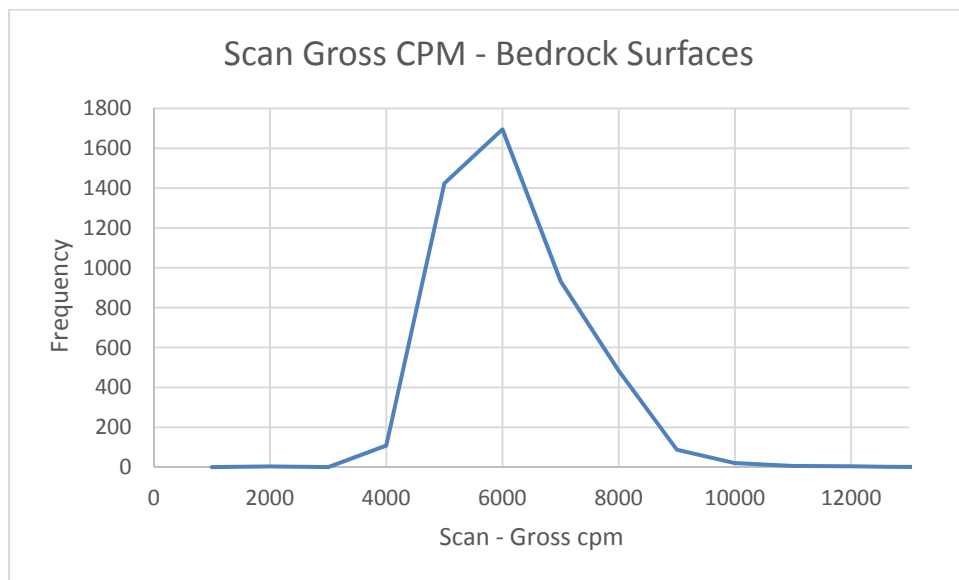
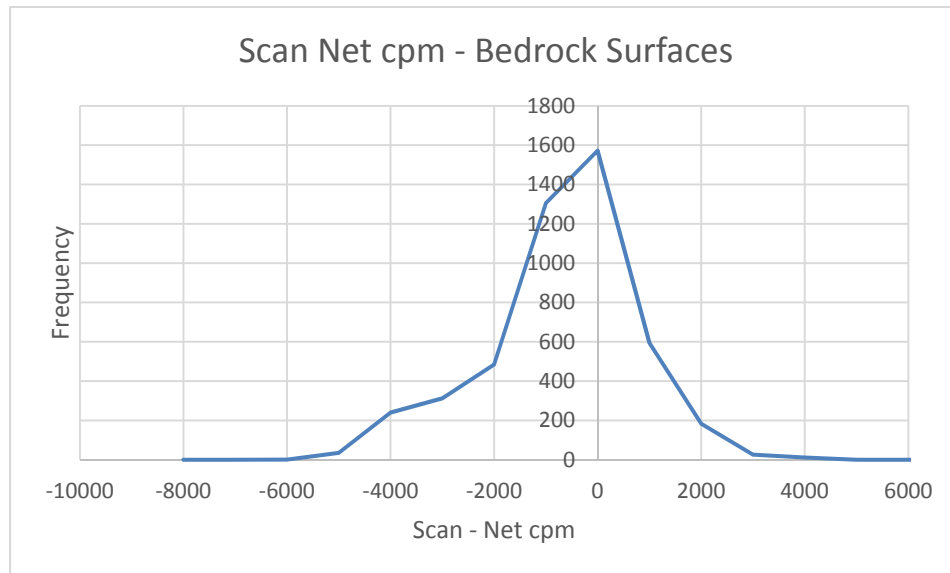


Figure 3-5: Frequency Distribution for Scan Net cpm for Bedrock Surfaces



3.1.6 Radiological Measurements for Soil Surfaces (SU5 and SU6)

The acceptance criteria for the soil surfaces are based on the laboratory analysis measurements of the collected soil sample and 25 percent scans using the 2x2 NaI detectors. Other measurements were made, including wipe samples counted for gross alpha and beta activity, gross alpha and beta static activity measurements, static gamma activity measurements, and gamma dose rate measurements. However, these additional measurements have only been used for qualitative evaluations and are not part of the specific determination as to whether the survey unit met the acceptance criteria.

Due to weather conditions, it was not possible to completely eliminate all snow and ice from the soil surfaces, but each area was cleared as much as possible. Soil samples were collected at the soil sample locations with mechanical means used to break up the frozen soil.

The soil DCGLs are in accordance with Table 3-2 of the FSS Plan. Each soil sample was evaluated by calculating for each radionuclide measured the fraction of the result to the individual DCGL and then calculating the SOF for that sample. The acceptance criterion for that sample is SOF less than 1.

The investigation level for the Class 2 area soil samples is given in Table 3-11 of the FSS Plan as greater than DCGL or equivalently SOF greater than 1. No FSS soil sample exceeded an SOF of 1, so no further investigation was required.

In accordance with Section 3.6.3 of the FSS Plan, the scan investigation level was established as greater than DCGL and a DCGL of 3.8 pCi/g for Co-60 would give a dose rate of 11 µR/hr. Using a 2x2 NaI detector with a response of 430 cpm per µR/hr, the response at the DCGL would be:

$$11 * 430 = 4,730 \text{ cpm above background}$$

The average scan background for the soil surfaces was 7,949 cpm, so:

$$\text{Scan Investigation Level} = 7,949 + 4,730 = 12,679 \text{ cpm}$$

Figure 3-6 shows the frequency distribution for gross scan data of the soil surfaces.

Figure 3-7 shows that some of the scan results exceed the investigation level so a review of the data was conducted. All of the data above the investigation level were found to be associated with measurements made on one day (February 5, 2015) with one instrument. Section 3.1.6.1 provides the discussion of the investigation of this elevated area within SU5.

Figure 3-6: Frequency Distribution for Scan Gross cpm for Soil Surfaces

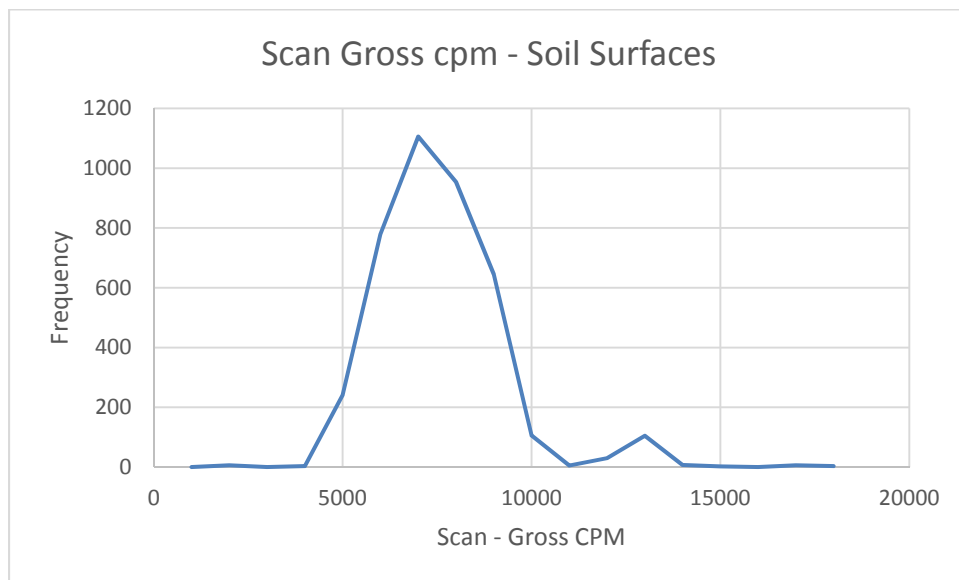
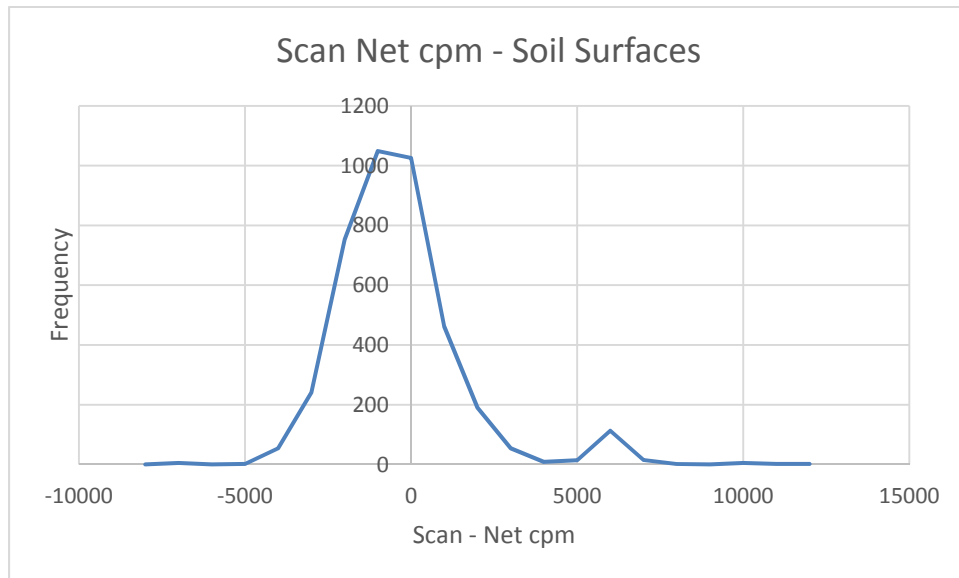


Figure 3-7: Frequency Distribution for Scan Net cpm for Soil Surfaces

3.1.6.1 Summary of Investigation of Elevated Scan Measurements in SU5

During the scan surveys made on February 5, 2015, an elevated area was noted by the survey technician. The time plot of the data accumulated on February 5 is shown on Figure 3-8. This plot demonstrates that an area of localized elevated activity was noted in the same area plotted on the site map in Figure 3.7. For those scan measurements that are greater than 13,000 cpm, the area was found to be less than 0.1 square foot in size. The investigation level established above is 12,679 cpm, but it should be noted that this value is a conservative number in that it uses Co-60 as the basis. For the site mixture that was measured based on grab samples, the Co-60 contributes only about 3 percent of the total activity and about 15 percent to the SOF of the mixture. If Silver-108m (Ag-108m) is used as the basis for the investigation level, then the equivalent value is 75,200 cpm. Ag-108m accounts for about 13 percent of the total activity and about 35 percent to the SOF of the mixture.

The area where this elevated area is located is near the beam storage tubes for the reactor. One grab sample had been taken in this area (2014 11 05 GR-01), and the analytical results for that sample provided an SOF = 0.047.

Based on this investigation, it is concluded that given the conservative approach that was used to establish the investigation level and the small size associated with the elevated area, no further action was necessary.

Figure 3-8: Time Plot of Scan Survey for February 5, 2015

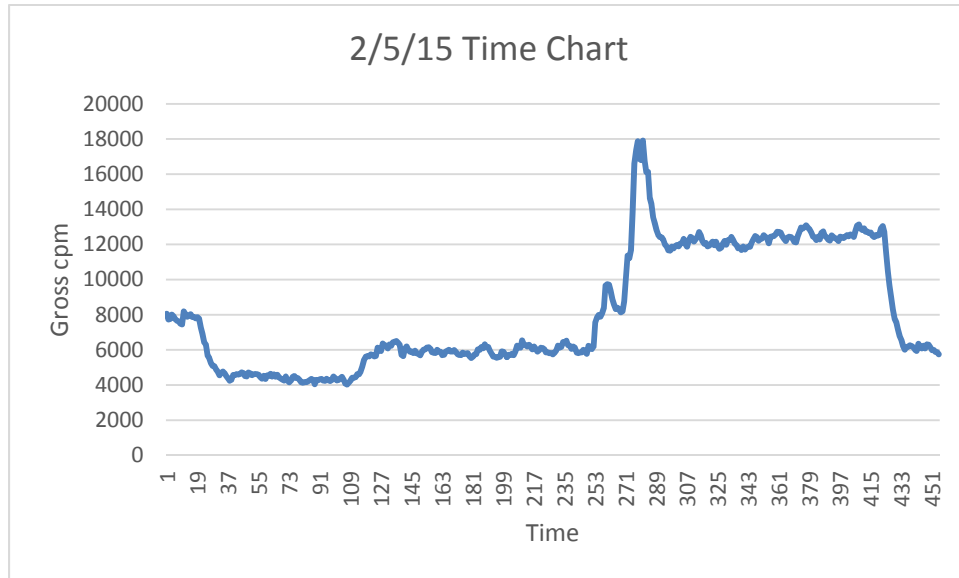
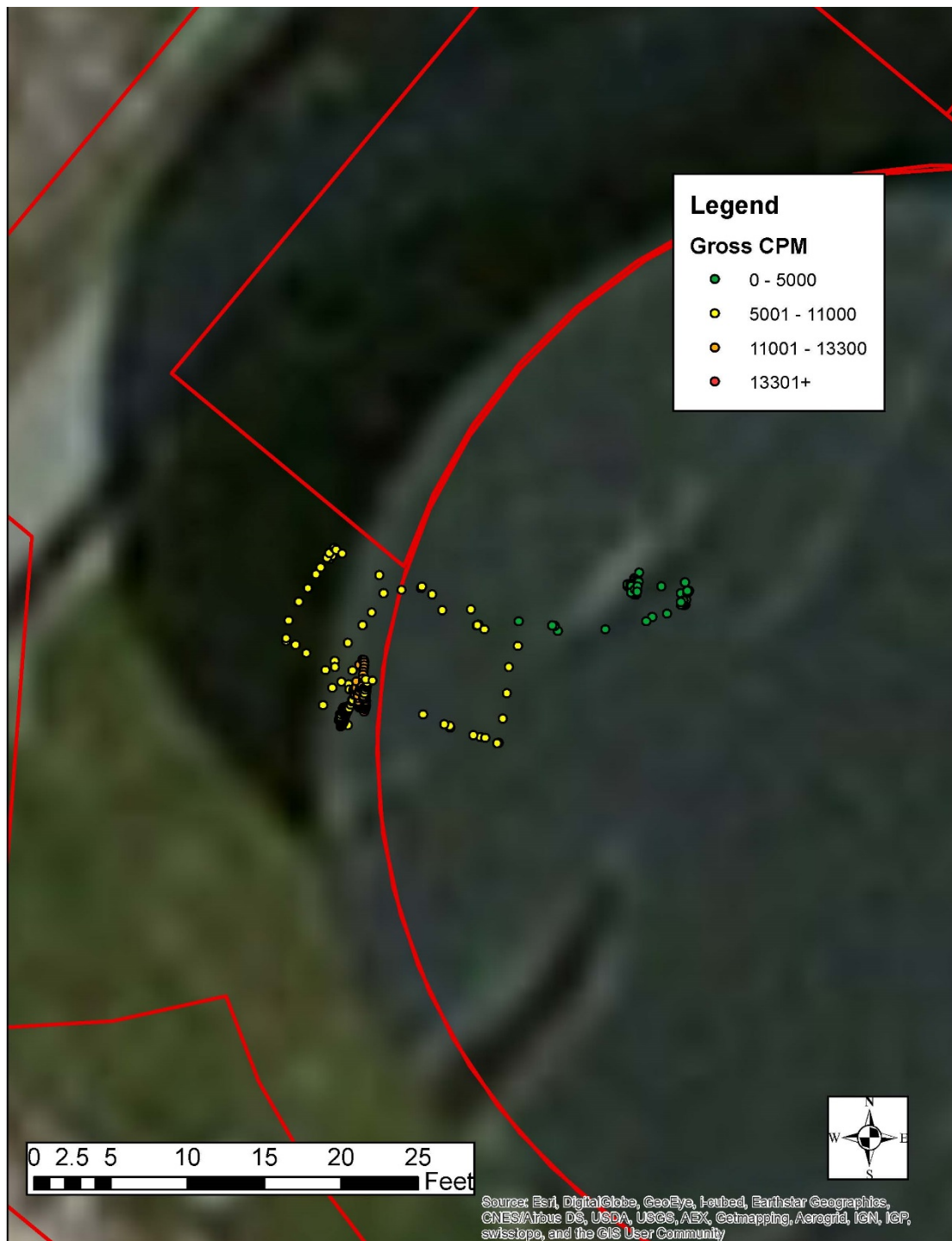


Figure 3-9: Site Plot of Scan Data for February 5, 2015



3.1.7 Radiological Measurements for Soil Surfaces (SU7)

As shown on Figure 2-1, SU7 is a Class 3 survey unit that surrounds the excavation and also consists of a large area northwest of the facility. This area was used to stockpile soil excavated from Class 1 and Class 2 areas which had been surveyed and found to contain no detectable radioactivity. The stockpiled soil was returned to the excavation cavity as backfill prior to performing FSS of SU7. The areas surrounding the perimeter of the excavation were disturbed by construction equipment during the excavation process. Gamma walkover surveys using the 2x2 NaI detectors were performed on approximately 10 percent of the soil surface, and 14 volumetric samples were collected and analyzed for the FSS. Results demonstrate the survey unit meets FSS release criteria.

The soil DCGL is in accordance with Table 3-2 of the FSS Plan. Each soil sample was evaluated by calculating for each radionuclide measured the fraction of the result to the individual DCGL and then calculating the SOF for that sample. The acceptance criterion is SOF less than 1.

The investigation level for the Class 3 area soil samples is given in Table 3-11 of the FSS Plan as greater than 50 percent DCGL or SOF greater than 0.5, as appropriate. No FSS soil sample exceeded an SOF of 0.5, so no further investigation was required.

In accordance with Section 3.6.3 of the FSS Plan, the scan investigation level was established as greater than 50 percent DCGL. A DCGL of 3.8 pCi/g for Co-60 would give a dose rate of 11 µR/hr. Using a 2x2 NaI detector with a response of 430 cpm per µR/hr and adjusting for 50 percent of the DCGL, the response at the DCGL would be:

$$11 * 430 * 0.5 = 2,365 \text{ cpm above background}$$

The average scan background for the soil surfaces was 7,949 cpm, so:

$$\text{Scan Investigation Level} = 7,949 + 2,365 = 10,314 \text{ cpm}$$

Therefore, the scan investigation level for SU7 is 10,314 cpm. No scan exceeded the investigation level, so no further investigation was required.

3.1.8 Determination of Background Values

For each day of use, the instruments were given a documented response check to establish operability. This check was conducted in the office area. Instruments that were used in the field then had a background determination made in the field. There was a significant difference in the background levels between the

excavated area on the bedrock and the soil areas with the bedrock being lower. Background values were determined and recorded by holding the detector probes (Models 43-93 and 44-10) above the ground within the survey unit to be measured. For the gross beta static measurements, the distance from the bedrock is sufficient to eliminate any influence from the surface of the bedrock. An examination of the frequency distribution curve on Figure 3-3 shows that the net value for the gross beta static measurements centers on zero, demonstrating that the background values determined are valid. The same is true for the frequency distribution curve on Figure 3-4 and Figure 3-6 for the scan measurements of the bedrock and soil surfaces using the 2x2 NaI detectors.

3.2 Surface Scan (Gamma Walkover) Results

Gamma walkover results are depicted on the figures located in Appendix G.

3.3 Soil Stockpile Sampling

In accordance with the work instructions for the removal and stockpiling of soil from the excavation, 39 soil samples were collected from the stockpile designated as clean soil from a Class 1 survey unit, 53 soil samples were collected from the stockpile designated as clean soil from a Class 2 survey unit, and 10 samples were collected from the stockpile designated as clean soil from a Class 3 survey unit. Gamma walkover scans were performed during the backfill operations on a frequency commensurate with the original classification of the area. No gamma readings greater than 1.5 times the background count rate were detected. The original analytical laboratory reports are included in Appendix F. Analysis of the soil stockpile sample results is provided in Appendix H.

4.0 CONCLUSIONS

The results for the soil samples support an unrestricted release of the NRC license. In the Class 1 excavation area survey unit, only 2 of the 56 soil samples had detectable Cesium-137 (Cs-137) concentrations with a maximum result of 0.1 pCi/g, approximately 1 percent of its release criteria. In the Class 2 perimeter survey unit, the maximum result for 28 soil samples collected was 0.25 pCi/g of Cs-137 (i.e., 2 percent of the release criteria) out of only 4 samples that had detectable Cs-137. There was no detectable Cs-137 in the Class 3 survey unit (SU7).

The Cs-137 results can be attributable to fall-out from historical atmospheric testing of nuclear weapons. No other ROCs were detected in the FSS samples, and all gamma walkover count rates were at background levels.

Based on the results of the BMRC FSS, the conditions in 10 CFR 20.1402, *Radiological Criteria for Unrestricted Use*, have been met with the maximum dose to an average member of the public calculated (by comparison of the residual concentration of material to the release criteria) to be less than 0.5 mrem per year, or 2 percent of the release criteria.

5.0 REFERENCES

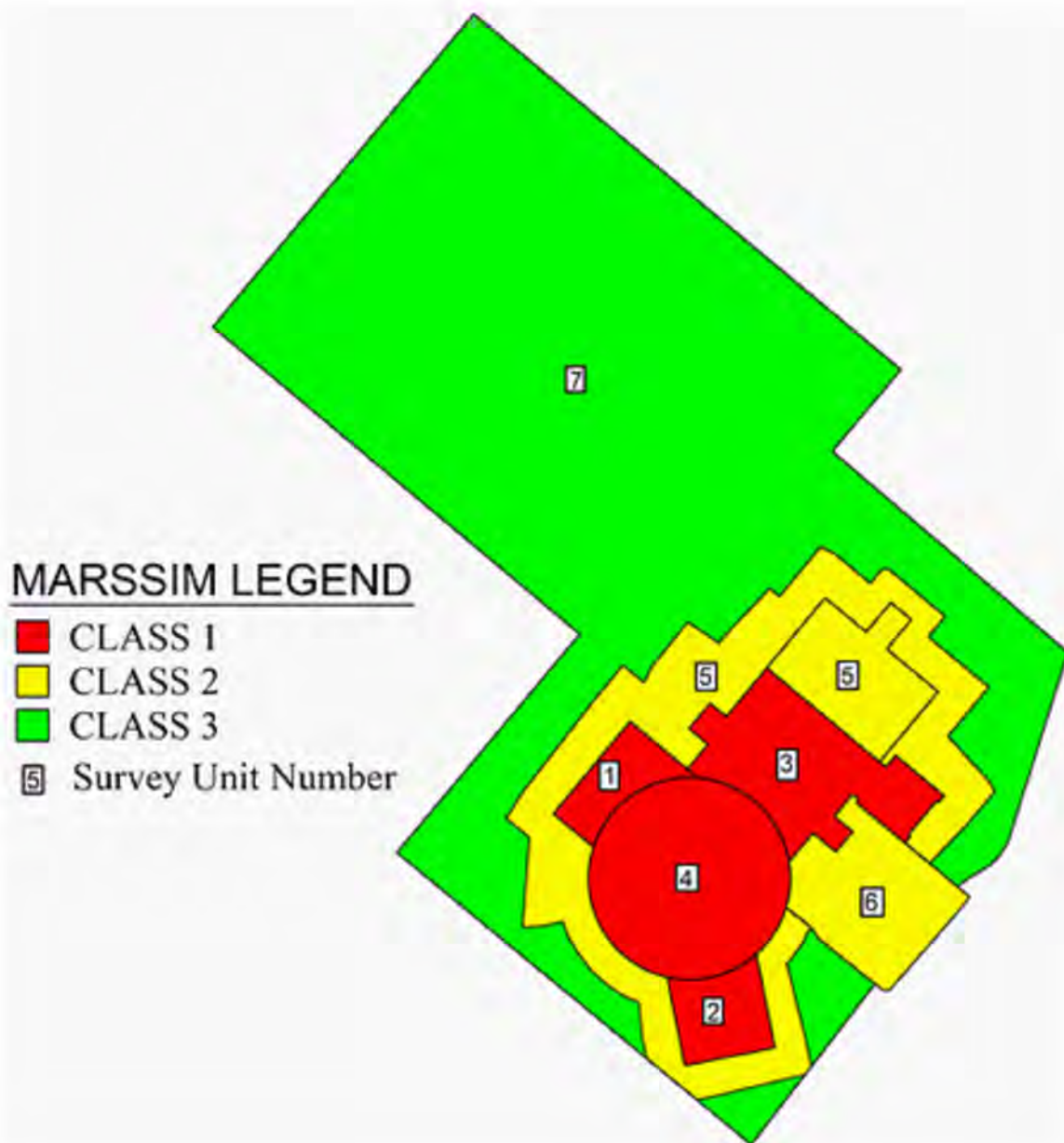
1. 10 CFR 20.1402, *Radiological Criteria for Unrestricted Use*.
2. 10 CFR 50.82, *Termination of License*.
3. U.S. Nuclear Regulatory Commission, *Supplemental Information on the Implementation of the Final Rule on Radiological Criteria for License Termination*, Federal Register, Volume 63, Number 222, November 18, 1998.
4. 10 CFR 20 Subpart E, *Radiological Criteria for License Termination*.
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10. NUREG-1757, *Consolidated Decommissioning Guidance*, September 2006.
11. Buffalo Materials Research Center, State University of New York, University at Buffalo – *Site Characterization Report, Revision 0*, Enercon Services, Inc., July 30, 2011.
12. ISO-7503-1, *Evaluation of surface contamination*, 1988.
13. Regulatory Guide 1.86, *Termination of Operating Licenses for Nuclear Reactors*, Nuclear Regulatory Commission, 1974.
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**APPENDIX A –
LIST OF EMBEDDED ITEMS**

STATUS OF EMBEDDED PIPING AND ACTIVATED STRUCTURAL CONCRETE

Item	Status
Item 1 is a pipe in the northwest portion of the reactor pit and goes to the 1k tank sump.	<i>Completed 12/06/2014</i>
Item 2 is the abandoned cooling line running from the center of the reactor pit under the Neutron Deck Floor to the N-16 Tank Vault.	<i>Completed 12/06/2014</i>
Items 3, 4, and 5 are the Dry Chamber columns, lintel, and floor.	<i>Completed 11/19/2014</i>
Item 6 is the seven Beam Storage Tubes that extend from the interior of the Reactor Building into the soil southwest of the Reactor Building.	<i>Completed 11/11/2014</i>
Item 7 and 8 are a ventilation pipe from the Hot Cell running from the gamma deck down to the neutron deck.	<i>Completed 10/27/2014</i>
Item 9 is a drain line running from the area in the sub-basement where the eleven waste lines exit the building. This line runs to the 1k sump.	<i>Completed 12/06/2014</i>
Item 10 is four lines entering the 1k tank sump area just above the sump. These are various drains from the containment building.	<i>Completed 12/06/2014</i>
Item 11 is eleven waste lines running from the sub-basement, terminating at the tank excavation outside the rollup door to the reactor building.	<i>Completed 12/06/2014</i>
Item 12 is the area on the neutron deck which is covered by cinder blocks.	<i>Completed 11/20/2014</i>
Items 13 and 14 are two floor points in the Sr-90 room.	<i>Completed 08/19/2014</i>
Items 15, 16, 17, and 18 are wall and floor points located in the 1k tank pit.	<i>Completed 08/19/2014. Additional remediation of Spot #17 was completed on 09/16/2014.</i>
Item 19 is a 3" drain line in the Hot Cell that was identified and removed on 10/25/2014.	<i>Completed 10/25/2014</i>
Item 20 is the 2.5" Primary Sump Pit Drain Line	<i>Completed 11/11/2014</i>

**APPENDIX B –
DATA POINT LOCATIONS**



Prepared for:
SUNY BMRC
 Final Status Survey Report
 Appendix B



1:660



Survey Unit by Classification

Source: ESRI World Imagery Service

Prepared by: M. Searle Date: January 3, 2017



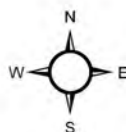
Legend

- Survey Sample Locations
- Suvey Unit



Prepared for:
SUNY BMRC

Final Status Survey Report
Appendix B



1:120



SU-1 Data Point Locations

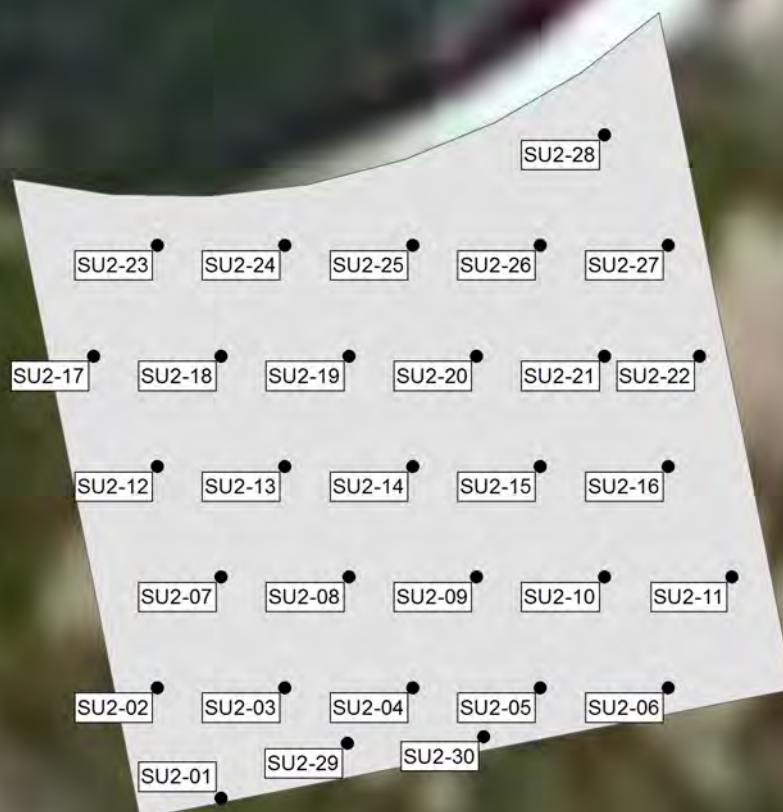
Source: ESRI World Imagery Service

Prepared by: M. Searle Date: January 27, 2016



Legend

- Survey Sample Locations
- Suvey Unit



Prepared for:
SUNY BMRC

Final Status Survey Report
Appendix B



1:120



SU-2 Data Point Locations

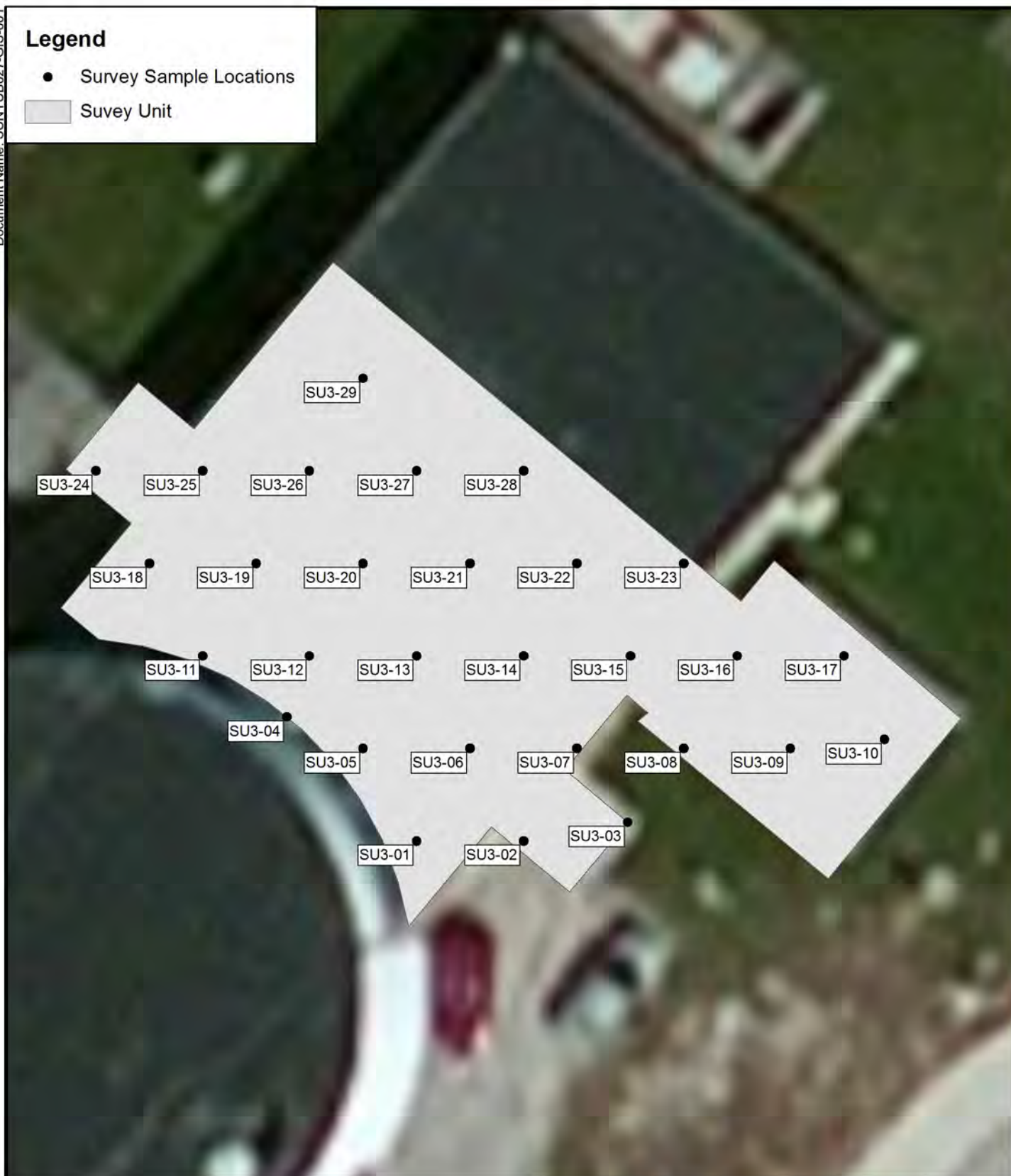
Source: ESRI World Imagery Service

Prepared by: M. Searle Date: January 27, 2016



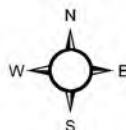
Legend

- Survey Sample Locations
- Suvey Unit



Prepared for:
SUNY BMRC

Final Status Survey Report
Appendix B



1:180



SU-3 Data Point Locations

Source: ESRI World Imagery Service

Prepared by: M. Searle Date: June 30, 2016



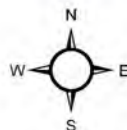
Legend

- Survey Sample Locations
- Suvey Unit



Prepared for:
SUNY BMRC

Final Status Survey Report
Appendix B



1:144



SU-4 Data Point Locations

Source: ESRI World Imagery Service

Prepared by: M. Searle Date: January 27, 2016



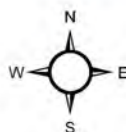
Legend

- Survey Sample Locations
- Suvey Unit



Prepared for:
SUNY BMRC

Final Status Survey Report
Appendix B



1:360



SU-5 Data Point Locations

Source: ESRI World Imagery Service

Prepared by: M. Searle Date: January 27, 2016



Legend

- Survey Sample Locations
- Suvey Unit



Prepared for:
SUNY BMRC

Final Status Survey Report
Appendix B



1:180



SU-6 Data Point Locations

Source: ESRI World Imagery Service

Prepared by: M. Searle Date: January 27, 2016



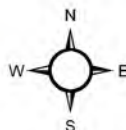
Legend

- Survey Sample Locations
- Suvey Unit



Prepared for:
SUNY BMRC

Final Status Survey Report
Appendix B



1:660



SU-7 Data Point Locations

Source: ESRI World Imagery Service

Prepared by: M. Searle Date: November 2, 2016



**APPENDIX C –
TECHNICAL DATA SHEETS FOR SURVEY INSTRUMENTS**

Model 2221

General Purpose Ratemeter/Scaler

Radiation Detection for a Safer World



Ludlum Measurements, Inc.



Features

- Digital Ratemeter with Built-In Scaler
- Dual Analog Meter & Digital LCD Presentation
- Rich Array of Discrete Front Panel Controls
- Single Channel Analysis
- RS-232 Data Output
- Wide Range HV
- Overload Protection

Part Number: 48-2065

Specifications

INDICATED USE: field analysis

RATEMETER: provides a four-decade analog display that is operational any time the instrument is turned on, the ratemeter can also be presented on the accompanying LCD as a digital value when the LCD is switched to the "Dig. Rate" position

SCALER: range from 0-999999 counts

TIMER: switch selectable divisions of 0.1, 0.5, 1, 2, 5, 10 minutes or CONT (continuous) for manual timing

CONCURRENT USE: scaler or digital ratemeter is active when not selected, allowing for concurrent use

SUGGESTED DETECTORS: GM, proportional, scintillation

HIGH VOLTAGE: adjustable from 400-2400 volts (can be checked on display)

THRESHOLD: adjustable from 100-1000 (can be checked on display)

WINDOW: adjustable from 0-1000 above threshold setting (can be turned on or off)

GAIN: adjustable from 1.5-100 mV at a threshold setting of 100

OVERLOAD: senses detector saturation, indicated by "----" on LCD display and meter going to full scale (adjustable depending on detector selected)

CONNECTOR: series "C" type

METER DIAL: 0-500 cpm, 50-500k cpm logarithmic scale (others available)

DIGITAL DISPLAY: 6-digit LCD display with 1.3 cm (0.5 in.) high digits

LCD BACKLIGHT: activated by LAMP switch

AUDIO: built-in unimorph speaker with volume control

AUDIO DIVIDE: toggle switch for 1, 10, or 100 events per click

AUDIO JACK: for optional headset

CONTROLS:

- * Power Switch: on/off
- * Scale Selector Switch: x1, x10, x100, x1K, Log
- * Response Switch: toggles between FAST (4 sec.) or SLOW (22 sec.) from 10% to 90% of final reading
- * Meter Zero Pushbutton: to zero meter
- * Audio Volume Knob: adjusts volume of audio output
- * Audio Divide Switch: divides audio clicks by either 1, 10, or 100
- * Meter Lamp Switch: illuminates meter
- * Window Switch: selects wide open window counts or a narrower setting for viewing a specific energy band
- * Scaler Count Time Selector Switch: 0.1, 0.2, 0.5, 1, 2, 5, or 10 minutes
- * Count Pushbutton: starts or resets scaler count
- * Count Hold Pushbutton: stops scaler count and leaves result in the display
- * Scaler/Digital Rate Switch: selects which mode is presented on the LCD
- * Test Buttons: battery, high voltage, threshold, window
- * Calibration Controls: recessed screwdriver adjustments with calibration cover

POWER: 4 each "D" cell batteries

BATTERY LIFE: typically 250 hours with alkaline batteries (battery condition can be checked on digital display)

SIZE: 22.9 x 10.9 x 25.4 cm (9 x 4.3 x 10 in.) (H x W x L) including handle

WEIGHT: 2.5 kg (5.5 lb) including batteries

RS-232 OUTPUT OPTION: This option facilitates exporting data to be read as output to a computer or serial printer from either the ratemeter or scaler reading. (Part No. 4261-148)

Model 44-10 Gamma Detector

Radiation Detection for a Safer World



Ludlum Measurements, Inc.



Part Number: 47-1540

Specifications

INDICATED USE: low-level, wide-energy gamma detection

ENERGY RESPONSE: energy dependent

SUGGESTED INSTRUMENTS: general purpose survey meters, ratemeters, and scalars

OPERATING VOLTAGE: 500–1200 volts

SCINTILLATOR: 5.1 x 5.1 cm (2 x 2 in.) (Dia x L) NaI

SENSITIVITY: typically 900 cpm/ μ R/hr (^{137}Cs gamma)

BACKGROUND: 9750 cpm

RECOMMENDED ENERGY RANGE: 50 KeV–3.0 MeV

PHOTOMULTIPLIER TUBE: 5.1 cm (2 in.) diameter, magnetically shielded

CONNECTOR: series “C” (others available)

TEMPERATURE RANGE: -20 to 50 °C (-4 to 122 °F), may be certified to operate from -40 to 65 °C (-40 to 150 °F)

CONSTRUCTION: aluminum housing with beige polyurethane paint

SIZE: 6.6 x 27.9 cm (2.6 x 11 in.) (Dia x L)

WEIGHT: 1.0 kg (2.3 lb)

Model 43-68

Alpha Beta Gamma Detector

Radiation Detection for a Safer World



Ludlum Measurements, Inc.



Part Number: 47-2005

Specifications

INDICATED USE: alpha beta survey

SUGGESTED INSTRUMENTS: Models 12, 16, 18, 2000, 2200, 2221, 2224-1, 2241-2, 2350-1, 2360

DETECTOR TYPE: rechargeable gas proportional

RECOMMENDED COUNTING GAS: P-10 (10% methane, 90% argon)

GAS RECHARGE: will operate on static charge for at least 15 hours with a 1 m (39 in.) cable; 5-hour static charge if connected to a simultaneous alpha/beta measuring instrument

GAS CONNECTORS: double-end quick disconnect

EFFICIENCY (4 π): 20%—²³⁹Pu; 15%—¹⁴C; 30%—⁹⁹Tc; 20%—⁹⁰Sr/⁹⁰Y less than 1%-gamma

SIMULTANEOUS ALPHA/BETA COUNTING: 17.5%—²³⁹Pu; 20%—⁹⁹Tc; 20%—⁹⁰Sr/⁹⁰Y

WINDOW: typically 0.8 mg/cm² aluminized Mylar (other thicknesses available)

WINDOW AREA: 126 cm² (19.5 in²) active, 100 cm² (15.6 in²) open

BACKGROUND: alpha: < 3 cpm (when operating at alpha-only plateau region)

beta-gamma: typically 350 cpm (10 μ R/hr field)

OPERATING VOLTAGE: alpha typically 1100–1400 volts; beta-gamma: typically 1600–1800 volts

COUNTER THRESHOLD SETTING: typically 2–5 mV

SIZE: 10 x 11.7 x 19.8 cm (3.9 x 4.6 x 7.8 in.) (H x W x L), with handle

WEIGHT: 0.9 kg (2 lb)

Model 43-68 Probe Gas Accessories

Part Number	Quantity	Description
2310017	1	2-stage regulator
13-7836	1	regulator output fitting (1/4 in. FPT to 1/4 in. tube)
48-2146	1	Model 2750 Flow Control Station
22-9689	3	plastic fitting nuts for 1/4 in. vinyl tubing
22-9522	2	fittings for flowmeter (1/8 in. MPT to 1/4 in. tubing)
21-9547	1	10 to 100 cc flowmeter (1/8 in. MPT to 1/4 in. tubing)
22-9514	AR	x feet 1/4 in. OD vinyl tubing for gas supply

Model 2360

Alpha/Beta Data Logger

Radiation Detection for a Safer World



Ludlum Measurements, Inc.

Features

- Scaler/Ratemeter/Data Logger
- Simultaneous Alpha & Beta Measurements with Audio Discrimination
- Logs 550 Data Points
- Analog & Digital Display
- Six Separate Alarms
- Overload Protection
- RS-232 Port



Part Number 48-2872

Specifications

SUGGESTED DETECTOR: dual phosphor scintillation and gas proportional detectors

LINEARITY: reading within 10% of true value

HIGH VOLTAGE: adjustable from 200–2000 volts (can be read on meter)

OVERLOAD: senses detector saturation, indicated by red lamp on meter and meter deflecting to full scale (internally adjustable)

RESPONSE: will vary according to number of counts, typically 2–11 seconds from 10%-90% of final reading

SCALER: 6-digit LCD display with 0.64 cm (0.25 in.) digits, overflow arrow, colons to indicate when a count is in process, and backlight

COUNT TIME RANGE: 0.1–60 minutes with capability to preset user-programmed value

DATA LOGGER: capable of storing up to 550 individual data points with the following identifiers for each point: (all data is stored in non-volatile memory allowing batteries to be removed without loss of data)

- alpha and beta sample counts

- sample number

- date/time stamp

- scaler count time

- 10-character location identifier (can be set by ASCII terminal or PC)

HEADER INFORMATION: 6 lines of user defined memory at the beginning of the stack for storing user name, survey name, serial numbers, etc. (information is dumped with logged data)

RS-232 PORT: located on the can, this allows the instrument to be connected to a PC for dumping of data, and setup of parameters

LOGGING FUNCTION CONTROL: internal selection that enables the pushbutton to log a ratemeter reading, initiate a scaler count and log the resulting reading, log both the scaler and ratemeter reading, or disable the logging function

ALARM: has alarm capabilities on both the scaler and ratemeter, both circuits allow for independent alarm settings of the alpha channel, beta channel, and the alpha/beta channel, the scaler alarm setpoints can be set at any point from 0–999999 counts, the ratemeter alarms can be set at any point from 0–999999 cpm, alarm points can be set via the keypad, or PC

CONTROLS:

- RESET/READ HV: a two-position, momentary action switch to allow for the meter to be reset or a reading of the HV setting

- COUNT TYPE: toggle switch to select alpha+beta or “alpha”, only, or “beta” only

- AUDIO VOLUME: rotary knob volume control, greater than 60 dB at 61 cm (2 ft), full volume, selectable dual or individual click-per-event for alpha and beta counts and divisions of 1, 10, 100, or 1000 events per click (beta counts only)

- INSTRUMENT: 6-position rotary knob for instrument off, battery check, range multipliers: x1, x10, x100, x1000

- COUNT TIME: switch selectable times of 0.1, 0.5, 1, 2, 5, 10, 60 minutes, or PC to allow for a specific count time to be set from a PC

- LOGGING PUSHBUTTON: located in handle; used to activate scaler and/or log a count

CALIBRATION DUE DATE: an internal date that disables the instrument if the required calibration interval has been missed

METER DIAL: 0–500 cpm, 0–2 kV, BAT OK, OL (overload); others available

BATTERY LIFE: typically 250 hours with alkaline batteries (battery condition can be checked on meter)

TEMPERATURE RANGE: -20 to 50 °C (-4 to 122 °F), may be certified for operation from -40 to 65 °C (-40 to 150 °F)

SIZE: 16.5 x 8.9 x 21.6 cm (6.5 x 3.5 x 8.5 in.) (H x W x L)

WEIGHT: 1.6 kg (3.5 lb), including batteries

Model 43-89

Alpha / Beta Scintillator

Radiation Detection for a Safer World



Ludlum Measurements, Inc.



Part Number: 47-2430

Specifications

INDICATED USE: simultaneous alpha and beta survey

SUGGESTED INSTRUMENTS: Ludlum Model 2929, Model 2223, Model 2224, Model 2360, or Model 3030E

DETECTOR: scintillator, ZnS (Ag) deposited on a 0.025 cm (0.010 in.) thick rectangular plastic scintillator

PHOTOMULTIPLIER TUBE: 3.8 cm (1.5 in.) diameter

OPERATING VOLTAGE: 500–1000 volts (1500 volts maximum)

WINDOW: 1.2 mg/cm² mylar

WINDOW AREA:

Open: approximately 100 cm² (15.5 in²)

Active: approximately 125 cm² (19.4 in²)

PROTECTOR SCREEN: 22 ga (0.076 cm [0.030 in.]) stainless steel hex (0.64 cm [0.25 in.]), 79% open

RESPONSE UNIFORMITY: $\pm 10\%$ from average reading

EFFICIENCY (4 π): 20% for ²³⁹Pu, 10% for ⁹⁹Tc, and 20% for ⁹⁰Sr ⁹⁰Y

GAMMA SENSITIVITY: approximately 20 cpm per μ R/hr

TYPICAL BACKGROUND:

alpha: 3 cpm or less

beta: 300 cpm or less

CROSSTALK:

alpha to beta: 10% or less

beta to alpha: 1% or less

TEMPERATURE RANGE: -20 to 50 °C (-4 to 122 °F)

CONSTRUCTION: aluminum with beige powder coat

CONNECTOR: series "C," unless specified otherwise

WINDOW FRAME SIZE: 190.3 x 100.2 mm (7.5 x 3.9 in.) (L x W)

OVERALL SIZE: 33 x 10 x 10 cm (12.25 x 4 x 4 in.) (L x W x H)

WEIGHT: 0.68 kg (1.5 lbs)

Model 3030E

Alpha/Beta Sample Counter

Radiation Detection for a Safer World



Ludlum Measurements, Inc.

Specifications

INDICATED USE: simultaneous alpha beta sample counting

SCALERS: 2 each six-digit LCD displays with back lights providing a range of 0–999999 counts

SCALER LINEARITY: reading within 2% of true value

COUNT TIMER SETTINGS: 0.1, 0.5, 1, 2, 5, 10, and 60 minutes. PC position facilitates other user-defined values set by software program.

BACKGROUND:

alpha: 3 cpm or less

beta gamma: typically 50 cpm or less (10 μ R/hr field)

AUDIO: built in unimorph-type speaker with volume control to provide a dual tone click-per-event audio

STATUS INDICATORS:

backlit indicators for daily QC check needed (QC)

overload condition (OL)

counting in cpm or dpm mode (CPM/DPM)

count has exceeded alpha alarm set point (α AL)

count has exceeded beta alarm set point (β AL)

CONNECTOR: series "C"

THRESHOLDS:

alpha: -120 mV

beta: -4 mV

beta window: 50 mV

SCALERS: two each six-digit LCD displays with backlights providing a range of 0–999999 counts

SCALER LINEARITY: reading within 2% of true value

COUNT TIMER SETTINGS: 0.1, 0.5, 1, 2, 5, 10, 60 minutes or the user-defined PC setting defined during setup using the RS-232 port. User-defined count time may be set from 0.1 to 546.1 minutes.

HIGH VOLTAGE: adjustable from 200–2500 Vdc

DATA-OUTPUT: 9-pin RS-232 port

POWER: 250 watts at 95–250 Vac, 50–60 Hz single phase; internal 12 Vdc, 1.2A/hr, trickle- charged battery will provides power up to eight hours

CONSTRUCTION: aluminum housing with gray powder coat paint and sub-surface printed front panel

TEMPERATURE RANGE: -20 to 50 °C (-4 to 122 °F)

SIZE: 24.1 x 13.5 x 25.4 (9.5 x 5.3 x 10.0 in.) (H x W x D)

WEIGHT: approximately 2.7 kg (6 lb)



Part Number: 48-3448

Model 3030E utilizes an external, side-mounted sample counter. Common external counters are Model 43-10 (alpha only) or Model 43-10-1 (alpha beta).

SOFTWARE: computer based to perform setup and calibration routines including: background subtract, crosstalk correction, cpm/dpm modes, daily QC check parameters, alarm levels, and automatic plateaus. All parameters are stored in the instrument in non-volatile memory. The supplied software is capable of logging and storing the following: Sample Number, Sample Date, Sample Time, Alpha Count, Beta Count, Sample Type, Comments.

Model 43-10-1

Alpha Sample Counter Head

Radiation Detection for a Safer World



Ludlum Measurements, Inc.



Part Number: 47-1305

Specifications

INDICATED USE: alpha/beta sample counting

SUGGESTED INSTRUMENTS: Model 2929, Model 2223, Model 2224, Model 3030E

DETECTOR TYPE: scintillator, ZnS (Ag)

DETECTOR OPERATING VOLTAGE: 500–1200 volts

CONNECTOR: series “C” (others available)

SAMPLE SIZE (maximum): 5.1 x 0.9 cm (2 x 0.4 in.) (Dia x L)

SAMPLE HOLDER: anodized aluminum tray with sample ring to allow for 2.5 cm (1 in.) or 5.1 cm (2 in.) diameter x 0.32 cm (0.13 in.) deep samples

PHOTOMULTIPLIER TUBE: 5.1 cm (2 in.)

WINDOW: 0.4 mg/cm²

EFFICIENCY (4π): 37% for ²³⁹Pu, 5% for ¹⁴C, 27% for ⁹⁹Tc, 32% for ²³⁰Th, 39% for ²³⁸U, 29% for ¹³⁷Cs, 26% for ⁹⁹Sr/⁹⁰Y

BACKGROUND: 3 cpm or less alpha, 80 cpm or less for beta-gamma

CONSTRUCTION: aluminum housing with beige powder coating

TEMPERATURE RANGE: -20 to 50 °C (-4 to 122 °F), may be certified for operation from -40 to 65 °C (-40 to 150 °F)

SIZE: 23.6 x 11.4 x 23.6 cm (9.3 x 4.5 x 9.3 in.) (H x W x L)

WEIGHT: 1.9 kg (4.1 lb)

Optional Accessories

Sample Planchets

SIZE: 5.1 x 0.32 cm (2 x 0.125 in.) (Dia x Thickness)

Aluminum: Part Number 7525-371

Stainless Steel: Part Number 7525-371-01
(minimum order quantity 500)



Model 19 MicroR Ratemeter

Radiation Detection for a Safer World



Ludlum Measurements, Inc.

Features

- High Sensitivity to Gamma
- 0-5000 $\mu\text{R/hr}$ Range (others available)
- Rugged
- Splashproof Protection for Outdoor Use
- 2000 Hour Battery life
- CE Certified



Part Number: 48-1615

Introduction

The Model 19 is a highly sensitive gamma $\mu\text{R}/\text{meter}$ employing an internally housed, 2.5 cm diameter by 2.5 cm thick (1.0 x 1.0 in.) NaI detector. The measuring range is 0-5000 $\mu\text{R}/\text{hr}$. The cast aluminum instrument housing with its separate battery compartment and accompanying metal handle offer an industrial robustness and quality that promote long lasting protection and instrument life.

The front-panel controls include a rotary switch for selecting the five-decade range and instrument shut-off, an audio on/off switch, a fast/slow response switch, and pushbuttons for activating the meter lamp, high-voltage display, battery test, and count reset. The Model 19 is a complete turn-key system and includes two "D" cell batteries.



Specifications

INDICATED USE: low-level (μR) gamma survey

MEASUREMENT RANGE: 0-5000 $\mu\text{R/hr}$

DETECTOR: 2.5 x 2.5 cm (1 x 1 in.) Sodium Iodide (NaI[Tl]) scintillator

SENSITIVITY: ≈ 175 cpm/ $\mu\text{R/hr}$ (^{137}Cs gamma)

ENERGY RESPONSE: energy dependent

LINEARITY: reading $\pm 10\%$ of true value

METER: 6.4 cm (2.5 in.) arc, 1 mA analog type

METER DIAL: 0-25 $\mu\text{R/hr}$, 0-50 $\mu\text{R/hr}$, BAT TEST, High Voltage Test

CONTROLS

ROTARY KNOB SELECTOR: 0-25, 0-50, 0-250, 0-500, 0-5000 $\mu\text{R/hr}$, Instrument Off

RESPONSE: toggle switch for FAST (4 seconds) or SLOW (22 seconds) from 10% to 90% of final reading

AUDIO: built-in unimorph speaker with ON/OFF switch (greater than 60 dB at 0.6 meters [2 ft])

HIGH VOLTAGE: pushbutton to display HV setting on meter

BATTERY: pushbutton checks battery voltage

RESET: pushbutton to zero meter

LAMP: pushbutton to activate meter light

CALIBRATION CONTROLS: accessible from front of instrument (protective cover provided)

WORKING ENVIRONMENT: splashproof shields for outdoor use

TEMPERATURE RANGE: -20 to 50 $^{\circ}\text{C}$ (-4 to 122 $^{\circ}\text{F}$), may be certified for operation from -40 to 65 $^{\circ}\text{C}$ (-40 to 150 $^{\circ}\text{F}$)

POWER: 2 each "D" cell batteries (housed in sealed compartment that is externally accessible)

BATTERY LIFE: typically 2000 hours with alkaline batteries (battery condition can be checked on meter)

CONSTRUCTION: cast and drawn aluminum with beige polyurethane enamel paint

SIZE: 15.2 x 8.9 x 21.6 cm (6.0 x 3.5 x 8.5 in.) (H x W x L), without handle

WEIGHT: 2.04 kg (4.5 lb), including batteries

**APPENDIX D –
CALIBRATION RECORDS**



Certificate of Calibration

243 Root Street Suite 100

Olean, NY

Customer		Instrument	
Customer Name: Enercon Services, Inc.		Manufacturer: Ludlum Measurements	
Address: 1501 Armore Blvd Suite 200 Pittsburgh, PA 15221		Model: 19 SN: 138476	
		Detector Manufacturer: Ludlum Measurements	
Customer PO# AECL	Work Order: 2014-5496	Det. Model: Internal Scintillator	SN: n/a
Calibration Method: Electronic(*) and Source		Procedure: MCP-14	
Instrument Received: <input checked="" type="checkbox"/> Within Tolerance <input type="checkbox"/> Out of Tolerance <input type="checkbox"/> Repairs Required <input type="checkbox"/> Other (See Comments)			
<input checked="" type="checkbox"/> Geotropism <input checked="" type="checkbox"/> Meter Zero <input checked="" type="checkbox"/> Mech. Ck <input type="checkbox"/> HV Readout <input checked="" type="checkbox"/> Battery Check <input checked="" type="checkbox"/> Reset			
<input checked="" type="checkbox"/> Audio <input type="checkbox"/> Window Status <input checked="" type="checkbox"/> FS Response <input checked="" type="checkbox"/> Linearity <input type="checkbox"/> Alarm Set			
Temperature: 72 F		Humidity: 50%	Pressure: 28.4 in Hg Altitude: 1450 ft

Instrument Calibration

Multiplier/Range	Calibration Point	Instrument Response			Multiplier/Range	Calibration Point	Instrument Response		
		As Found	As Left	Tolerance			As Found	As Left	Tolerance
25*	5 uR/hr	4.98 uR/hr	5 uR/hr	4.25-5.75	25*	20 uR/hr	18 uR/hr	20 uR/hr	18-22
50*	20 uR/hr	18.5 uR/hr	20 uR/hr	17-23	50*	40 uR/hr	38.5 uR/hr	40 uR/hr	36-44
250*	50 uR/hr	49.9 uR/hr	50 uR/hr	42.5-57.5	250	200 uR/hr	190 uR/hr	200 uR/hr	180-220
500	200 uR/hr	190 uR/hr	200 uR/hr	170-230	500	400 uR/hr	390 uR/hr	400 uR/hr	360-440
5000	1000 uR/hr	1000 uR/hr	1000 uR/hr	850-1150	5000	4000 uR/hr	4200 uR/hr	4200 uR/hr	3600-4400
500*	400 uR/hr ±	68900 cpm	68800 cpm	For Reference					

Electronic Instruments

Pulser: 500-2 sn# 220106

Sources

Isotope	Serial#	Type	Activity	Response	Efficiency	CF	Distance
Cs137	7773CM	Cell 1 Gam	2 Ci		0 %	0	

Instrument Status

Voltage: 645 V Disc/Sens: 33 mV

Statement of Certification

MJW Technical Services, Inc certifies that the above instrument has been calibrated by standards traceable to the National Institute of Standards and Technology or to the calibrator facilities of other International Standards organization members, or have been derived from accepted values of natural physical constants or have been derived by the ration type of calibration techniques. The calibration system conforms to the requirements ISO/IEC 17025 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).

Calibration Technician:
(AL)

QA Technician:

Date: 8-11-14

Calibration Date: 08/06/2014

Calibration Due: 08/06/2015



Certificate of Calibration

243 Root Street Suite 100

Olean, NY

Customer		Instrument	
Customer Name: Enercon Services, Inc.		Manufacturer: Ludlum Measurements	
Address: 1501 Armore Blvd Suite 200 Pittsburgh, PA 15221		Model: 19 SN: 69363	
		Detector Manufacturer: Ludlum Measurements	
Customer PO# AECL	Work Order: 2014-5530	Det. Model: Internal Scintillator	SN: n/a
Calibration Method: Electronic(*) and Source		Procedure: MCP-14	
Instrument Received: <input checked="" type="checkbox"/> Within Tolerance <input type="checkbox"/> Out of Tolerance <input type="checkbox"/> Repairs Required <input type="checkbox"/> Other (See Comments)			
<input checked="" type="checkbox"/> Geotropism <input checked="" type="checkbox"/> Meter Zero <input checked="" type="checkbox"/> Mech. Ck <input type="checkbox"/> HV Readout <input checked="" type="checkbox"/> Battery Check <input checked="" type="checkbox"/> Reset			
<input checked="" type="checkbox"/> Audio <input type="checkbox"/> Window Status <input checked="" type="checkbox"/> FS Response <input checked="" type="checkbox"/> Linearity <input type="checkbox"/> Alarm Set			
Temperature: 70.7 F		Humidity: 49%	Pressure: 28.3 in Hg Altitude: 1450 ft

Instrument Calibration

Multiplier/Range	Calibration Point	Instrument Response			Multiplier/Range	Calibration Point	Instrument Response		
		As Found	As Left	Tolerance			As Found	As Left	Tolerance
25*	5 uR/hr	4.9 uR/hr	5.1 uR/hr	4.25-5.75	25*	20 uR/hr	18.9 uR/hr	20 uR/hr	18-22
50*	20 uR/hr	18.7 uR/hr	21 uR/hr	17-23	50*	40 uR/hr	37 uR/hr	40 uR/hr	36-44
250*	50 uR/hr	50 uR/hr	52 uR/hr	42.5-57.5	250	200 uR/hr	192 uR/hr	200 uR/hr	180-220
500	200 uR/hr	196 uR/hr	202 uR/hr	170-230	500	400 uR/hr	380 uR/hr	400 uR/hr	360-440
5000	1000 uR/hr	1020 uR/hr	1000 uR/hr	850-1150	5000	4000 uR/hr	4200 uR/hr	4100 uR/hr	3600-4400
500*	400 uR/hr =	69700 cpm	64000 cpm	For Reference					

Electronic Instruments

Pulser: 500-2 sn# 220100

Sources

Isotope	Serial#	Type	Activity	Response	Efficiency	CF	Distance
Cs137	7773CM	Cell 1 Gam	2 Ci		0 %	0	

Instrument Status

Voltage: 750 V Disc/Sens: 39 mV

Statement of Certification

MJW Technical Services, Inc certifies that the above instrument has been calibrated by standards traceable to the National Institute of Standards and Technology or to the calibrator facilities of other International Standards organization members, or have been derived from accepted values of natural physical constants or have been derived by the ration type of calibration techniques. The calibration system conforms to the requirements ISO/IEC 17025 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).

Calibration Technician:
(KR)

QA Technician:

Date: 8-21-14

Calibration Date: 08/20/2014

Calibration Due: 08/20/2015



Certificate of Calibration

2015-5893-1

243 Root Street Suite 100

Olean, NY 14760

Customer		Instrument	
Customer Name: Enercon Services, Inc.		Manufacturer: Ludlum Measurements	
Address: 416 Black Oak Drive Attn: Todd Brautigam Greensburg, PA 15601		Model: 19 SN: 69363	
Customer PO# DECOM8G4N Work Order: 2015-5893		Detector Manufacturer: Ludlum Measurements	
Calibration Method: Electronic(*) and Source		Det. Model: Internal Scintillator SN: n/a	
Instrument Received: <input checked="" type="checkbox"/> Within Tolerance <input type="checkbox"/> Out of Tolerance <input type="checkbox"/> Repairs Required <input type="checkbox"/> Other (See Comments)		Procedure: MCP-14	
<input checked="" type="checkbox"/> Geotropism <input checked="" type="checkbox"/> Meter Zero <input checked="" type="checkbox"/> Mech. Ck <input type="checkbox"/> HV Readout <input checked="" type="checkbox"/> Battery Check <input checked="" type="checkbox"/> Reset			
<input checked="" type="checkbox"/> Audio <input type="checkbox"/> Window Status <input checked="" type="checkbox"/> FS Response <input checked="" type="checkbox"/> Linearity <input type="checkbox"/> Alarm Set			
Temperature: 71.8 F Humidity: 22% Pressure: 28.4 in Hg Altitude: 1450 ft			

Instrument Calibration

Multiplier/Range	Calibration Point	Instrument Response			Multiplier/Range	Calibration Point	Instrument Response		
		As Found	As Left	Tolerance			As Found	As Left	Tolerance
25*	5 uR/hr	5 uR/hr	5 uR/hr	4.25-6.75	25*	20 uR/hr	20 uR/hr	20 uR/hr	18-22
50*	20 uR/hr	20 uR/hr	20 uR/hr	17-23	50*	40 uR/hr	40 uR/hr	40 uR/hr	36-44
250*	50 uR/hr	52 uR/hr	52 uR/hr	42.5-57.5	250	200 uR/hr	200 uR/hr	200 uR/hr	180-220
500	200 uR/hr	200 uR/hr	200 uR/hr	170-230	500	400 uR/hr	390 uR/hr	390 uR/hr	360-440
5000	1000 uR/hr	1000 uR/hr	1000 uR/hr	850-1150	5000	4000 uR/hr	3950 uR/hr	3950 uR/hr	3600-4400
500*	400 uR/hr =	70000 cpm	70000 cpm	For Reference					

Electronic Instruments

Pulser: 500-2 sn# 220106

Sources

Isotope	Serial#	Type	Activity	Response	Efficiency	CF	Distance
Cs137	7773CM	Cell I Gamma Irradiator	1.36 Ci				

Instrument Status

Voltage: 750 V Disc/Sens: 40 mV

Statement of Certification

MJW Technical Services, Inc. certifies that the above instrument has been calibrated by standards traceable to the National Institute of Standards and Technology or to the calibrator 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 ISO/IEC 17025 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).

Calibration Technician: (AL) <i>Adrian M. Thomas</i>	QA Technician: <i>[Signature]</i>	Date: 3/18/15
Calibration Date: 03/17/2015	Calibration Due: 03/17/2016	



Certificate of Calibration

2015-6186-1

243 Root Street Suite 100
Olean, NY 14760

Customer		Instrument	
Customer Name: Enercon Services, Inc.		Manufacturer: Ludlum Measurements	
Address: 1501 Armore Blvd Suite 200 Pittsburgh, PA 15221		Model: 19	SN: 138476
Customer PO# G1114 Work Order: 2015-6186		Detector Manufacturer: Ludlum Measurements	
Calibration Method: Electronic(*) and Source		Det. Model: Internal Scintillator	SN: n/a
		Procedure: MCP-14	
Instrument Received: <input type="checkbox"/> Within Tolerance <input type="checkbox"/> Out of Tolerance <input checked="" type="checkbox"/> Repairs Required <input type="checkbox"/> Other (See Comments)			
<input checked="" type="checkbox"/> Geotopism <input checked="" type="checkbox"/> Meter Zero <input checked="" type="checkbox"/> Mech. Ck <input type="checkbox"/> HV Readout <input checked="" type="checkbox"/> Battery Check <input checked="" type="checkbox"/> Reset			
<input checked="" type="checkbox"/> Audio <input type="checkbox"/> Window Status <input checked="" type="checkbox"/> FS Response <input checked="" type="checkbox"/> Linearity <input type="checkbox"/> Alarm Set			
Temperature: 70 F		Humidity: 52%	Pressure: 28.5 in Hg Altitude: 1450 ft

Instrument Calibration

Multiplier/Range	Calibration Point	Instrument Response			Multiplier/Range	Calibration Point	Instrument Response		
		As Found	As Left	Tolerance			As Found	As Left	Tolerance
25*	5 uR/hr	5 uR/hr	5 uR/hr	4.25-5.75	25*	20 uR/hr	19.9 uR/hr	19.9 uR/hr	18-22
50*	20 uR/hr	20 uR/hr	20 uR/hr	17-23	50*	40 uR/hr	40 uR/hr	40 uR/hr	35-44
250*	50 uR/hr	50 uR/hr	50 uR/hr	42.5-57.5	250	200 uR/hr	200 uR/hr	200 uR/hr	180-220
500	200 uR/hr	200 uR/hr	200 uR/hr	170-230	500	400 uR/hr	400 uR/hr	400 uR/hr	360-440
5000	1000 uR/hr	1000 uR/hr	1000 uR/hr	850-1150	5000	4000 uR/hr	4100 uR/hr	4100 uR/hr	3600-4400
500*	400 uR/hr =	68800 cpm	68800 cpm	For Reference					

Electronic Instruments

Pulser: 500-2 sn# 220106

Sources

Isotope	Serial#	Type	Activity	Response	Efficiency	CF	Distance
Cs137	7773CM	Cell 1 Gamma Irradiator	1.571 Ci				

Instrument Status

Voltage: 648 V Disc/Sens: 33 mV

Comments

"As Found" results obtained after repairs were completed

Statement of Certification

MJW Technical Services, Inc. certifies that the above instrument has been calibrated by standards traceable to the National Institute of Standards and Technology or to the calibrator facilities of other International Standards organization members, or have been derived from accepted values of natural physical constants or have been derived by the ration type of calibration techniques. The calibration system conforms to the requirements ISO/IEC 17025 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).

Calibration Technician:
(AL)

QA Technician:

Date: 8-12-15

Calibration Date: 08/12/2015

Calibration Due: 08/12/2016



Certificate of Calibration

2015-6349-7

243 Root Street Suite 100

Olean, NY 14760

Customer		Instrument	
Customer Name: Enercon Services, Inc.		Manufacturer: Ludlum Measurements	
Address: 1501 Armore Blvd Suite 200 Pittsburgh, PA 15221		Model: 19 SN: 69363	
Customer PO# EFS042 Work Order: 2015-6349		Detector Manufacturer: Ludlum Measurements	
Calibration Method: Electronic(*) and Source		Det. Model: Internal Scintillator SN: n/a	
Instrument Received: <input checked="" type="checkbox"/> Within Tolerance <input type="checkbox"/> Out of Tolerance <input type="checkbox"/> Repairs Required <input type="checkbox"/> Other (See Comments)		Procedure: MCP-14	
<input checked="" type="checkbox"/> Geotropism <input checked="" type="checkbox"/> Meter Zero <input checked="" type="checkbox"/> Mech. Ck <input type="checkbox"/> HV Readout <input checked="" type="checkbox"/> Battery Check <input checked="" type="checkbox"/> Reset			
<input checked="" type="checkbox"/> Audio <input type="checkbox"/> Window Status <input checked="" type="checkbox"/> FS Response <input checked="" type="checkbox"/> Linearity <input type="checkbox"/> Alarm Set			
Temperature: 67.3 F Humidity: 48.3% Pressure: 28.4 in Hg Altitude: 1450 ft			

Instrument Calibration

Multiplier/Range	Calibration Point	Instrument Response			Multiplier/Range	Calibration Point	Instrument Response		
		As Found	As Left	Tolerance			As Found	As Left	Tolerance
25*	5 uR/hr	5.5 uR/hr	5.1 uR/hr	4.25-5.75	25*	20 uR/hr	21 uR/hr	20 uR/hr	18-22
50*	20 uR/hr	22 uR/hr	20 uR/hr	17-23	50*	40 uR/hr	42 uR/hr	39 uR/hr	36-44
250*	50 uR/hr	55 uR/hr	51 uR/hr	42.5-57.5	250	200 uR/hr	212 uR/hr	195 uR/hr	180-220
500	200 uR/hr	210 uR/hr	200 uR/hr	170-230	500	400 uR/hr	430 uR/hr	410 uR/hr	360-440
5000	1000 uR/hr	1050 uR/hr	990 uR/hr	850-1150	5000	4000 uR/hr	4400 uR/hr	4100 uR/hr	3600-4400
500*	400 uR/hr =	64000 cpm	67200 cpm	For Reference					

Electronic Instruments

Pulser: 500-2 sn# 220106

Sources

Isotope	Serial#	Type	Activity	Response	Efficiency	CF	Distance
Cs137	7773CM	Cell 1 Gamma Irradiator	1.564 Ci				
Am241	UB992	Y	2343925.480 dpm				

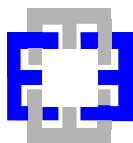
Instrument Status

Voltage: 750 V Disc/Sens: 40 mV

Statement of Certification

MJW Technical Services, Inc certifies that the above instrument has been calibrated by standards traceable to the National Institute of Standards and Technology or to the calibrator 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 ISO/IEC 17025 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).

Calibration Technician: (AL) <i>John M. F...</i>	QA Technician: <i>[Signature]</i>	Date: 11-2-15
Calibration Date: 10/28/2015	Calibration Due: 10/28/2016	



CERTIFICATE OF CALIBRATION

ENERCON Services, Inc.
4499 Old William Penn
Hwy.
Murrysville, PA 15668
Ph. 724-733-8711 ext. 278
Fax 724-733-4630

Customer: **Enercon Services, Inc.** Order Number: **N/A**
Manufacturer: **Ludlum** Model: **2221** Serial Number: **190173 w/ M44-10 s.n. PR206809**
Cal Date: **01/03/2014** Cal Due: **01/03/2015** Cal Interval: **12 mo.** Meterface: **202-159**
Laboratory Conditions: Temperature: **70** °F Relative Humidity: **83** % Altitude: **1,180 ft**

Check mark ☒ indicates criteria applicable to instrument and/or detector IAW Manufacturer's Specifications

☐ New Instrument **OR Instrument Received** ☒ Within Toler +/-10% ☐ 0-20% ☐ Out of Tol. ☐ Requiring Repair ☐ Other-See
☐ Mechanical Ck. ☒ Meter Zeroed ☐ Background Subtract ☒ Input Sens. Linearity
☒ F/S Resp. OK ☒ Reset Ck. ☒ Window Operation ☒ Geotropism
☐ Audio. Ck. ☐ Alarm Setting Ck. ☒ Batt. Ck. 5.5 VDC ☒ Precision Test
☒ Calibrated in accordance with **ECL No. 205-1 & OEM Manual** Barometric Pressure: **30** mmHg ☐ Overload Test
Instrument Volt Set **975V** Input Sensitivity **10 mV**
Det. Oper. Volt **N/A V at N/A** Threshold Dial Ratio: **10 = 100**
☒ HV Readout (2 points) Ref./Inst **1500 V / 1500 V** Ref./Inst **400 V / 400 V**

COMMENTS: No audio.

Gamma Calibration: GM detectors positioned perpendicular to source except for M44-9 in which the front of probe faces source.

RANGE/ MULTIPLIER	REFERENCE CAL. POINT	INSTRUMENT REC'D "AS FOUND" READING	INSTRUMENT METER "AS LEFT" READING*
X1K	400,000 cpm	400,000 cpm	400,000 cpm
X1K	200,000 cpm	200,000 cpm	200,000 cpm
X1K	100,000 cpm	100,000 cpm	100,000 cpm
X100	40,000 cpm	40,000 cpm	40,000 cpm
X100	20,000 cpm	20,000 cpm	20,000 cpm
X100	10,000 cpm	10,000 cpm	10,000 cpm
X10	4,000 com	4,000 cpm	4,000 cpm
X10	2,000 cpm	2,000 cpm	2,000 cpm
X10	1,000 cpm	1,000 cpm	1,000 cpm
X1	400 cpm	400 cpm	400 cpm
X1	200 cpm	200 cpm	200 cpm
X1	100 cpm	100 cpm	100 cpm

*Uncertainty within ±20%

Digital Readout	REFERENCE CAL POINT	INSTRUMENT RECEIVED	INSTRUMENT METER READING*	Log Scale	REFERENCE CAL. POINT	INSTRUMENT RECEIVED	INSTRUMENT METER READING
	400,000 cpm	389715 cpm	389715 cpm		400,000 cpm	350,000\ cpm	350,000\ cpm
	40,000 cpm	38984 cpm	38984 cpm		40,000 cpm	35,000\ cpm	35,000\ cpm
	4,000 cpm	3890 cpm	3890 cpm		4,000 cpm	3,500 \ cpm	3,500 \ cpm
	400 cpm	391 cpm	391 cpm		400 cpm	350 \ cpm	350 \ cpm

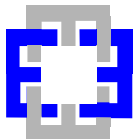
ENERCON Services, inc. certifies that the above instrument has been calibrated by standards traceable to the National Institute of Standards and Technology or to the calibration facility other International Standards Organization members, or have been derived from accepted values or natural physical constraints or have been derived by the ratio type of calibration technology. The calibration system conforms to the requirements of ANSI /NCSL Z540-1-1994 and ANSI N323-1978.

Reference Instruments and/or Sources:

<input checked="" type="checkbox"/> Cs-137 Gamma S/N 55	<input type="checkbox"/> Alpha S/N	<input checked="" type="checkbox"/> Beta S/N
<input checked="" type="checkbox"/> M 500 S/N: 187460 Cal Due: 08/06/14	<input type="checkbox"/> Multimeter S/N: 020513278	<input type="checkbox"/> Other

Calibrated By: **R. Ric Shank** Date: **January 3, 2014**

Reviewed By: _____ Date: _____



CERTIFICATE OF CALIBRATION

(Continued)

ENERCON Services, Inc.
4499 Old William Penn
Hghwy.
Murrysville, PA 15668
Ph. 724-733-8711 ext. 278
Fax 724-733-4630

Customer: **Enercon Services Inc.** Order Number: **N/A**
Manufacturer: **Ludlum** Model: **2221** Serial Number: **190173 w/ M44-10 s.n. PR206809**
Cal Date: **01/03/2014** Cal Due: **01/03/2015** Cal Interval: **12 mo.** Meterface: **202-159**

High Voltage Calibration				Timer Calibration			
Voltage	Tolerance	As Found	As Left	Time (sec.)	Tolerance	As Found	As Left
400	390-410	397	397	300	290-310	300	300
1,000	990-1,010	999	999	60	58-62	60	60
1,500	1,490-1,510	1503	1503	30	29-31	30	30
1,900	1,890-1,910	1908	1908				

Threshold/Gain Calibration (Desired Ratio 10*100/mV)				
Input	As Found Value	As Found Ratio (100/mV*10)	As Left Value	As Left Ratio (100/mV*10)
10	10	100	10	100
20	20	50	20	50
30	29.8	33.56	29.8	33.56
40	39.6	25.25	39.6	25.25

Add Plateau Data Here: 30 second count used.

Count No.	Background	Counts per 0.5 Min.	Voltage
1	1271	16111	700
2	1382	16498	725
3	1471	16939	750
4	1657	17954	775
5	1646	18187	800
6	1610	17995	825
7	1780	17898	850
8	1567	18076	875
9	1744	18430	900
10	1811	18535	925
11	1694	18516	950
12	1780	18643	975
13	1805	18679	1000
14	2003	18647	1025
15	1626	18554	1050
16	1936	18867	1075
17	1949	19212	1100
18			1125

Add Detector Efficiency Here: Five counts used

<input type="checkbox"/> Cs-137 Gamma S/N 55	<input type="checkbox"/> Alpha S/N	<input checked="" type="checkbox"/> Beta S/N
<input checked="" type="checkbox"/> M 500 S/N: 187460 Cal Due: 08/06/14	<input type="checkbox"/> Multimeter S/N: 020513278	<input type="checkbox"/> Other

Calibrated By: **R. Ric Shank** Date: **January 3, 2014**
Reviewed By: _____ Date: _____



Certificate of Calibration

243 Root Street Suite 100
Olean, NY 14760

Customer		Instrument	
Customer Name: Enercon Services, Inc.		Manufacturer: Ludlum Measurements	
Address: 1501 Armore Blvd Suite 200 Pittsburgh, PA 15221		Model: 2221 SN: 211772	
		Detector Manufacturer: Ludlum Measurements	
Customer PO# SUNY	Work Order: 2014-5566	Det. Model: 44-10	SN: PR163994
Calibration Method: Electronic(*)		Procedure: SOP-06	

Instrument Received: ☒ Within Tolerance ☐ Out of Tolerance ☐ Repairs Required ☐ Other (See Comments)

☒ Geotropism ☒ Meter Zero ☒ Mech. Ck ☒ HV Readout ☒ Battery Check ☒ Reset

☒ Audio ☐ Window Status ☒ FS Response ☒ Linearity ☐ Alarm Set

Temperature: 73.4 F Humidity: 53% Pressure: 28.6 in Hg Altitude: 1450 ft

Instrument Calibration

Multiplier/Range	Calibration Point	Instrument Response			Multiplier/Range	Calibration Point	Instrument Response		
		As Found	As Left	Tolerance			As Found	As Left	Tolerance
X 1*	100 cpm	98 cpm	98 cpm	90-110	X 1*	400 cpm	400 cpm	400 cpm	360-440
X 10*	1 kcpm	0.99 kcpm	0.99 kcpm	0.9-1.1	X 10*	4 kcpm	4 kcpm	4 kcpm	3.6-4.4
X 100*	10 kcpm	9.9 kcpm	9.9 kcpm	9-11	X 100*	40 kcpm	40 kcpm	40 kcpm	36-44
X 1K*	100 kcpm	99 kcpm	99 kcpm	90-110	X 1K*	400 kcpm	400 kcpm	400 kcpm	360-440
Digital Ratemeter*	40 cpm	40 cpm	40 cpm	36-44	Digital Ratemeter*	400 cpm	400 cpm	400 cpm	360-440
Digital Ratemeter*	4 kcpm	3.998 kcpm	3.998 kcpm	3.6-4.4	Digital Ratemeter*	40 kcpm	39.994 kcpm	39.994 kcpm	36-44
Digital Ratemeter*	400 kcpm	399.958 kcpm	399.958 kcpm	360-440	Digital Scaler*	40 cpm	40 cpm	40 cpm	36-44
Digital Scaler*	400 cpm	400 cpm	400 cpm	360-440	Digital Scaler*	4 kcpm	3.999 kcpm	3.999 kcpm	3.6-4.4
Digital Scaler*	40 kcpm	39.989 kcpm	39.989 kcpm	36-44	Digital Scaler*	400 kcpm	399.893 kcpm	399.893 kcpm	360-440
Log Scale*	50 cpm	50 cpm	50 cpm	45-55	Log Scale*	500 cpm	500 cpm	500 cpm	450-550
Log Scale*	5 kcpm	5 kcpm	5 kcpm	4.5-5.5	Log Scale*	50 kcpm	50 kcpm	50 kcpm	45-55
Log Scale*	500 kcpm	490 kcpm	490 kcpm	450-550					

Electronic Instruments

Pulser: 500-2 sn# 220100

Scaler: 2200 sn# 287166

Sources

Isotope	Serial#	Type	Activity	Response	Efficiency	CF	Distance
Cs137	1130105	Y	2115660 dpm		%		
Am241	UB992	Y	2358000 dpm	144157	6.1 %	16.39	0 inch

Instrument Status

Voltage: 1200 V Disc/Sens: 10 mV Ref. V 1: 500 V Ins. V 1: 500 V Ref. V 2: 1500 V Ins. V 2: 1506 V

Comments

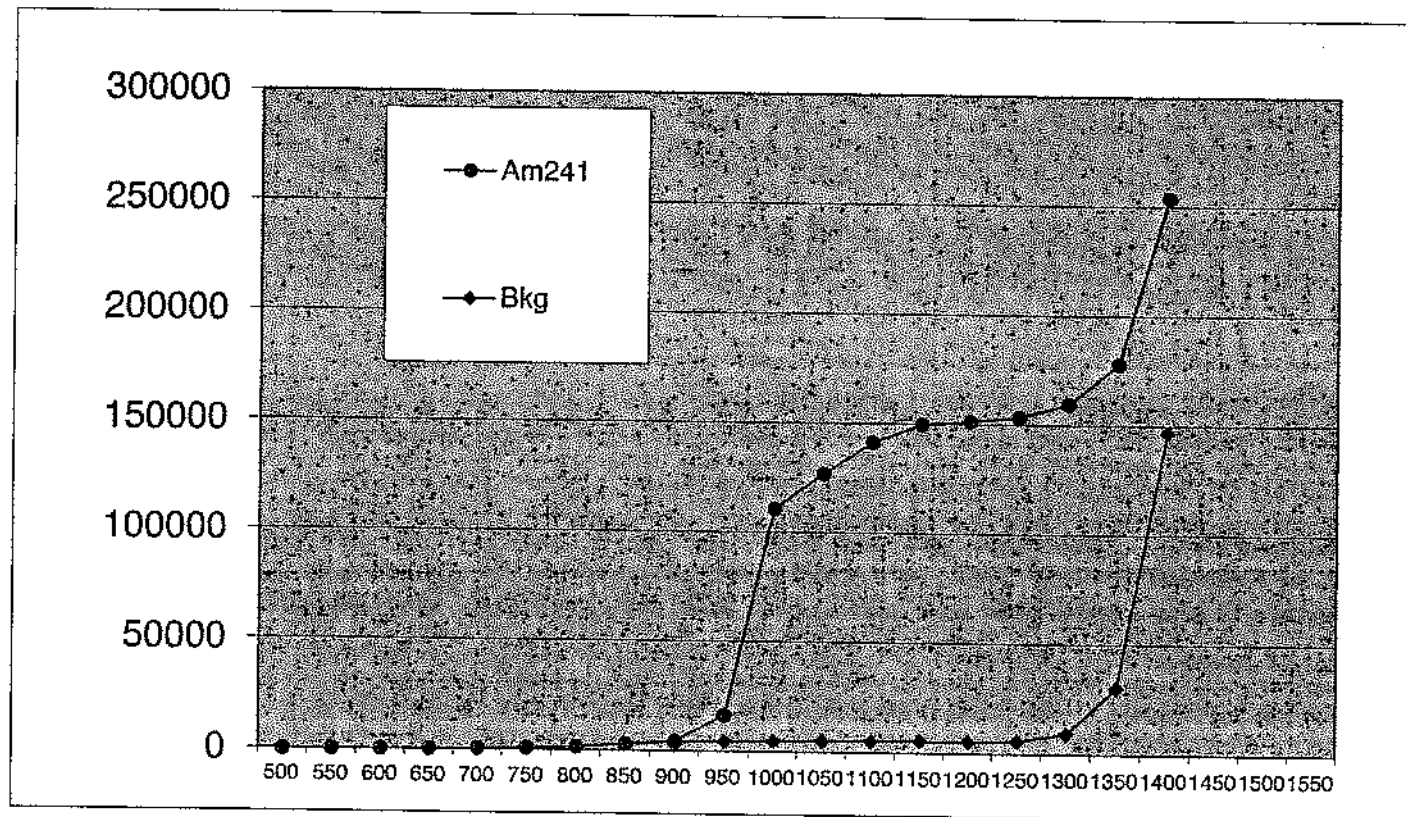
Model 2221 currently set for gross counts.
High Voltage: 1200V detector connected with 5 foot cord.
Threshold: 100 (10mV)
Window: OUT
Verified RS-232 operation.

Statement of Certification

MJW Technical Services, Inc certifies that the above instrument has been calibrated by standards traceable to the National Institute of Standards and Technology or to the calibrator facilities of other International Standards organization members, or have been derived from accepted values of natural physical constants or have been derived by the ration type of calibration techniques. The calibration system conforms to the requirements ISO/IEC 17025 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).

Calibration Technician: <i>KR</i> (KR)	QA Technician: <i>[Signature]</i>	Date: 9-8-14
Calibration Date: 09/08/2014	Calibration Due: 09/08/2015	

Voltage	Bkg	Am241
500	30	30
550	30	60
600	190	120
650	470	340
700	690	640
750	1150	1170
800	1850	1820
850	3070	3270
900	4480	4680
950	4730	16570
1000	5270	110800
1050	5460	126930
1100	5510	141550
1150	5750	149950
1200	5590	151520
1250	6140	153570
1300	9650	159680
1350	30420	178030
1400	147110	253850
1450		
1500		
1550		



	1200 v			
	Bkg	Am241	UB-992	2348096 gamma/decay
1200	5590	151520		
		145930		
		Eff		
		6.21%		

Det 44-10
SN PR163994

Plateau Instrument Model 2200 287166
Source Am241 on contact

1 uCi Cs137 Energy resolution	Threshold	Window	counts	voltage
12.1 %	6.42	0.4	33630	900
high	6.77	0.4	16350	
low	5.97	0.4	16660	

Energy resolution is performed to test the integrity of the crystal and tube socket.
The resolution should be less than 13% to be considered an acceptable detector.
A new detector will be between 8% and 9% and increase towards 13% as it ages.

9/8/2014

AKR



SUNTRAC Services, Inc.

CERTIFICATE OF CALIBRATION

Customer: 14365

Enercon
5850 San Felipe Ste 400
Houston, TX 77057

1818 East Main Street
League City, TX 77573
Phone: (281) 338-2133
Fax: (281) 338-2136
www.suntrac.com

	Manufacturer	Model Number	Serial Number
Instrument Serviced:	Ludlum	2221	190173
Detector:	Ludlum	44-10	PR206809

Meter Range Multiplier	Distance Calculated (inches)	Filter	Calculated Calibration Point	Instrument Meter Reading	Unit	Correction Factor	Reference Points
Digital readout	PULSER	N	40	40	C.P.M.	1.0	
Digital readout	PULSER	N	400	401	C.P.M.		
Digital readout	PULSER	N	4000	4007	C.P.M.		
Digital readout	PULSER	N	40000	40028	C.P.M.		
Digital readout	PULSER	N	400000	403013	C.P.M.		450
TIME	PULSER	N	1	1	Min.	1.0	
TIME	PULSER	N	2	2	Min.		
TIME	PULSER	N	5	5	Min.		
TIME	PULSER	N	10	10	Min.		
HV	PULSER	N	500	500	Volts	1.0	
HV	PULSER	N	2000	2000	Volts		
x1	PULSER	N	100	100	C.P.M.	1.0	
x1	PULSER	N	400	400	C.P.M.		

Calibrated in accordance with Texas Radioactive Materials License Number L03062, and requirements of ANSI/NCSL Z540-1-1994; ANSI-N323A-1997; and 10 CFR 34.25 & 35.61. NIST Traceable #141271/T140856.

Temperature: 72°F

Humidity: 37%

Altitude: 30inHG

Geotropism: ☐

Calibration Source S/N: A280

Source Activity: 58.07 mCi

Cs137: 19.67 mR/hr.@100cm; <+/-5%

Pulser Utilized: Yes

Pulser Information: Ludlum Model 500 S/N 54670

Battery Check: OK

OP Volts: 950

Detector Position: Parallel

Check Source: Yes

Isotope: CS 137

Isotope S/N: 875

C.P.M. At Contact: 240,000

Technician Comments: The check source reading was taken with the front end of the detector at contact with source (door open). This instrument is calibrated electronically in C. P. M. with reference points given in μ R/Hr.

Calibrated By Luka Banic

1/13/2015

Cal. Date

12 months

Calibration Interval

1/13/2016

Cal. Due Date

Quality Assurance Reviewed By

1-15-15
Review Date



SUNTRAC Services, Inc.

CERTIFICATE OF CALIBRATION

1818 East Main Street
League City, TX 77573
Phone: (281) 338-2133
Fax: (281) 338-2136
www.suntrac.com

Customer: 14365

Enercon
5850 San Felipe Ste 400
Houston, TX 77057

	Manufacturer	Model Number	Serial Number
Instrument Serviced:	Ludlum	2221	190173
Detector:	Ludlum	44-10	PR206809

Meter Range Multiplier	Distance Calculated (inches)	Filter	Calculated Calibration Point	Instrument Meter Reading	Unit	Correction Factor	Reference Points
x10	PULSER	N	1000	1000	C.P.M.	1.0	
x10	PULSER	N	4000	4000	C.P.M.		
x100	PULSER	N	10000	10000	C.P.M.	1.0	
x100	PULSER	N	40000	40000	C.P.M.		
x1000	PULSER	N	100000	100000	C.P.M.	1.0	
x1000	PULSER	N	400000	400000	C.P.M.		450
Log Scale	PULSER	N	200	200	C.P.M.	1.0	
Log Scale	PULSER	N	2000	2000	C.P.M.		
Log Scale	PULSER	N	20000	20000	C.P.M.		
Log Scale	PULSER	N	200000	200000	C.P.M.		210

Calibrated in accordance with Texas Radioactive Materials License Number L03062, and requirements of ANSI/NCSL Z540-1-1994; ANSI-N323A-1997; and 10 CFR 34.25 & 35.61. NIST Traceable #141271/T140856.

Temperature: 72°F Humidity: 37% Altitude: 30inHG Geotropism: ☐

Calibration Source S/N: A280 Source Activity: 58.07 mCi Cs137: 19.67 mR/hr.@100cm; <+/-5%

Pulser Utilized: Yes Pulser Information: Ludlum Model 500 S/N 54670

Battery Check: OK	OP Volts: 950	Detector Position: Parallel
Check Source: Yes	Isotope: CS 137	Isotope S/N: 875
		C.P.M. At Contact: 240,000

Technician Comments: The check source reading was taken with the front end of the detector at contact with source (door open). This instrument is calibrated electronically in C. P. M. with reference points given in μ R/Hr.

	1/13/2015
Calibrated By Luka Banic	Cal. Date
	1-13-15
Quality Assurance Reviewed By	Review Date

12 months	1/13/2016
Calibration Interval	Cal. Due Date



Certificate of Calibration

2015-6349-5

243 Root Street Suite 100

Olean, NY 14760

Customer		Instrument	
Customer Name: Enercon Services, Inc.		Manufacturer: Ludlum Measurements	
Address: 1501 Armore Blvd Suite 200 Pittsburgh, PA 15221		Model: 2221 SN: 211772	
Customer PO# EFS042 Work Order: 2015-6349		Detector Manufacturer: Ludlum Measurements	
Calibration Method: Electronic(*)		Det. Model: 44-10 SN: PR163994	
		Procedure: SOP-06	

Instrument Received: ☒ Within Tolerance ☐ Out of Tolerance ☐ Repairs Required ☐ Other (See Comments)

☒ Geotropism ☒ Meter Zero ☒ Mech. Ck ☒ HV Readout ☒ Battery Check ☒ Reset

☒ Audio ☐ Window Status ☒ FS Response ☒ Linearity ☐ Alarm Set

Temperature: 70.4 F Humidity: 46% Pressure: 28 in Hg Altitude: 1450 ft

Instrument Calibration

Multiplier/Range	Calibration Point	Instrument Response			Multiplier/Range	Calibration Point	Instrument Response		
		As Found	As Left	Tolerance			As Found	As Left	Tolerance
X 1*	100 cpm	100 cpm	100 cpm	90-110	X 1*	400 cpm	400 cpm	400 cpm	360-440
X 10*	1 kcpm	1 kcpm	1 kcpm	0.9-1.1	X 10*	4 kcpm	4 kcpm	4 kcpm	3.6-4.4
X 100*	10 kcpm	10 kcpm	10 kcpm	9-11	X 100*	40 kcpm	40 kcpm	40 kcpm	36-44
X 1K*	100 kcpm	100 kcpm	100 kcpm	90-110	X 1K*	400 kcpm	400 kcpm	400 kcpm	360-440
Digital Ratemeter*	40 cpm	40 cpm	40 cpm	36-44	Digital Ratemeter*	400 cpm	400 cpm	400 cpm	360-440
Digital Ratemeter*	4 kcpm	3.979 kcpm	3.979 kcpm	3.6-4.4	Digital Ratemeter*	40 kcpm	39.914 kcpm	39.914 kcpm	36-44
Digital Ratemeter*	400 kcpm	399.171 kcpm	399.171 kcpm	360-440	Digital Scaler*	40 cpm	40 cpm	40 cpm	36-44
Digital Scaler*	400 cpm	400 cpm	400 cpm	360-440	Digital Scaler*	4 kcpm	3.993 kcpm	3.993 kcpm	3.6-4.4
Digital Scaler*	40 kcpm	39.92 kcpm	39.92 kcpm	36-44	Digital Scaler*	400 kcpm	399.125 kcpm	399.125 kcpm	360-440
Log Scale*	50 cpm	50 cpm	50 cpm	45-55	Log Scale*	500 cpm	500 cpm	500 cpm	450-550
Log Scale*	5 kcpm	5 kcpm	5 kcpm	4.5-5.5	Log Scale*	50 kcpm	50 kcpm	50 kcpm	45-55
Log Scale*	500 kcpm	490 kcpm	490 kcpm	450-550					

Electronic Instruments

Pulser: 500-2 sn# 220106 MultiMeter: GDM-8245 sn# CF870447 Scaler: 2200 sn# 287163

High Voltage Divider Box: T1016 sn# PR285867

Sources

Isotope	Serial#	Type	Activity	Response	Efficiency	CF	Distance
Am241	UB992	Y	2343946.040 dpm	120800	5.2 %	19.23	0 inch
Cs137	UB994	Y	2372310.182 dpm	221900	9.4 %	10.64	0 inch

Instrument Status

Voltage: 1200 V Disc/Sens: 10 mV Ref. V 1: 500 V Ins. V 1: 502 V Ref. V 2: 1500 V Ins. V 2: 1507 V

Comments

Model 2221 currently set for gross counts.
High Voltage: 1200V detector connected with 5 foot cord.
Threshold: 100 (10mV) Window: OUT
Model 44-10 energy resolution = 13.6%, acceptable detector energy resolution is <13%

Statement of Certification

MJW Technical Services, Inc certifies that the above instrument has been calibrated by standards traceable to the National Institute of Standards and Technology or to the calibrator facilities of other International Standards organization members, or have been derived from accepted values of natural physical constants or have been derived by the ration type of calibration techniques. The calibration system conforms to the requirements ISO/IEC 17025 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).

Calibration Technician: (AL) <i>Adam M. Jones</i>	QA Technician: <i>[Signature]</i>	Date: 11-2-15
Calibration Date: 10/29/2015	Calibration Due: 10/29/2016	



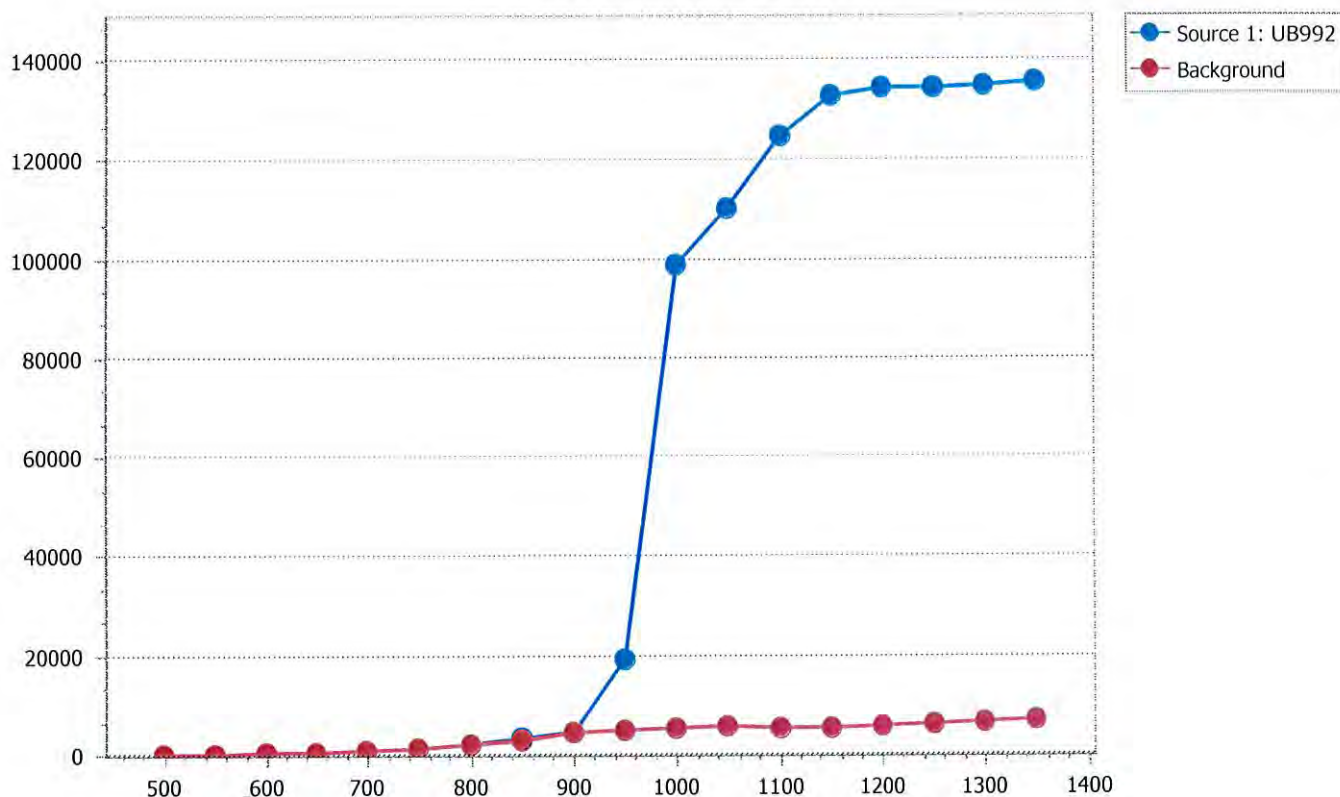
Certificate of Calibration

2015-6349-5

243 Root Street Suite 100
Olean, NY 14760

Customer		Instrument	
Customer Name: Enercon Services, Inc.		Manufacturer: Ludlum Measurements	
Address: 1501 Armore Blvd Suite 200 Pittsburgh, PA 15221		Model: 2221 SN: 211772	
Customer PO# EFS042 Work Order: 2015-6349		Detector Manufacturer: Ludlum Measurements	
Calibration Method: Electronic(*)		Det. Model: 44-10 SN: PR163994	
Instrument Received: <input checked="" type="checkbox"/> Within Tolerance <input type="checkbox"/> Out of Tolerance <input type="checkbox"/> Repairs Required <input type="checkbox"/> Other (See Comments)		Procedure: SOP-06	
<input checked="" type="checkbox"/> Geotropism <input checked="" type="checkbox"/> Meter Zero <input checked="" type="checkbox"/> Mech. Ck <input checked="" type="checkbox"/> HV Readout <input checked="" type="checkbox"/> Battery Check <input checked="" type="checkbox"/> Reset			
<input checked="" type="checkbox"/> Audio <input type="checkbox"/> Window Status <input checked="" type="checkbox"/> FS Response <input checked="" type="checkbox"/> Linearity <input type="checkbox"/> Alarm Set			
Temperature: 70.4 F Humidity: 46%		Pressure: 28 in Hg Altitude: 1450 ft	

Source Voltage Plateaus



Statement of Certification

MJW Technical Services, Inc certifies that the above instrument has been calibrated by standards traceable to the National Institute of Standards and Technology or to the calibrator facilities of other International Standards organization members, or have been derived from accepted values of natural physical constants or have been derived by the ration type of calibration techniques. The calibration system conforms to the requirements ISO/IEC 17025 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).

Calibration Technician:
(AL)

John M. Fourn

QA Technician:

[Signature]

Date: 11-2-15

Calibration Date: 10/29/2015

Calibration Due: 10/29/2016



Certificate of Calibration

2015-5804-1

243 Root Street Suite 100
Olean, NY 14760

Customer		Instrument	
Customer Name: Enercon Services, Inc.		Manufacturer: Ludlum Measurements	
Address: 1501 Ardmore Blvd Suite 200 Pittsburgh, PA 15221		Model: 2360 SN: 248132	
		Detector Manufacturer: Ludlum Measurements	
Customer PO#	Work Order: 2015-5804	Det. Model: 43-93	SN: PR339082
Calibration Method: Electronic(*)		Procedure: SOP-06	

Instrument Received: ☒ Within Tolerance ☐ Out of Tolerance ☐ Repairs Required ☐ Other (See Comments)

☒ Geotropism ☒ Meter Zero ☒ Mech. Ck ☒ HV Readout ☒ Battery Check ☒ Reset

☒ Audio ☐ Window Status ☐ FS Response ☐ Linearity ☐ Alarm Set

Temperature: 71.5 F Humidity: 23% Pressure: 28.5 in Hg Altitude: 1450 ft

Instrument Calibration

Multiplier/Range	Calibration Point	Instrument Response			Multiplier/Range	Calibration Point	Instrument Response		
		As Found	As Left	Tolerance			As Found	As Left	Tolerance
X 1*	200 cpm	200 cpm	200 cpm	170-230	X 1*	800 cpm	815 cpm	815 cpm	720-880
X 10*	2 kcpm	2 kcpm	2 kcpm	1.7-2.3	X 10*	8 kcpm	8.15 kcpm	8.15 kcpm	7.2-8.8
X 100*	20 kcpm	19.9 kcpm	19.9 kcpm	17-23	X 100*	80 kcpm	81.6 kcpm	81.6 kcpm	72-88
X 1K*	200 kcpm	199 kcpm	199 kcpm	170-230	X 1K*	800 kcpm	815 kcpm	815 kcpm	720-880
Digital Scaler*	80 cpm	80 cpm	80 cpm	72-88	Digital Scaler*	800 cpm	799 cpm	799 cpm	720-880
Digital Scaler*	8 kcpm	7.995 kcpm	7.995 kcpm	7.2-8.8	Digital Scaler*	80 kcpm	79.951 kcpm	79.951 kcpm	72-88
Digital Scaler*	800 kcpm	799.518 kcpm	799.518 kcpm	720-880					

Electronic Instruments

Pulser: 500-2 sn# 220100 Scaler: 2200 sn# 287166

Sources

Isotope	Serial#	Type	Activity	Response	Efficiency	CF	Distance
Pu239	C7-636	a 4pi	111569.772 dpm	19453	17.4 %	5.75	0 inch
Th230	C7-643	a 4pi	99311.591 dpm	15336	15.4 %	6.49	0 inch
Sr90	C7-637	B 2pi	109699.870 dpm	40165	36.6 %	2.73	0 inch
Tc99	C7-642	B 2pi	68837.893 dpm	8492	12.3 %	8.13	0 inch

Instrument Status

Voltage: 925 V Ref. V 1: 500 V Ins. V 1: 500 V Ref. V 2: 1500 V Ins. V 2: 1510 V

Windows Status

Alpha Thres: 119 mV Beta Thres: 3.42 mV Beta Window: 30 mV

Detector Status

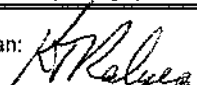
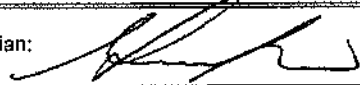
Oper. V: 925 V

Comments

Alpha Background = 1 cpm. Beta Background = 67 cpm.
Alpha crosstalk in the Beta channel is <10%
Beta crosstalk in the Alpha channel is <1%

Statement of Certification

MJW Technical Services, Inc certifies that the above instrument has been calibrated by standards traceable to the National Institute of Standards and Technology or to the calibrator facilities of other International Standards organization members, or have been derived from accepted values of natural physical constants or have been derived by the ration type of calibration techniques. The calibration system conforms to the requirements ISO/IEC 17025 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).

Calibration Technician:  (KR)	QA Technician:  Date: 1-28-15
Calibration Date: 01/28/2015	Calibration Due: 01/28/2015



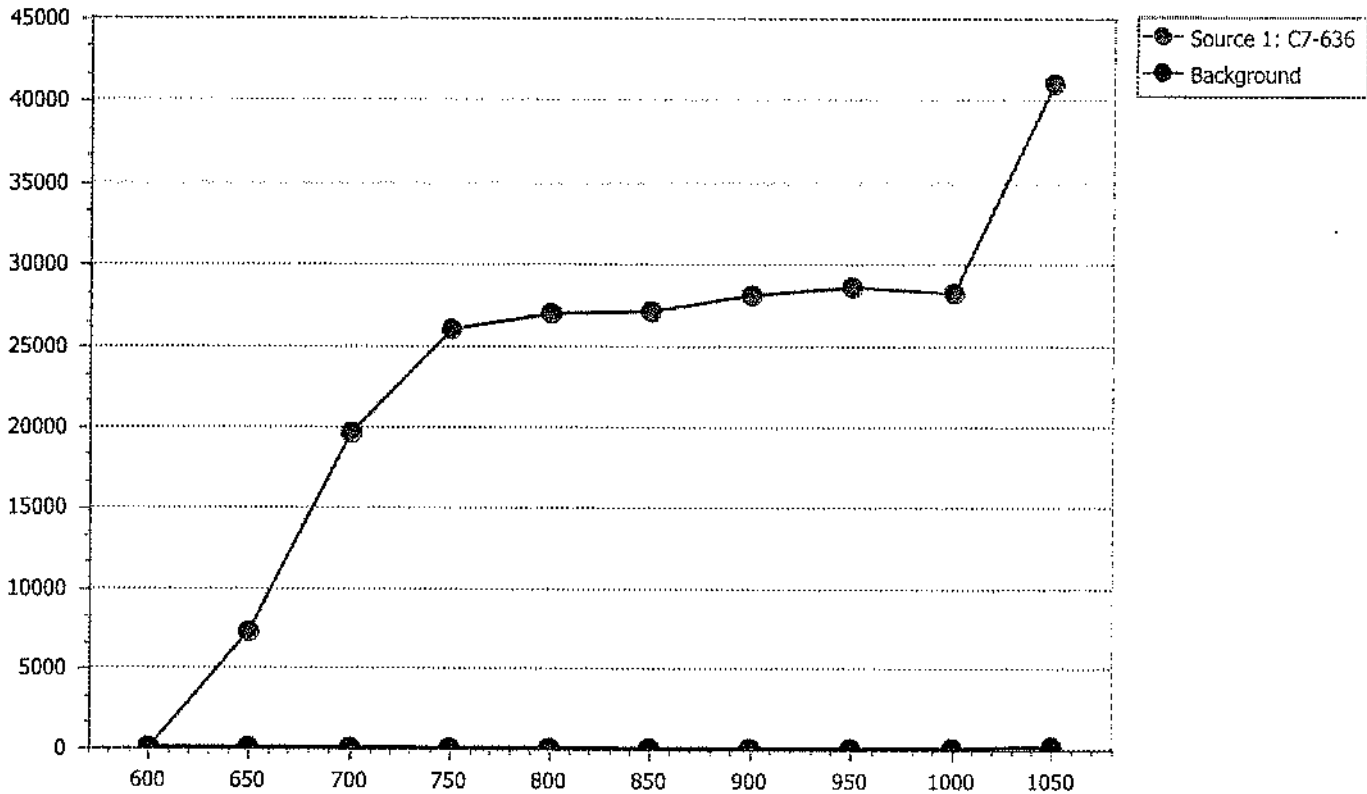
Certificate of Calibration

2015-5804-1

243 Root Street Suite 100
Olean, NY 14760

Customer		Instrument	
Customer Name: Enercon Services, Inc.		Manufacturer: Ludlum Measurements	
Address: 1501 Ardmore Blvd Suite 200 Pittsburgh, PA 15221		Model: 2360	SN: 248132
Customer PO#		Detector Manufacturer: Ludlum Measurements	
Work Order: 2015-5804		Det. Model: 43-93	SN: PR339082
Calibration Method: Electronic(*)		Procedure: SOP-06	
Instrument Received: <input checked="" type="checkbox"/> Within Tolerance <input type="checkbox"/> Out of Tolerance <input type="checkbox"/> Repairs Required <input type="checkbox"/> Other (See Comments)			
<input checked="" type="checkbox"/> Geotrolism <input checked="" type="checkbox"/> Meter Zero <input checked="" type="checkbox"/> Mech. Ck <input checked="" type="checkbox"/> HV Readout <input checked="" type="checkbox"/> Battery Check <input checked="" type="checkbox"/> Reset			
<input checked="" type="checkbox"/> Audio <input type="checkbox"/> Window Status <input type="checkbox"/> FS Response <input type="checkbox"/> Linearity <input type="checkbox"/> Alarm Set			
Temperature: 71.5 F		Humidity: 23%	Pressure: 28.5 in Hg
		Altitude: 1450 ft	

Source Voltage Plateaus



Statement of Certification

MJW Technical Services, Inc certifies that the above instrument has been calibrated by standards traceable to the National Institute of Standards and Technology or to the calibrator facilities of other International Standards organization members, or have been derived from accepted values of natural physical constants or have been derived by the ration type of calibration techniques. The calibration system conforms to the requirements ISO/IEC 17025 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).

Calibration Technician:
(KR)

R. K. Regan

QA Technician:

[Signature]

Date:

1-28-15

Calibration Date: 01/28/2015

Calibration Due: 01/28/2015



Certificate of Calibration

2015-5804-1

243 Root Street Suite 100
Olean, NY 14760

Customer		Instrument	
Customer Name: Enercon Services, Inc.		Manufacturer: Ludlum Measurements	
Address: 1501 Ardmore Blvd Suite 200 Pittsburgh, PA 15221		Model: 2360 SN: 248132	
		Detector Manufacturer: Ludlum Measurements	
Customer PO#	Work Order: 2015-5804	Det. Model: 43-93	SN: PR339082
Calibration Method: Electronic(*)		Procedure: SOP-06	

Instrument Received: ☒ Within Tolerance ☐ Out of Tolerance ☐ Repairs Required ☐ Other (See Comments)

☒ Geotropism ☒ Meter Zero ☒ Mech. Ck ☒ HV Readout ☒ Battery Check ☒ Reset

☒ Audio ☐ Window Status ☐ FS Response ☐ Linearity ☐ Alarm Set

Temperature: 71.5 F Humidity: 23% Pressure: 28.5 in Hg Altitude: 1450 ft

Instrument Calibration

Multiplier/Range	Calibration Point	Instrument Response			Multiplier/Range	Calibration Point	Instrument Response		
		As Found	As Left	Tolerance			As Found	As Left	Tolerance
X 1*	200 cpm	200 cpm	200 cpm	170-230	X 1*	800 cpm	815 cpm	815 cpm	720-880
X 10*	2 kcpm	2 kcpm	2 kcpm	1.7-2.3	X 10*	8 kcpm	8.15 kcpm	8.15 kcpm	7.2-8.8
X 100*	20 kcpm	19.9 kcpm	19.9 kcpm	17-23	X 100*	80 kcpm	81.6 kcpm	81.6 kcpm	72-88
X 1K*	200 kcpm	199 kcpm	199 kcpm	170-230	X 1K*	800 kcpm	815 kcpm	815 kcpm	720-880
Digital Scaler*	80 cpm	80 cpm	80 cpm	72-88	Digital Scaler*	800 cpm	799 cpm	799 cpm	720-880
Digital Scaler*	8 kcpm	7.995 kcpm	7.995 kcpm	7.2-8.8	Digital Scaler*	80 kcpm	79.951 kcpm	79.951 kcpm	72-88
Digital Scaler*	800 kcpm	799.518 kcpm	799.518 kcpm	720-880					

Electronic Instruments

Pulser: 500-2 sn# 220100 Scaler: 2200 sn# 287166

Sources

Isotope	Serial#	Type	Activity	Response	Efficiency	CF	Distance
Pu239	C7-636	a 4pi	111569.772 dpm	19453	17.4 %	5.75	0 inch
Th230	C7-643	a 4pi	99311.591 dpm	15336	15.4 %	6.49	0 inch
Sr90	C7-637	B 2pi	109699.870 dpm	40165	36.6 %	2.73	0 inch
Tc99	C7-642	B 2pi	68837.893 dpm	8492	12.3 %	8.13	0 inch

Instrument Status

Voltage: 925 V Ref. V 1: 500 V Ins. V 1: 500 V Ref. V 2: 1500 V Ins. V 2: 1510 V

Windows Status

Alpha Thres: 119 mV Beta Thres: 3.42 mV Beta Window: 30 mV

Detector Status

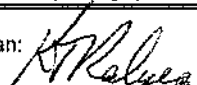
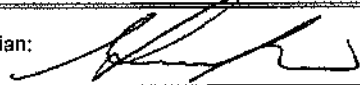
Oper. V: 925 V

Comments

Alpha Background = 1 cpm. Beta Background = 67 cpm.
Alpha crosstalk in the Beta channel is <10%
Beta crosstalk in the Alpha channel is <1%

Statement of Certification

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Calibration Technician:  (KR)	QA Technician:  Date: 1-28-15
Calibration Date: 01/28/2015	Calibration Due: 01/28/2015



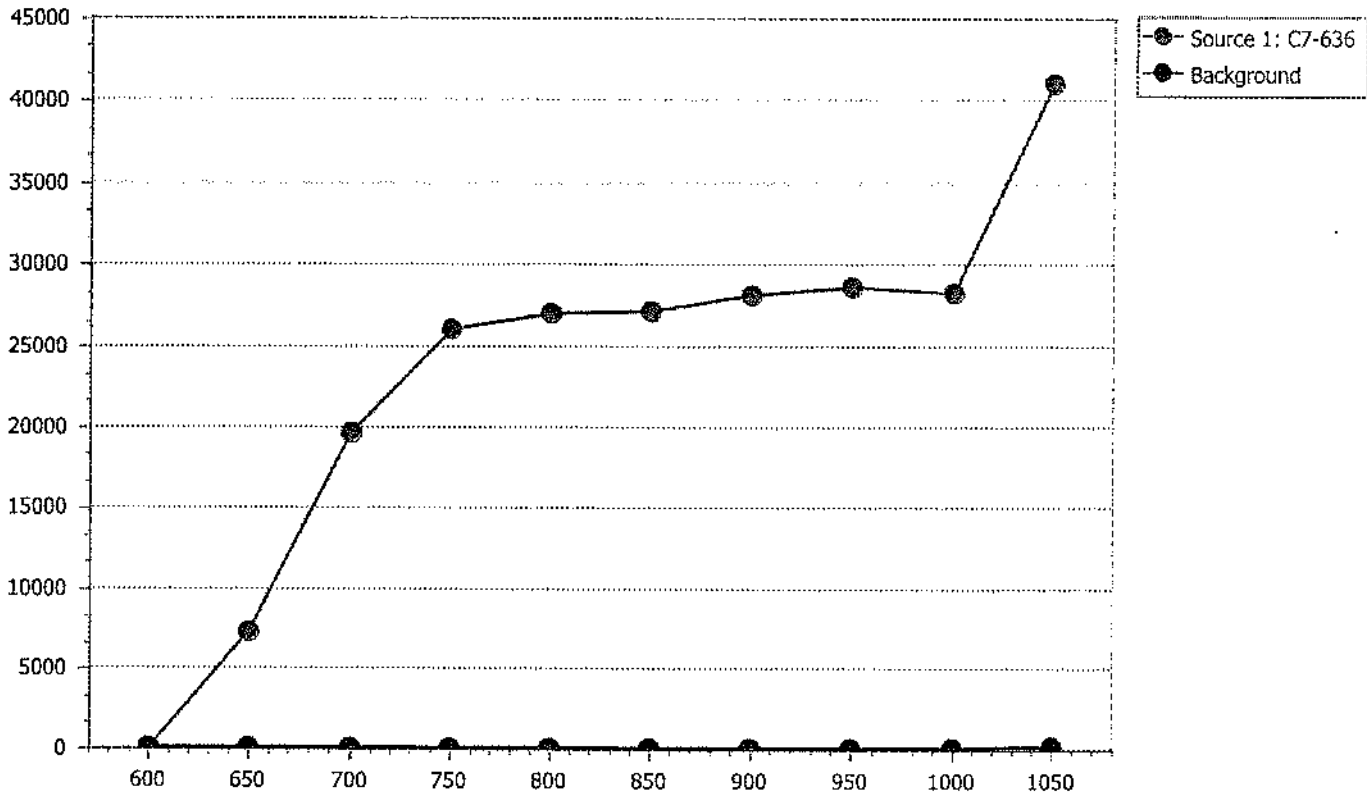
Certificate of Calibration

2015-5804-1

243 Root Street Suite 100
Olean, NY 14760

Customer		Instrument	
Customer Name: Enercon Services, Inc.		Manufacturer: Ludlum Measurements	
Address: 1501 Ardmore Blvd Suite 200 Pittsburgh, PA 15221		Model: 2360	SN: 248132
Customer PO#		Detector Manufacturer: Ludlum Measurements	
Work Order: 2015-5804		Det. Model: 43-93	SN: PR339082
Calibration Method: Electronic(*)		Procedure: SOP-06	
Instrument Received: <input checked="" type="checkbox"/> Within Tolerance <input type="checkbox"/> Out of Tolerance <input type="checkbox"/> Repairs Required <input type="checkbox"/> Other (See Comments)			
<input checked="" type="checkbox"/> Geotrolism <input checked="" type="checkbox"/> Meter Zero <input checked="" type="checkbox"/> Mech. Ck <input checked="" type="checkbox"/> HV Readout <input checked="" type="checkbox"/> Battery Check <input checked="" type="checkbox"/> Reset			
<input checked="" type="checkbox"/> Audio <input type="checkbox"/> Window Status <input type="checkbox"/> FS Response <input type="checkbox"/> Linearity <input type="checkbox"/> Alarm Set			
Temperature: 71.5 F		Humidity: 23%	Pressure: 28.5 in Hg
		Altitude: 1450 ft	

Source Voltage Plateaus



Statement of Certification

MJW Technical Services, Inc certifies that the above instrument has been calibrated by standards traceable to the National Institute of Standards and Technology or to the calibrator facilities of other International Standards organization members, or have been derived from accepted values of natural physical constants or have been derived by the ration type of calibration techniques. The calibration system conforms to the requirements ISO/IEC 17025 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).

Calibration Technician:
(KR)

[Signature]

QA Technician:

[Signature]

Date:

1-28-15

Calibration Date: 01/28/2015

Calibration Due: 01/28/2015



Certificate of Calibration

2014-5424-1

243 Root Street Suite 100
Olean, NY 14760

Customer		Instrument	
Customer Name:	Enercon Services, Inc.	Manufacturer:	Ludlum Measurements
Address:	1501 Armore Blvd Suite 200 Pittsburgh, PA 15221	Model:	2360 SN: 267525
Customer PO#	CC Work Order: 2014-5424	Detector Manufacturer:	Ludlum Measurements
Calibration Method:	Electronic(*)	Det. Model:	43-93 SN: PR286290
		Procedure:	SOP-06

Instrument Received: ☐ Within Tolerance ☐ Out of Tolerance ☒ Repairs Required ☐ Other (See Comments)

☒ Geotropism ☒ Meter Zero ☒ Mech. Ck ☒ HV Readout ☒ Battery Check ☒ Reset

☒ Audio ☐ Window Status ☐ FS Response ☐ Linearity ☐ Alarm Set

Temperature: 72 F Humidity: 53% Pressure: 28.2 in Hg Altitude: 1450 ft

Instrument Calibration

Multiplier/Range	Calibration Point	Instrument Response			Multiplier/Range	Calibration Point	Instrument Response		
		As Found	As Left	Tolerance			As Found	As Left	Tolerance
X 1*	200 cpm	200 cpm	205 cpm	180-220	X 1*	800 cpm	785 cpm	800 cpm	720-880
X 10*	2 kcpm	2 kcpm	2.05 kcpm	1.8-2.2	X 10*	8 kcpm	7.85 kcpm	8 kcpm	7.2-8.8
X 100*	20 kcpm	19 kcpm	20 kcpm	18-22	X 100*	80 kcpm	78.5 kcpm	80 kcpm	72-88
X 1K*	200 kcpm	198 kcpm	200 kcpm	180-220	X 1K*	800 kcpm	785 kcpm	800 kcpm	720-880
Digital Scaler*	80 cpm	80 cpm	80 cpm	72-88	Digital Scaler*	800 cpm	799 cpm	799 cpm	720-880
Digital Scaler*	8 kcpm	7.989 kcpm	7.989 kcpm	7.2-8.8	Digital Scaler*	80 kcpm	79.898 kcpm	79.898 kcpm	72-88
Digital Scaler*	800 kcpm	798.973 kcpm	798.973 kcpm	720-880					

Electronic Instruments

Pulser: 500-2 sn# 220100 MultiMeter: GDM-8245 sn# CF870298 High Voltage Divider Box: T1016 sn# PR285857

Sources

Isotope	Serial#	Type	Activity	Response	Efficiency	CF	Distance
Pu239	C7-636	a 4pi	111566.52 dpm	21100	18.9 %	5.29	0 inch
Th230	C7-643	a 4pi	99310.068 dpm	16165	16.3 %	6.13	0 inch
Sr90	C7-638	B 2pi	111702.24 dpm	33549	30.0 %	3.33	0 inch
Tc99	C7-642	B 2pi	68840 dpm	8247	12.0 %	8.33	0 inch

Instrument Status

Voltage: 680 V Ref. V 1: 500 V Ins. V 1: 500 V Ref. V 2: 1500 V Ins. V 2: 1525 V

Windows Status

Alpha Thres: 118 mV Beta Thres: 3.7 mV Beta Window: 29 mV

Detector Status

Oper. V: 680 V

Comments

Alpha crosstalk in the Beta channel is <10%
Beta crosstalk in the Alpha channel is <1%
Detector Uniformity within 15%.

**Amended certificate with correct source activity displayed

Statement of Certification

MJW Technical Services, Inc certifies that the above instrument has been calibrated by standards traceable to the National Institute of Standards and Technology or to the calibrator 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 ISO/IEC 17025 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).

Calibration Technician: *[Signature]*
(KR) FOR KEN ROYER

QA Technician: *[Signature]*

Date: 4/1/15

Calibration Date: 07/01/2014

Calibration Due: 07/01/2015



Certificate of Calibration

2014-5496-1

243 Root Street Suite 100
Olean, NY 14760

Customer		Instrument	
Customer Name:	Enercon Services, Inc.	Manufacturer:	Ludlum Measurements
Address:	1501 Armore Blvd Suite 200 Pittsburgh, PA 15221	Model:	2360 SN: 267533
		Detector Manufacturer:	Ludlum Measurements
Customer PO#	AECL Work Order: 2014-5496	Det. Model:	43-93 SN: PR286552
Calibration Method:	Electronic(*)	Procedure:	SOP-06

Instrument Received:	<input checked="" type="checkbox"/> Within Tolerance	<input type="checkbox"/> Out of Tolerance	<input type="checkbox"/> Repairs Required	<input type="checkbox"/> Other (See Comments)			
<input checked="" type="checkbox"/> Geotropism	<input checked="" type="checkbox"/> Meter Zero	<input checked="" type="checkbox"/> Mech. Ck	<input checked="" type="checkbox"/> HV Readout	<input checked="" type="checkbox"/> Battery Check	<input checked="" type="checkbox"/> Reset		
<input checked="" type="checkbox"/> Audio	<input type="checkbox"/> Window Status	<input type="checkbox"/> FS Response	<input type="checkbox"/> Linearity	<input type="checkbox"/> Alarm Set			
Temperature:	71.5 F	Humidity:	50%	Pressure:	28.4 in Hg	Altitude:	1450 ft

Instrument Calibration									
Multiplier/Range	Calibration Point	Instrument Response			Multiplier/Range	Calibration Point	Instrument Response		
		As Found	As Left	Tolerance			As Found	As Left	Tolerance
X 1*	40 cpm	40 cpm	40 cpm	36-44	X 1*	400 cpm	400 cpm	400 cpm	360-440
X 10*	4 kcpm	4 kcpm	4 kcpm	3.6-4.4	X 100*	40 kcpm	40 kcpm	40 kcpm	36-44
X 1K*	400 kcpm	400 kcpm	400 kcpm	360-440	Digital Scaler*	40 cpm	41 cpm	41 cpm	36-44
Digital Scaler*	400 cpm	399 cpm	399 cpm	360-440	Digital Scaler*	4 kcpm	3.993 kcpm	3.993 kcpm	3.6-4.4
Digital Scaler*	40 kcpm	39.938 kcpm	39.938 kcpm	36-44	Digital Scaler*	400 kcpm	399.386 kcpm	399.386 kcpm	360-440

Electronic Instruments

Pulser: 500-2 sn# 220106

Sources							
Isotope	Serial#	Type	Activity	Response	Efficiency	CF	Distance
Pu239	C7-636	a 4pi	111566.52 dpm	12800	11.5 %	8.70	0.25 inch
Th230	C7-643	a 4pi	99310.068 dpm	8333	8.4 %	11.90	0.25 inch
Cs137	C7-806	B 2pi	50741.434 dpm	12333	24.3 %	4.12	0.25 inch
Sr90	C7-638	B 2pi	111440.61 dpm	30900	27.7 %	3.61	0.25 inch

Instrument Status				
Voltage: 630 V	Ref. V 1: 500 V	Ins. V 1: 500 V	Ref. V 2: 1500 V	Ins. V 2: 1510 V

Windows Status							
Alpha Thres:	122 mV	Beta Thres:	3.5 mV	Beta Window:	31 mV		

Comments

Alpha crosstalk in the Beta channel is <10%
Beta crosstalk in the Alpha channel is <1%

**Amended certificate with correct source activity displayed

Statement of Certification		
MJW Technical Services, Inc certifies that the above instrument has been calibrated by standards traceable to the National Institute of Standards and Technology or to the calibrator 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 ISO/IEC 17025 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).		
Calibration Technician: (AL)	QA Technician:	Date: 4-1-15
Calibration Date: 08/06/2014	Calibration Due: 08/06/2015	



Certificate of Calibration

2015-6349-1

243 Root Street Suite 100

Olean, NY 14760

Customer		Instrument	
Customer Name: Enercon Services, Inc.		Manufacturer: Ludlum Measurements	
Address: 1501 Armore Blvd Suite 200 Pittsburgh, PA 15221		Model: 2360 SN: 267533	
Customer PO# EFS042 Work Order: 2015-6349		Detector Manufacturer: Ludlum Measurements	
Calibration Method: Electronic(*)		Det. Model: 43-93 SN: PR286552	
		Procedure: SOP-06	

Instrument Received: ☒ Within Tolerance ☐ Out of Tolerance ☐ Repairs Required ☐ Other (See Comments)

☒ Geotropism ☒ Meter Zero ☒ Mech. Ck ☒ HV Readout ☒ Battery Check ☒ Reset

☒ Audio ☐ Window Status ☐ FS Response ☐ Linearity ☐ Alarm Set

Temperature: 70.6 F Humidity: 40% Pressure: 28.4 in Hg Altitude: 1450 ft

Instrument Calibration

Multiplier/Range	Calibration Point	Instrument Response			Multiplier/Range	Calibration Point	Instrument Response		
		As Found	As Left	Tolerance			As Found	As Left	Tolerance
X 1*	200 cpm	200 cpm	200 cpm	170-230	X 1*	800 cpm	795 cpm	795 cpm	720-880
X 10*	2 kcpm	2 kcpm	2 kcpm	1.7-2.3	X 10*	8 kcpm	7.95 kcpm	7.95 kcpm	7.2-8.8
X 100*	20 kcpm	20 kcpm	20 kcpm	17-23	X 100*	80 kcpm	79.5 kcpm	79.5 kcpm	72-88
X 1K*	200 kcpm	200 kcpm	200 kcpm	170-230	X 1K*	800 kcpm	799 kcpm	799 kcpm	720-880
Digital Scaler*	80 cpm	80 cpm	80 cpm	72-88	Digital Scaler*	800 cpm	799 cpm	799 cpm	720-880
Digital Scaler*	8 kcpm	7.987 kcpm	7.987 kcpm	7.2-8.8	Digital Scaler*	80 kcpm	79.871 kcpm	79.871 kcpm	72-88
Digital Scaler*	800 kcpm	799.41 kcpm	799.41 kcpm	720-880					

Electronic Instruments

Pulser: 500-2 sn# 220106

Sources

Isotope	Serial#	Type	Activity	Response	Efficiency	CF	Distance
Pu239	C7-636	a 4pi	111567.388 dpm	12300	11.0 %	9.09	0.25 inch
Cs137	C7-806	B 2pi	49334.722 dpm	11300	22.9 %	4.37	0.25 inch
Tc99	C7-642	B 2pi	68837.724 dpm	7900	11.5 %	8.70	0.25 inch

Instrument Status

Voltage: 630 V Ref. V 1: 500 V Ins. V 1: 500 V Ref. V 2: 1500 V Ins. V 2: 1510 V

Windows Status

Alpha Thres: 120 mV Beta Thres: 3.5 mV Beta Window: 30 mV

Detector Status

Oper. V: 630 V

Comments

Alpha crosstalk in the Beta channel is <10%
Beta crosstalk in the Alpha channel is <1%
Detector Uniformity within 10%

Statement of Certification

MJW Technical Services, Inc certifies that the above instrument has been calibrated by standards traceable to the National Institute of Standards and Technology or to the calibrator facilities of other International Standards organization members, or have been derived from accepted values of natural physical constants or have been derived by the ration type of calibration techniques. The calibration system conforms to the requirements ISO/IEC 17025 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).

Calibration Technician: (AL) <i>Al M. Long</i>	QA Technician: <i>[Signature]</i>	Date: 11-2-15
Calibration Date: 10/30/2015	Calibration Due: 10/30/2016	



Certificate of Calibration

2015-6349-2

243 Root Street Suite 100
Olean, NY 14760

Customer		Instrument	
Customer Name: Enercon Services, Inc.		Manufacturer: Ludlum Measurements	
Address: 1501 Armore Blvd Suite 200 Pittsburgh, PA 15221		Model: 2360 SN: 267525	
Customer PO# EFS042 Work Order: 2015-6349		Detector Manufacturer: Ludlum Measurements	
Calibration Method: Electronic(*)		Det. Model: 43-93 SN: PR286290	
		Procedure: SOP-06	

Instrument Received: ☒ Within Tolerance ☐ Out of Tolerance ☐ Repairs Required ☐ Other (See Comments)

☒ Geotropism ☒ Meter Zero ☒ Mech. Ck ☒ HV Readout ☒ Battery Check ☒ Reset

☒ Audio ☐ Window Status ☐ FS Response ☐ Linearity ☐ Alarm Set

Temperature: 70.6 F Humidity: 40% Pressure: 28.4 in Hg Altitude: 1450 ft

Instrument Calibration

Multiplier/Range	Calibration Point	Instrument Response			Multiplier/Range	Calibration Point	Instrument Response		
		As Found	As Left	Tolerance			As Found	As Left	Tolerance
X 1*	200 cpm	205 cpm	205 cpm	180-220	X 1*	800 cpm	800 cpm	800 cpm	720-880
X 10*	2 kcpm	2 kcpm	2 kcpm	1.8-2.2	X 10*	8 kcpm	8 kcpm	8 kcpm	7.2-8.8
X 100*	20 kcpm	20 kcpm	20 kcpm	18-22	X 100*	80 kcpm	80 kcpm	80 kcpm	72-88
X 1K*	200 kcpm	200 kcpm	200 kcpm	180-220	X 1K*	800 kcpm	800 kcpm	800 kcpm	720-880
Digital Scaler*	80 cpm	80 cpm	80 cpm	72-88	Digital Scaler*	800 cpm	800 cpm	800 cpm	720-880
Digital Scaler*	8 kcpm	7.99 kcpm	7.99 kcpm	7.2-8.8	Digital Scaler*	80 kcpm	79.879 kcpm	79.879 kcpm	72-88
Digital Scaler*	800 kcpm	799.264 kcpm	799.264 kcpm	720-880					

Electronic Instruments

Pulser: 500-2 sn# 220106

Sources

Isotope	Serial#	Type	Activity	Response	Efficiency	CF	Distance
Pu239	C7-636	a 4pi	111567.388 dpm	12166	10.9 %	9.17	0.25 inch
Cs137	C7-806	B 2pi	49322.263 dpm	9733	19.7 %	5.08	0.25 inch
Tc99	C7-642	B 2pi	68837.727 dpm	5866	8.5 %	11.76	0.25 inch

Instrument Status

Voltage: 680 V Ref. V 1: 500 V Ins. V 1: 500 V Ref. V 2: 1500 V Ins. V 2: 1515 V

Windows Status

Alpha Thres: 120 mV Beta Thres: 3.5 mV Beta Window: 30 mV

Detector Status

Oper. V: 680 V

Comments

Alpha crosstalk in the Beta channel is <10%
Beta crosstalk in the Alpha channel is <1%
Detector Uniformity within 10%

Statement of Certification

MJW Technical Services, Inc certifies that the above instrument has been calibrated by standards traceable to the National Institute of Standards and Technology or to the calibrator facilities of other International Standards organization members, or have been derived from accepted values of natural physical constants or have been derived by the ration type of calibration techniques. The calibration system conforms to the requirements ISO/IEC 17025 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).

Calibration Technician: (AL) <i>Adam M. Jorg</i>	QA Technician: <i>[Signature]</i> Date: 11-2-15
Calibration Date: 10/30/2015	Calibration Due: 10/30/2016



Work Order: 2014-5207

MJW Technical Services
243 Root Street Suite 100
Olean, New York 14760

Date Received: 04/01/2014

P.O./CC Number: DECOM84N

Bill To:

Enercon Services, Inc.
4490 Old William Penn Hwy
Murrysville, PA 15668

Ship To:

Enercon Services, Inc.
4490 Old William Penn Hwy
Murrysville, PA 15668**Instruments**

Manufacturer	Instrument Model	Serial#	Condition	Comments
Ludlum Measurements	2929	180832	Good	[H]

Detectors

Manufacturer	Detector Model	Serial#	Condition	Comments
Ludlum Measurements	43-10-1	PR203056	Good	

Cables

Cable Number	Cable Length	Condition	Comments
2	39"	Good	Series C
1	72"	Good	Power Cable

THIS IS NOT AN INVOICE / INVOICE TO FOLLOWInstrument Calibrated: 1 at \$100

Total Parts Cost: _____

Sub Total Calibration, Parts, and Labor: \$100

Instrument Calibrated: _____ at _____

Total Calibration Charge: \$100

Shipping Charges: _____

Instrument Calibrated: _____ at _____

Total Labor: _____

Sales Tax: _____

Labor: _____ hour(s) at \$ _____ per hour

Total Charges: _____

Instrument		
Calibrated By: <i>[Signature]</i>	Reviewed By: <i>[Signature]</i>	Date: <i>4/5/14</i>
Calibration Date: 04/02/2014	Calibration Due: 04/02/2015	



Quality Control Instrument Inspection Checklist

Customer Name: Enercon Services, Inc.

04/03/2014

Work Order Number: 2014-5207

Instrument Model: 2929

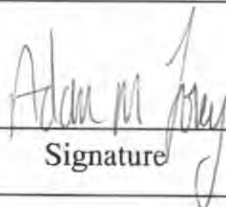
Serial Number: 180832

Inspection Criteria	Yes	No	N/A
Calibration tag is attached to the Instrument?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Information on tag is correct? (date, model, serial number)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
All pieces of the instrument are included per the work order?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ensure that the detector face(s) and glass meter bezel(s) are protected from damage . Also include any defective parts generated from repairs/replacement.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Document Review			
Calibration Certificate has been generated?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Information on Calibration Tag and Certificate matches?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Calibration Certificate is signed?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Instructions on the work order are complete?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Special requirements by customer are met?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Note any problems and subsequent resolutions

Verify proper shipping address is listed on packing slip, certificate of calibration and work order.

Performed By:



 Signature

4/3/14

 Date



MJW Technical Services

MJW Technical Services Inc.

243 Root Street Suite 100

Olean, New York 14760

Phone: (866)-300-3MJW or (716)-372-5300

Fax: (716)-372-5307

E-mail: services@mjwts.com

www.mjwts.com

Calibration / Repair Order Form

Date: 03/31/2014

Name on Cal Cert: Enercon Services Inc.

Location: Murrysville, Pa.

Billing Information:

Contact Person: Todd Brautigam

(Purchasing / AP Dept.)

Phone: (724) 733-8711 ext. 241

Fax:

E-mail: TBrautigam@enercon.com

Service Requested:

☒ Calibration ☐ Repair ☐ Other:

Contact Person: Ric Shank

(Tech / User)

Phone: (724) 733-8711 ext. 278

E-mail: rshank@enercon.com

Instruments / Probes / Cables

Manufacturer	Model	Serial
Ludlum	2929	180832
Ludlum	43-10-1	PR203056
	72" AC	
	48" C	

Invoice to be sent via:

☐ E-mail ☐ Fax ☒ Mail

Tax Exempt:

☐ Yes ☒ No #

Payment via:

☐ Credit Card ☒ Purchase Order # DECOM894N

Bill to Address:

Enercon Services Inc.

4499 Old William Penn Highway

Murrysville, Pa. 15668

Ship to Address:

☒ Same as Bill to Address

Shipping Method: UPS ground

Use Customer Acct#:

Zip Code for Acct#: 15668

Insurance: ☒ No

☐ Yes Amount

☐ Call With Estimate

WO#: 5207

☐ Email With Estimate

Surveyed By: BR 4-1-14

Special Instructions, malfunctioning symptoms, etc.



Work Order: 2014-5207

MJW Technical Services
243 Root Street Suite 100
Olean, New York 14760

Date Received: 04/01/2014

P.O./CC Number: DECOM84N

Bill To:

Enercon Services, Inc.
4490 Old William Penn Hwy
Murrysville, PA 15668

Ship To:

Enercon Services, Inc.
4490 Old William Penn Hwy
Murrysville, PA 15668**Instruments**

Manufacturer	Instrument Model	Serial#	Condition	Comments
Ludlum Measurements	2929	180832	Good	[H]

Detectors

Manufacturer	Detector Model	Serial#	Condition	Comments
Ludlum Measurements	43-10-1	PR203056	Good	

Cables

Cable Number	Cable Length	Condition	Comments
2	39"	Good	Series C
1	72"	Good	Power Cable

THIS IS NOT AN INVOICE / INVOICE TO FOLLOWInstrument Calibrated: 1 at \$100

Total Parts Cost: _____

Sub Total Calibration, Parts, and Labor: \$100

Instrument Calibrated: _____ at _____

Total Calibration Charge: \$100

Shipping Charges: _____

Instrument Calibrated: _____ at _____

Total Labor: _____

Sales Tax: _____

Labor: _____ hour(s) at \$ _____ per hour

Total Charges: _____

Instrument		
Calibrated By: <i>[Signature]</i>	Reviewed By: <i>[Signature]</i>	Date: <i>4/3/14</i>
Calibration Date: 04/02/2014	Calibration Due: 04/02/2015	



Quality Control Instrument Inspection Checklist

Customer Name: Enercon Services, Inc.

04/03/2014

Work Order Number: 2014-5207

Instrument Model: 2929

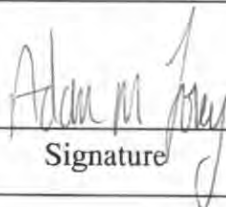
Serial Number: 180832

Inspection Criteria	Yes	No	N/A
Calibration tag is attached to the Instrument?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Information on tag is correct? (date, model, serial number)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
All pieces of the instrument are included per the work order?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ensure that the detector face(s) and glass meter bezel(s) are protected from damage . Also include any defective parts generated from repairs/replacement.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Document Review			
Calibration Certificate has been generated?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Information on Calibration Tag and Certificate matches?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Calibration Certificate is signed?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Instructions on the work order are complete?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Special requirements by customer are met?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Note any problems and subsequent resolutions

Verify proper shipping address is listed on packing slip, certificate of calibration and work order.

Performed By:



 Signature

4/3/14

 Date



MJW Technical Services

MJW Technical Services Inc.

243 Root Street Suite 100

Olean, New York 14760

Phone: (866)-300-3MJW or (716)-372-5300

Fax: (716)-372-5307

E-mail: services@mjwts.com

www.mjwts.com

Calibration / Repair Order Form

Date: 03/31/2014

Name on Cal Cert: Enercon Services Inc.

Location: Murrysville, Pa.

Billing Information:

Contact Person: Todd Brautigam

(Purchasing / AP Dept.)

Phone: (724) 733-8711 ext. 241

Fax:

E-mail: TBrautigam@enercon.com

Service Requested:

☒ Calibration ☐ Repair ☐ Other:

Contact Person: Ric Shank

(Tech / User)

Phone: (724) 733-8711 ext. 278

E-mail: rshank@enercon.com

Invoice to be sent via:

☐ E-mail ☐ Fax ☒ Mail

Tax Exempt:

☐ Yes ☒ No #

Payment via:

☐ Credit Card ☒ Purchase Order # DECOM894N

Bill to Address:

Enercon Services Inc.

4499 Old William Penn Highway

Murrysville, Pa. 15668

Ship to Address:

☒ Same as Bill to Address

Shipping Method: UPS ground

Use Customer Acct#:

Zip Code for Acct#: 15668

Insurance: ☒ No

☐ Yes Amount

Instruments / Probes / Cables

Manufacturer	Model	Serial
Ludlum	2929	180832
Ludlum	43-10-1	PR203056
	72" AC	
	48" C	

☐ Call With Estimate WO#: 5207

☐ Email With Estimate Surveyed By: BR 4-1-14

Special Instructions, malfunctioning symptoms, etc.



Certificate of Calibration

2015-6218-2

243 Root Street Suite 100
Olean, NY 14760

Customer		Instrument	
Customer Name	Enercon Services, Inc.	Manufacturer	Ludlum Measurements
Address	1501 Ardmore Blvd Suite 200 Pittsburgh, PA 15221	Model	2929 SN 180832
Customer PO#	SUNYUB027 Work Order 2015-6218	Detector Manufacturer	Ludlum Measurements
Calibration Method	Electronic(*)	Det Model	43-10-1 SN PR203056
		Procedure	SOP-06

Instrument Received:	<input checked="" type="checkbox"/> Within Tolerance	<input type="checkbox"/> Out of Tolerance	<input type="checkbox"/> Repairs Required	<input type="checkbox"/> Other (See Comments)
<input checked="" type="checkbox"/> Geotropism	<input checked="" type="checkbox"/> Meter Zero	<input checked="" type="checkbox"/> Mech. CK	<input checked="" type="checkbox"/> HV Readout	<input type="checkbox"/> Battery Check
<input checked="" type="checkbox"/> Audio	<input type="checkbox"/> Window Status	<input type="checkbox"/> FS Response	<input type="checkbox"/> Linearity	<input type="checkbox"/> Alarm Set
Temperature	71.3 F	Humidity	49%	Pressure
				28.3 in Hg
				Altitude
				1450 ft

Instrument Calibration

Multiplier/Range	Calibration Point	Instrument Response			Multiplier/Range	Calibration Point	Instrument Response		
		As Found	As Left	Tolerance			As Found	As Left	Tolerance
Alpha*	40 cpm	40 cpm	40 cpm	36-44	Alpha*	400 cpm	400 cpm	400 cpm	360-440
Alpha*	4000 cpm	3992 cpm	3992 cpm	3600-4400	Alpha*	40000 cpm	39912 cpm	39912 cpm	36000-44000
Alpha*	400000 cpm	399260 cpm	399260 cpm	360000-440000	Beta-Gamma*	40 cpm	40 cpm	40 cpm	36-44
Beta-Gamma*	400 cpm	400 cpm	400 cpm	360-440	Beta-Gamma*	4000 cpm	3999 cpm	3999 cpm	3600-4400
Beta-Gamma*	40000 cpm	39955 cpm	39955 cpm	36000-44000	Beta-Gamma*	400000 cpm	399382 cpm	399382 cpm	360000-440000

Electronic Instruments

Pulser: 500-2 sn# 220106 MultiMeter: GDM-8245 sn# CF870447 Oscilloscope: TDS1002 sn# C076946
High Voltage Divider Box: T1016 sn# PR285867

Sources

Isotope	Serial#	Type	Activity	Response	Efficiency	CF	Distance
Pu239	C7-640	a 4pi	57043.623 dpm	22112	38.8 %	2.58	0 inch
Sr90	C7-630	B 2pi	54177.448 dpm	38330	70.7 %	1.41	0 inch
Cs99	C7-642	B 2pi	68837.767 dpm	22392	32.5 %	3.08	0 inch
Co60	C7-804	B 2pi	30942.816 dpm	3500	11.3 %	8.85	0 inch

Instrument Status

Voltage: 837 V Ref. V 1: 500 V Inc. V 1: 500 V Ref. V 2: 1500 V Inc. V 2: 1500 V

Windows Status

Alpha Thresh: 175 mV Beta Thresh: 4 mV Beta Window: 50 mV

Comments

Amplifier gain: 25

Instrument Voltage set at 837V (HV Dial = 3.37)

Alpha background is 3 cpm. Beta background is 54 cpm.
Alpha crosstalk in the Beta channel is <10% with insert in place.
Beta crosstalk in the Alpha channel is <1% with insert in place.

Statement of Certification

MJW Technical Services, Inc. certifies that the above instrument has been calibrated by standards traceable to the National Institute of Standards and Technology or to the calibrator facilities of other International Standards organization members, or have been derived from accepted values of natural physical constants or have been derived by the ration type of calibration techniques. The calibration system conforms to the requirements ISO/IEC 17025 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)

Calibration Technician (AL)		QA Technician		Date	8-26-15
Calibration Date	08/25/2015	Calibration Due	08/25/2016		

**APPENDIX E –
FIELD DATA SPREADSHEETS**

Sample Location ID	Removable Alpha dpm/100 cm ²	Removable Beta dpm/100 cm ²	Static Alpha dpm/100 cm ²	Static Beta MDA dpm/100 cm ²	Static Beta dpm/100 cm ²	Static Gamma Static cpm	Gamma Scan Range		β/γ Dose Rate (μR/hr)
							Min cpm	Max cpm	
SU1-01	0	3	0	875	-846	3,862	4,000	8,500	7
SU1-02	0	-35	0	875	-423	7,972	4,000	8,500	9
SU1-03	0	-11	0	875	-130	3,942	4,000	8,500	8
SU1-04	0	-11	0	875	-813	4,627	4,000	8,500	7
SU1-05	0	3	0	1,214	65	5,615	4,000	8,500	6
SU1-06	2	-11	0	875	911	7,276	4,000	8,500	9
SU1-07	2	37	11	875	1,301	6,873	4,000	8,500	9
SU1-08	2	48	0	875	1,171	4,456	4,000	8,500	7
SU1-09	0	3	6	875	-813	4,650	4,000	8,500	8
SU1-10	1	6	0	875	1,301	5,289	4,000	8,500	6
SU1-11	0	-2	0	875	-813	3,967	4,000	8,500	7
SU1-11-DUP	5	-16	0	615	-165	4,507	4,000	8,500	8
SU1-12	0	17	0	875	-520	4,404	4,000	8,500	7
SU1-13	5	17	0	875	-683	4,371	4,000	8,500	7
SU1-14	0	-5	0	875	-715	4,920	4,000	8,500	8
SU1-15	0	14	11	1,214	-878	5,324	4,000	8,500	6
SU1-16	2	23	11	875	1,008	6,718	4,000	8,500	9
SU1-17	5	25	0	875	195	4,698	4,000	8,500	8
SU1-18	0	34	0	875	1,041	4,210	4,000	8,500	7
SU2-01	0	11	0	588	741	8,331	3,000	8,500	9
SU2-02	0	-3	0	588	-198	4,440	3,000	8,500	9
SU2-03	0	19	0	588	49	4,436	3,000	8,500	8
SU2-04	1	8	0	588	-82	4,700	3,000	8,500	8
SU2-05	1	14	0	588	165	4,617	3,000	8,500	9
SU2-06	-1	-19	0	588	33	9,850	3,000	8,500	9
SU2-07	-1	25	11	1,162	-1,951	4,417	3,000	8,500	7
SU2-08	1	3	11	1,162	-1,659	4,790	3,000	8,500	7
SU2-08-DUP	0	23	11	810	185	4,988	3,000	8,500	6
SU2-09	1	19	11	1,162	-1,463	4,384	3,000	8,500	7
SU2-10	1	-6	0	588	-379	4,861	3,000	8,500	8
SU2-11	1	17	0	588	971	8,495	3,000	8,500	8
SU2-12	2	25	0	1,162	-1,496	4,336	3,000	8,500	7
SU2-13	-1	-3	11	1,162	-1,398	4,478	3,000	8,500	7
SU2-14	1	-6	0	1,162	-1,789	4,182	3,000	8,500	7
SU2-14-DUP	2	4	0	810	-42	4,232	3,000	8,500	6
SU2-15	0	-17	0	588	-115	4,567	3,000	8,500	8
SU2-16	2	3	0	588	1,086	7,418	3,000	8,500	9
SU2-17	1	-3	0	588	494	8,346	3,000	8,500	9
SU2-18	1	-14	0	1,162	-1,659	4,299	3,000	8,500	7
SU2-19	1	25	23	1,162	-1,561	4,092	3,000	8,500	7

Sample Location ID	Removable Alpha dpm/100 cm ²	Removable Beta dpm/100 cm ²	Static Alpha dpm/100 cm ²	Static Beta MDA dpm/100 cm ²	Static Beta dpm/100 cm ²	Static Gamma Static cpm	Gamma Scan Range		β/γ Dose Rate (μ R/hr)
							Min cpm	Max cpm	
SU2-20	0	33	23	1,162	-2,016	4,017	3,000	8,500	7
SU2-21	0	17	0	588	82	4,329	3,000	8,500	8
SU2-22	1	-6	0	588	856	7,346	3,000	8,500	9
SU2-22-DUP	1	4	0	588	856	7,346	3,000	8,500	9
SU2-23	0	-6	17	588	99	4,456	3,000	8,500	7
SU2-23-DUP	2	9	17	410	-38	4,559	3,000	8,500	6
SU2-24	0	-6	17	588	313	4,036	3,000	8,500	7
SU2-25	0	11	0	588	99	3,816	3,000	8,500	7
SU2-26	5	28	0	588	-115	4,032	3,000	8,500	7
SU2-27	0	14	0	588	0	4,282	3,000	8,500	8
SU2-28	0	-33	17	588	16	3,929	3,000	8,500	7
SU2-29	0	-3	17	588	971	8,457	3,000	8,500	9
SU2-30	0	6	17	588	724	8,221	3,000	8,500	9
SU3-01	2	-45	-17	1,132	-248	4,159	4,000	8,500	6
SU3-02	0	-20	-23	1,132	0	3,161	4,000	8,500	5
SU3-03	0	22	-6	1,132	1097	7,963	4,000	8,500	7
SU3-04	0	5	149	1,132	407	6,536	4,000	8,500	8
SU3-05	0	-6	-17	1,132	1204	8,302	4,000	8,500	9
SU3-5-DUP	0	-32	-11	1,135	1416	4,445	3,500	8,000	7
SU3-06	0	2	-23	1,132	-637	5,027	4,000	8,500	7
SU3-07	0	8	-23	1,132	372	8,640	4,000	8,500	7
SU3-08	0	8	-23	1,132	-673	4,257	4,000	8,500	8
SU3-09	0	-14	-23	1,132	-319	4,144	4,000	8,500	7
SU3-10	0	-36	-23	1,132	-867	4,501	4,000	8,500	6
SU3-11	0	-17	-17	1,132	-496	4,127	4,000	8,500	6
SU3-12	0	11	-11	1,132	-442	4,087	4,000	8,500	6
SU3-12-DUP	0	-28	-21	1,135	991	3,881	4,000	8,500	6
SU3-13	0	8	-23	1,132	71	5,313	4,000	8,500	7
SU3-14	5	2	-23	1,132	35	3,803	4,000	8,500	6
SU3-15	0	-14	-23	1,132	319	3,124	4,000	8,500	6
SU3-16	0	-31	-23	1,132	-496	3,698	4,000	8,500	6
SU3-17	0	-22	-23	1,132	18	6,200	4,000	8,500	6
SU3-18	0	-20	-23	1,132	-230	3,874	3,500	8,000	6
SU3-19	0	5	-17	1,132	-425	3,879	3,500	8,000	5
SU3-20	0	-14	-23	1,132	-690	3,667	3,500	8,000	6
SU3-20-DUP	2	-17	-16	1,135	1310	4,006	3,500	8,000	6
SU3-21	2	-25	-17	1,132	71	4,808	3,500	8,000	6
SU3-22	0	0	-23	1,132	319	6,616	3,500	8,000	6
SU3-23	2	5	0	1,132	-761	5,241	3,500	8,000	6
SU3-24	0	-14	0	1,132	425	3,757	3,500	8,000	6

Sample Location ID	Removable Alpha dpm/100 cm ²	Removable Beta dpm/100 cm ²	Static Alpha dpm/100 cm ²	Static Beta MDA dpm/100 cm ²	Static Beta dpm/100 cm ²	Static Gamma Static cpm	Gamma Scan Range		β/γ Dose Rate (μR/hr)
							Min cpm	Max cpm	
SU3-25	2	-29	6	1,132	319	8,536	3,500	8,000	6
SU3-26	0	-15	-23	1,132	-425	3,540	3,500	8,000	6
SU3-27	0	-15	-23	1,132	0	3,714	3,500	8,000	6
SU3-28	0	-20	-23	1,132	708	6,726	3,500	8,000	6
SU3-29	0	-4	-17	1,132	106	4,969	3,500	8,000	6
SU4-01	1	-9	0	594	3,095	8,684	3,500	8,800	9
SU4-01-DUP	1	-9	0	606	3,029	8,684	3,500	8,800	9
SU4-02	1	-32	0	594	1,136	3,668	3,500	8,800	7
SU4-02-DUP	0	-2	0	810	-10	4,443	3,500	8,800	6
SU4-03	0	2	0	594	1,300	4,361	3,500	8,800	8
SU4-04	3	29	0	594	1,202	4,615	3,500	8,800	8
SU4-05	0	-18	0	594	1,613	4,241	3,500	8,800	7
SU4-05-DUP	2	9	0	810	-107	4,612	3,500	8,800	6
SU4-06	1	-4	0	594	1,169	3,847	3,500	8,800	7
SU4-06-DUP	5	18	11	810	250	4,855	3,500	8,800	7
SU4-07	1	-7	0	594	889	3,819	3,500	8,800	7
SU4-08	1	-12	17	606	-132	5,018	3,500	8,800	8
SU4-09	1	-7	35	606	-214	5,269	3,500	8,800	8
SU4-10	1	2	0	594	1,251	4,177	3,500	8,800	8
SU4-11	1	-18	0	594	988	3,932	3,500	8,800	7
SU4-12	0	-29	17	606	-247	5,072	3,500	8,800	7
SU4-13	0	-9	17	606	115	5,004	3,500	8,800	6
SU4-14	1	21	17	606	-66	5,185	3,500	8,800	7
SU4-15	1	24	0	594	1,218	3,762	3,500	8,800	7
SU4-16	0	-7	0	594	1,103	4,446	3,500	8,800	7
SU4-17	1	-4	17	594	1,465	3,890	3,500	8,800	7
SU4-18	0	-9	17	606	-280	5,115	3,500	8,800	6
SU4-19	0	21	0	606	-230	4,968	3,500	8,800	5
SU4-20	1	13	0	594	2,140	3,699	3,500	8,800	10
SU4-21	1	-20	0	594	1,169	4,083	3,500	8,800	7
SU4-22	0	2	0	594	1,004	3,998	3,500	8,800	7
SU4-23	3	24	0	594	889	3,697	3,500	8,800	7
SU4-24	1	-12	17	606	-214	5,317	3,500	8,800	7
SU4-25	0	4	17	606	-280	4,896	3,500	8,800	7
SU4-26	0	-1	17	594	1,909	3,605	3,500	8,800	7
SU4-27	0	-12	17	606	-33	5,056	3,500	8,800	7
SU4-28	1	-9	17	606	-82	5,150	3,500	8,800	7
SU4-29	1	21	0	606	-346	4,949	3,500	8,800	7
SU5-01	5	9	0	922	-260	5,642	4,000	8,500	8
SU5-02	4	9	0	922	-130	6,420	4,000	8,500	7

Sample Location ID	Removable Alpha dpm/100 cm ²	Removable Beta dpm/100 cm ²	Static Alpha dpm/100 cm ²	Static Beta MDA dpm/100 cm ²	Static Beta dpm/100 cm ²	Static Gamma Static cpm	Gamma Scan Range		β/γ Dose Rate (μR/hr)
							Min cpm	Max cpm	
SU5-03	5	12	0	922	98	6,418	4,000	8,500	8
SU5-04	6	43	0	922	-390	12,920	4,000	8,500	8
SU5-05	5	39	0	679	-1,416	17,900	4,000	8,500	9
SU5-06	5	43	0	922	130	8,516	4,000	8,500	8
SU5-07	2	26	0	922	-325	5,411	4,000	8,500	7
SU5-08	5	12	0	922	-293	7,769	4,000	8,500	8
SU5-09	4	26	0	922	878	6,934	4,000	8,500	8
SU5-09-DUP	0	-154	0	922	911	6,425	4,000	8,500	9
SU5-10	2	-13	11	1,342	-1,724	7,576	4,000	8,500	9
SU5-11	9	48	0	922	-455	6,378	4,000	8,500	9
SU5-11-DUP	5	51	0	922	195	5,638	4,000	8,500	9
SU5-12	10	7	0	922	65	14,280	4,000	8,500	8
SU5-13	4	12	0	922	-228	4,992	4,000	8,500	7
SU5-14	5	29	11	922	163	7,926	4,000	8,500	7
SU5-15	5	45	11	922	-195	8,230	4,000	8,500	7
SU5-16	0	-25	11	842	1,463	8,168	4,000	8,500	9
SU5-17	0	-4	0	914	-163	6,833	3,500	8,000	7
SU5-18	0	-20	11	914	33	6,763	3,500	8,000	7
SU5-19	2	-6	0	842	1,398	8,456	3,500	8,000	10
SU5-20	0	-7	11	914	130	7,427	3,500	8,000	7
SU6-01	0	-2	11	959	65	8,096	3,500	8,000	6
SU6-02	0	-8	34	959	943	6,180	3,500	12,500	6
SU6-03	2	12	11	959	-358	4,791	3,500	12,500	6
SU6-04	0	-47	0	959	455	7,355	3,500	12,500	6
SU6-04-DUP	0	19	17	634	510	4,122	3,500	12,500	8
SU6-05	2	1	0	959	1,008	9,265	3,500	12,500	6
SU6-06	5	28	11	959	1,659	7,668	3,500	12,500	6
SU6-07	0	3	23	959	-228	4,947	3,500	12,500	7
SU6-08	-1	12	0	585	2,979	12,065	3,500	12,500	9
SU6-09	5	-30	23	959	715	7,263	3,500	12,500	7
SU6-10	0	-22	11	959	911	7,474	3,500	12,500	6
SU6-10-DUP	0	6	17	634	1,350	3,983	3,500	12,500	8
SU6-11	0	-2	0	959	1,366	7,404	3,500	12,500	6
SU6-12	0	23	11	959	1,138	7,842	3,500	12,500	6
SU6-13	0	-22	0	959	-163	4,755	3,500	12,500	7
SU6-14	5	12	11	959	-455	7,104	3,500	12,500	8
SU6-15	2	-30	11	959	390	6,279	3,500	12,500	6
SU6-15-DUP	0	-163	0	49	2,634	NR	NR	NR	NR
SU6-16	0	28	23	959	683	7,237	3,500	12,500	6
SU6-17	0	23	23	959	846	8,208	3,500	12,500	7

Sample Location ID	Removable Alpha dpm/100 cm ²	Removable Beta dpm/100 cm ²	Static Alpha dpm/100 cm ²	Static Beta MDA dpm/100 cm ²	Static Beta dpm/100 cm ²	Static Gamma Static cpm	Gamma Scan Range		β/γ Dose Rate (μR/hr)
							Min cpm	Max cpm	
SU6-17-DUP	0	-5	0	634	889	3,756	3,500	12,500	8
SU6-18	5	-13	11	959	618	7,610	3,500	12,500	6
SU6-19	2	-13	0	959	-390	4,782	3,500	12,500	7
SU6-20	8	28	17	945	-293	7,225	3,500	12,500	9
SU6-21	6	34	17	945	488	8,235	3,500	12,500	9
SU6-22	0	-30	23	959	813	7,292	3,500	12,500	6
SU6-23	0	-2	34	959	618	7,414	3,500	12,500	6
SU6-24	2	20	0	959	-130	7,147	3,500	12,500	6
SU6-25	0	-11	23	959	911	8,200	3,500	12,500	6
SU6-26	5	23	23	945	1,463	8,339	3,500	12,500	10
SU6-27	8	17	0	945	1,138	8,927	3,500	12,500	9
SU6-28	8	14	0	945	-293	8,625	3,500	12,500	9
SU6-29	13	-5	11	945	1,008	9,327	3,500	12,500	8
SU7-01	NR	NR	NR	NR	NR	6,587	3,900	9,500	8
SU7-02	NR	NR	NR	NR	NR	6,634	3,900	9,500	8
SU7-03	NR	NR	NR	NR	NR	5,437	3,900	9,500	8
SU7-04	NR	NR	NR	NR	NR	5,766	3,900	9,500	10
SU7-05	NR	NR	NR	NR	NR	6,254	3,900	9,500	8
SU7-06	NR	NR	NR	NR	NR	4,498	3,900	9,500	8
SU7-07	NR	NR	NR	NR	NR	5,376	3,900	9,500	8
SU7-08	NR	NR	NR	NR	NR	6,148	3,900	9,500	8
SU7-09	NR	NR	NR	NR	NR	5,582	3,900	9,500	8
SU7-10	NR	NR	NR	NR	NR	6,630	3,900	9,500	8
SU7-11	NR	NR	NR	NR	NR	5,676	3,900	9,500	9
SU7-12	NR	NR	NR	NR	NR	5,823	3,900	9,500	9
SU7-13	NR	NR	NR	NR	NR	6,144	3,900	9,500	8
SU7-14	NR	NR	NR	NR	NR	6,417	3,900	9,500	8

Note: NR = Not recorded

**APPENDIX F –
LABORATORY RESULTS**

Appendix F1 - Laboratory Results Table

Survey Area	Sample ID	Sample Date	Analyte	Result (pCi/g)	Uncertainty (pCi/g)	MDC (pCi/g)	DCGL Fraction
STOCK-1	2014 11 12 S1-01	11/12/2014	STRONTIUM-90	-0.0539	0.0626	0.175	0.00
STOCK-1	2014 11 12 S1-01	11/12/2014	AMERICIUM-241	-0.008	0.395	0.639	0.00
STOCK-1	2014 11 12 S1-01	11/12/2014	CESIUM-137	0.015	0.062	0.11	0.00
STOCK-1	2014 11 12 S1-01	11/12/2014	COBALT-60	-0.031	0.142	0.132	0.00
STOCK-1	2014 11 12 S1-01	11/12/2014	EUROPIUM-152	0.119	0.156	0.257	0.02
STOCK-1	2014 11 12 S1-01	11/12/2014	EUROPIUM-154	0.134	0.127	0.169	0.02
STOCK-1	2014 11 12 S1-01	11/12/2014	SILVER-108M	0.025	0.071	0.124	0.00
STOCK-1	2014 11 12 S1-01	11/12/2014	PLUTONIUM-238	-0.012	0.032	0.053	0.00
STOCK-1	2014 11 12 S1-01	11/12/2014	PU-239/240	0.005	0.01	0.017	0.00
STOCK-1	2014 11 12 S1-01	11/12/2014	CARBON-14	-0.122	0.706	1.57	0.00
STOCK-1	2014 11 12 S1-01	11/12/2014	NICKEL-63	-0.269	0.575	1.493	0.00
STOCK-1	2014 11 12 S1-01	11/12/2014	TRITIUM	1.08	1.74	2.97	0.01
STOCK-1	2014 11 12 S1-02	11/12/2014	STRONTIUM-90	0.021	0.0766	0.183	0.01
STOCK-1	2014 11 12 S1-02	11/12/2014	AMERICIUM-241	0.049	0.24	0.41	0.02
STOCK-1	2014 11 12 S1-02	11/12/2014	CESIUM-137	0.03	0.037	0.061	0.00
STOCK-1	2014 11 12 S1-02	11/12/2014	COBALT-60	0.079	0.038	0.079	0.02
STOCK-1	2014 11 12 S1-02	11/12/2014	EUROPIUM-152	0.021	0.105	0.179	0.00
STOCK-1	2014 11 12 S1-02	11/12/2014	EUROPIUM-154	0.038	0.072	0.12	0.00
STOCK-1	2014 11 12 S1-02	11/12/2014	SILVER-108M	0.325	0.057	0.056	0.04
STOCK-1	2014 11 12 S1-02	11/12/2014	PLUTONIUM-238	0.012	0.019	0.03	0.00
STOCK-1	2014 11 12 S1-02	11/12/2014	PU-239/240	0.009	0.01	0.015	0.00
STOCK-1	2014 11 12 S1-02	11/12/2014	CARBON-14	0.636	0.973	1.68	0.05
STOCK-1	2014 11 12 S1-02	11/12/2014	NICKEL-63	0.349	0.548	1.24	0.00
STOCK-1	2014 11 12 S1-02	11/12/2014	TRITIUM	2.05	1.77	2.83	0.02
STOCK-1	2014 11 12 S1-03	11/12/2014	STRONTIUM-90	0.0123	0.073	0.177	0.01
STOCK-1	2014 11 12 S1-03	11/12/2014	AMERICIUM-241	0.015	0.255	0.458	0.01
STOCK-1	2014 11 12 S1-03	11/12/2014	CESIUM-137	0.203	0.073	0.049	0.02
STOCK-1	2014 11 12 S1-03	11/12/2014	COBALT-60	0.066	0.059	0.13	0.02
STOCK-1	2014 11 12 S1-03	11/12/2014	EUROPIUM-152	0.031	0.145	0.253	0.00
STOCK-1	2014 11 12 S1-03	11/12/2014	EUROPIUM-154	-0.032	0.109	0.187	0.00
STOCK-1	2014 11 12 S1-03	11/12/2014	SILVER-108M	1.07	0.164	0.083	0.13
STOCK-1	2014 11 12 S1-03	11/12/2014	PLUTONIUM-238	0.003	0.019	0.032	0.00
STOCK-1	2014 11 12 S1-03	11/12/2014	PU-239/240	-0.007	0.013	0.024	0.00
STOCK-1	2014 11 12 S1-03	11/12/2014	CARBON-14	0.522	0.962	1.72	0.04
STOCK-1	2014 11 12 S1-03	11/12/2014	NICKEL-63	1.85	0.778	2.191	0.00
STOCK-1	2014 11 12 S1-03	11/12/2014	TRITIUM	-0.438	1.99	3.72	0.00
STOCK-1	2014 11 12 S1-04	11/12/2014	STRONTIUM-90	0.218	0.131	0.254	0.13
STOCK-1	2014 11 12 S1-04	11/12/2014	AMERICIUM-241	0.063	0.17	0.292	0.03
STOCK-1	2014 11 12 S1-04	11/12/2014	CESIUM-137	0.014	0.086	0.157	0.00
STOCK-1	2014 11 12 S1-04	11/12/2014	COBALT-60	0.016	0.085	0.169	0.00
STOCK-1	2014 11 12 S1-04	11/12/2014	EUROPIUM-152	0	0.103	0.191	0.00
STOCK-1	2014 11 12 S1-04	11/12/2014	EUROPIUM-154	-0.005	0.092	0.166	0.00

Appendix F1 - Laboratory Results Table

Survey Area	Sample ID	Sample Date	Analyte	Result (pCi/g)	Uncertainty (pCi/g)	MDC (pCi/g)	DCGL Fraction
STOCK-1	2014 11 12 S1-04	11/12/2014	SILVER-108M	0.053	0.053	0.162	0.01
STOCK-1	2014 11 12 S1-04	11/12/2014	PLUTONIUM-238	0.02	0.024	0.035	0.01
STOCK-1	2014 11 12 S1-04	11/12/2014	PU-239/240	-0.005	0.017	0.03	0.00
STOCK-1	2014 11 12 S1-04	11/12/2014	CARBON-14	0.131	0.858	1.73	0.01
STOCK-1	2014 11 12 S1-04	11/12/2014	NICKEL-63	-0.198	0.75	2.493	0.00
STOCK-1	2014 11 12 S1-04	11/12/2014	TRITIUM	1.28	1.89	3.2	0.01
STOCK-1	2014 11 12 S1-05	11/12/2014	STRONTIUM-90	0.103	0.0711	0.136	0.06
STOCK-1	2014 11 12 S1-05	11/12/2014	AMERICIUM-241	-0.084	0.368	0.633	0.00
STOCK-1	2014 11 12 S1-05	11/12/2014	CESIUM-137	0.002	0.068	0.123	0.00
STOCK-1	2014 11 12 S1-05	11/12/2014	COBALT-60	-0.006	0.202	0.123	0.00
STOCK-1	2014 11 12 S1-05	11/12/2014	EUROPIUM-152	-0.005	1.039	0.249	0.00
STOCK-1	2014 11 12 S1-05	11/12/2014	EUROPIUM-154	0.12	0.15	0.163	0.02
STOCK-1	2014 11 12 S1-05	11/12/2014	SILVER-108M	0.066	0.077	0.125	0.01
STOCK-1	2014 11 12 S1-05	11/12/2014	PLUTONIUM-238	-0.014	0.029	0.049	0.00
STOCK-1	2014 11 12 S1-05	11/12/2014	PU-239/240	0.008	0.012	0.018	0.00
STOCK-1	2014 11 12 S1-05	11/12/2014	CARBON-14	0.658	1.01	1.73	0.05
STOCK-1	2014 11 12 S1-05	11/12/2014	NICKEL-63	0.254	0.594	1.489	0.00
STOCK-1	2014 11 12 S1-05	11/12/2014	TRITIUM	1.84	1.6	2.55	0.02
STOCK-1	2014 11 12 S1-06	11/12/2014	STRONTIUM-90	0.0267	0.0798	0.189	0.02
STOCK-1	2014 11 12 S1-06	11/12/2014	AMERICIUM-241	-0.018	0.189	0.332	0.00
STOCK-1	2014 11 12 S1-06	11/12/2014	CESIUM-137	0.05	0.09	0.153	0.00
STOCK-1	2014 11 12 S1-06	11/12/2014	COBALT-60	0.001	0.085	0.177	0.00
STOCK-1	2014 11 12 S1-06	11/12/2014	EUROPIUM-152	0	0.004	0.307	0.00
STOCK-1	2014 11 12 S1-06	11/12/2014	EUROPIUM-154	-0.014	0.109	0.193	0.00
STOCK-1	2014 11 12 S1-06	11/12/2014	SILVER-108M	0.091	0.056	0.147	0.01
STOCK-1	2014 11 12 S1-06	11/12/2014	PLUTONIUM-238	-0.002	0.022	0.037	0.00
STOCK-1	2014 11 12 S1-06	11/12/2014	PU-239/240	0.006	0.012	0.02	0.00
STOCK-1	2014 11 12 S1-06	11/12/2014	CARBON-14	1.61	1.25	1.76	0.13
STOCK-1	2014 11 12 S1-06	11/12/2014	NICKEL-63	0.363	0.592	1.459	0.00
STOCK-1	2014 11 12 S1-06	11/12/2014	TRITIUM	5.26	2.23	3	0.05
STOCK-1	2014 11 12 S1-07	11/12/2014	STRONTIUM-90	-0.0257	0.0718	0.189	0.00
STOCK-1	2014 11 12 S1-07	11/12/2014	AMERICIUM-241	0.039	0.181	0.315	0.02
STOCK-1	2014 11 12 S1-07	11/12/2014	CESIUM-137	0.013	0.059	0.112	0.00
STOCK-1	2014 11 12 S1-07	11/12/2014	COBALT-60	0.076	0.08	0.132	0.02
STOCK-1	2014 11 12 S1-07	11/12/2014	EUROPIUM-152	-0.05	0.133	0.229	0.00
STOCK-1	2014 11 12 S1-07	11/12/2014	EUROPIUM-154	0.147	0.156	0.15	0.02
STOCK-1	2014 11 12 S1-07	11/12/2014	SILVER-108M	0.204	0.075	0.147	0.02
STOCK-1	2014 11 12 S1-07	11/12/2014	PLUTONIUM-238	0.02	0.027	0.041	0.01
STOCK-1	2014 11 12 S1-07	11/12/2014	PU-239/240	0.004	0.012	0.02	0.00
STOCK-1	2014 11 12 S1-07	11/12/2014	CARBON-14	0.131	0.861	1.74	0.01
STOCK-1	2014 11 12 S1-07	11/12/2014	NICKEL-63	0.093	0.547	1.288	0.00
STOCK-1	2014 11 12 S1-07	11/12/2014	TRITIUM	3.44	2.21	3.34	0.03

Appendix F1 - Laboratory Results Table

Survey Area	Sample ID	Sample Date	Analyte	Result (pCi/g)	Uncertainty (pCi/g)	MDC (pCi/g)	DCGL Fraction
STOCK-1	2014 11 12 S1-08	11/12/2014	STRONTIUM-90	0.0157	0.0751	0.181	0.01
STOCK-1	2014 11 12 S1-08	11/12/2014	AMERICIUM-241	0.058	0.356	0.623	0.03
STOCK-1	2014 11 12 S1-08	11/12/2014	CESIUM-137	0	0.064	0.118	0.00
STOCK-1	2014 11 12 S1-08	11/12/2014	COBALT-60	-0.019	0.235	0.124	0.00
STOCK-1	2014 11 12 S1-08	11/12/2014	EUROPIUM-152	0.065	0.141	0.241	0.01
STOCK-1	2014 11 12 S1-08	11/12/2014	EUROPIUM-154	0.028	0.1	0.174	0.00
STOCK-1	2014 11 12 S1-08	11/12/2014	SILVER-108M	0.046	0.042	0.118	0.01
STOCK-1	2014 11 12 S1-08	11/12/2014	PLUTONIUM-238	0.012	0.029	0.046	0.00
STOCK-1	2014 11 12 S1-08	11/12/2014	PU-239/240	0	0.016	0.028	0.00
STOCK-1	2014 11 12 S1-08	11/12/2014	CARBON-14	0	0.787	1.67	0.00
STOCK-1	2014 11 12 S1-08	11/12/2014	NICKEL-63	0.072	0.711	2.194	0.00
STOCK-1	2014 11 12 S1-08	11/12/2014	TRITIUM	-0.0779	1.56	2.87	0.00
STOCK-1	2014 11 17 S1-01	11/17/2014	STRONTIUM-90	0.25	0.132	0.238	0.15
STOCK-1	2014 11 17 S1-01	11/17/2014	AMERICIUM-241	0.239	0.365	0.607	0.11
STOCK-1	2014 11 17 S1-01	11/17/2014	CESIUM-137	0.146	0.085	0.081	0.01
STOCK-1	2014 11 17 S1-01	11/17/2014	COBALT-60	0.1	0.067	0.13	0.03
STOCK-1	2014 11 17 S1-01	11/17/2014	EUROPIUM-152	-0.011	0.533	0.274	0.00
STOCK-1	2014 11 17 S1-01	11/17/2014	EUROPIUM-154	0.105	0.111	0.178	0.01
STOCK-1	2014 11 17 S1-01	11/17/2014	SILVER-108M	0.913	0.147	0.099	0.11
STOCK-1	2014 11 17 S1-01	11/17/2014	PLUTONIUM-238	0.011	0.031	0.059	0.00
STOCK-1	2014 11 17 S1-01	11/17/2014	PU-239/240	-0.011	0.015	0.041	0.00
STOCK-1	2014 11 17 S1-01	11/17/2014	CARBON-14	0	0.302	0.543	0.00
STOCK-1	2014 11 17 S1-01	11/17/2014	NICKEL-63	2.54	1.404	3.336	0.00
STOCK-1	2014 11 17 S1-01	11/17/2014	TRITIUM	0.778	1.46	2.52	0.01
STOCK-1	2014 12 12 S1-01	12/12/2014	AMERICIUM-241	-0.066	0.327	0.568	0.00
STOCK-1	2014 12 12 S1-01	12/12/2014	CESIUM-137	0.016	0.05	0.089	0.00
STOCK-1	2014 12 12 S1-01	12/12/2014	COBALT-60	-0.016	3.81	0.122	0.00
STOCK-1	2014 12 12 S1-01	12/12/2014	EUROPIUM-152	0.103	0.157	0.261	0.01
STOCK-1	2014 12 12 S1-01	12/12/2014	EUROPIUM-154	0	0.018	0.183	0.00
STOCK-1	2014 12 12 S1-01	12/12/2014	SILVER-108M	0.084	0.044	0.096	0.01
STOCK-1	2014 12 12 S1-01	12/12/2014	TRITIUM	0.557	1.56	2.73	0.01
STOCK-1	2014 12 12 S1-02	12/12/2014	AMERICIUM-241	0.115	0.32	0.552	0.05
STOCK-1	2014 12 12 S1-02	12/12/2014	CESIUM-137	0.003	0.06	0.111	0.00
STOCK-1	2014 12 12 S1-02	12/12/2014	COBALT-60	-0.018	5.666	0.098	0.00
STOCK-1	2014 12 12 S1-02	12/12/2014	EUROPIUM-152	-0.009	0.153	0.241	0.00
STOCK-1	2014 12 12 S1-02	12/12/2014	EUROPIUM-154	-0.013	0.102	0.168	0.00
STOCK-1	2014 12 12 S1-02	12/12/2014	SILVER-108M	0.029	0.025	0.102	0.00
STOCK-1	2014 12 12 S1-02	12/12/2014	TRITIUM	-0.268	1.3	2.42	0.00
STOCK-1	2014 12 13 S1-01	12/13/2014	AMERICIUM-241	-0.012	0.19	0.312	0.00
STOCK-1	2014 12 13 S1-01	12/13/2014	CESIUM-137	0.02	0.092	0.167	0.00
STOCK-1	2014 12 13 S1-01	12/13/2014	COBALT-60	0.034	0.084	0.163	0.01
STOCK-1	2014 12 13 S1-01	12/13/2014	EUROPIUM-152	0.076	0.125	0.21	0.01

Appendix F1 - Laboratory Results Table

Survey Area	Sample ID	Sample Date	Analyte	Result (pCi/g)	Uncertainty (pCi/g)	MDC (pCi/g)	DCGL Fraction
STOCK-1	2014 12 13 S1-01	12/13/2014	EUROPIUM-154	0	0.009	0.158	0.00
STOCK-1	2014 12 13 S1-01	12/13/2014	SILVER-108M	0.001	0.081	0.153	0.00
STOCK-1	2014 12 13 S1-01	12/13/2014	TRITIUM	0.851	1.46	2.5	0.01
STOCK-1	2014 12 13 S1-02	12/13/2014	AMERICIUM-241	0.001	0.364	0.647	0.00
STOCK-1	2014 12 13 S1-02	12/13/2014	CESIUM-137	0.027	0.065	0.113	0.00
STOCK-1	2014 12 13 S1-02	12/13/2014	COBALT-60	0.006	0.066	0.129	0.00
STOCK-1	2014 12 13 S1-02	12/13/2014	EUROPIUM-152	0.07	0.16	0.273	0.01
STOCK-1	2014 12 13 S1-02	12/13/2014	EUROPIUM-154	-0.001	0.021	0.237	0.00
STOCK-1	2014 12 13 S1-02	12/13/2014	SILVER-108M	0.059	0.046	0.124	0.01
STOCK-1	2014 12 13 S1-02	12/13/2014	TRITIUM	0.374	1.76	3.14	0.00
STOCK-1	2014 12 13 S1-03	12/13/2014	AMERICIUM-241	-0.054	0.196	0.332	0.00
STOCK-1	2014 12 13 S1-03	12/13/2014	CESIUM-137	-0.001	0.071	0.136	0.00
STOCK-1	2014 12 13 S1-03	12/13/2014	COBALT-60	0.013	0.083	0.168	0.00
STOCK-1	2014 12 13 S1-03	12/13/2014	EUROPIUM-152	0.03	0.14	0.246	0.00
STOCK-1	2014 12 13 S1-03	12/13/2014	EUROPIUM-154	-0.029	0.112	0.191	0.00
STOCK-1	2014 12 13 S1-03	12/13/2014	SILVER-108M	0.041	0.033	0.059	0.01
STOCK-1	2014 12 13 S1-03	12/13/2014	TRITIUM	0.49	1.37	2.4	0.00
STOCK-1	2014 12 13 S1-04	12/13/2014	AMERICIUM-241	0.003	0.156	0.277	0.00
STOCK-1	2014 12 13 S1-04	12/13/2014	CESIUM-137	0	0.014	0.052	0.00
STOCK-1	2014 12 13 S1-04	12/13/2014	COBALT-60	0.014	0.019	0.102	0.00
STOCK-1	2014 12 13 S1-04	12/13/2014	EUROPIUM-152	-0.052	0.178	0.278	0.00
STOCK-1	2014 12 13 S1-04	12/13/2014	EUROPIUM-154	0.059	0.104	0.151	0.01
STOCK-1	2014 12 13 S1-04	12/13/2014	SILVER-108M	0.134	0.064	0.052	0.02
STOCK-1	2014 12 13 S1-04	12/13/2014	TRITIUM	-0.16	1.7	3.13	0.00
STOCK-1	2014 12 13 S1-05	12/13/2014	AMERICIUM-241	0.081	0.169	0.287	0.04
STOCK-1	2014 12 13 S1-05	12/13/2014	CESIUM-137	0.054	0.082	0.138	0.00
STOCK-1	2014 12 13 S1-05	12/13/2014	COBALT-60	0.007	0.012	0.222	0.00
STOCK-1	2014 12 13 S1-05	12/13/2014	EUROPIUM-152	-0.032	0.165	0.246	0.00
STOCK-1	2014 12 13 S1-05	12/13/2014	EUROPIUM-154	0.029	0.09	0.157	0.00
STOCK-1	2014 12 13 S1-05	12/13/2014	SILVER-108M	0.039	0.058	0.153	0.00
STOCK-1	2014 12 13 S1-05	12/13/2014	TRITIUM	0.429	1.67	2.96	0.00
STOCK-1	2014 12 13 S1-06	12/13/2014	AMERICIUM-241	0.133	0.163	0.266	0.06
STOCK-1	2014 12 13 S1-06	12/13/2014	CESIUM-137	0.026	0.066	0.119	0.00
STOCK-1	2014 12 13 S1-06	12/13/2014	COBALT-60	0.005	0.07	0.154	0.00
STOCK-1	2014 12 13 S1-06	12/13/2014	EUROPIUM-152	-0.035	0.171	0.257	0.00
STOCK-1	2014 12 13 S1-06	12/13/2014	EUROPIUM-154	-0.009	0.089	0.152	0.00
STOCK-1	2014 12 13 S1-06	12/13/2014	SILVER-108M	0.193	0.063	0.136	0.02
STOCK-1	2014 12 13 S1-06	12/13/2014	TRITIUM	0.808	1.62	2.79	0.01
STOCK-2	2014 10 29 S2-01	10/29/2014	STRONTIUM-90	-0.0399	0.0923	0.242	0.00
STOCK-2	2014 10 29 S2-01	10/29/2014	AMERICIUM-241	-0.008	0.173	0.308	0.00
STOCK-2	2014 10 29 S2-01	10/29/2014	CESIUM-137	-0.024	0.103	0.161	0.00
STOCK-2	2014 10 29 S2-01	10/29/2014	COBALT-60	-0.016	0.626	0.092	0.00

Appendix F1 - Laboratory Results Table

Survey Area	Sample ID	Sample Date	Analyte	Result (pCi/g)	Uncertainty (pCi/g)	MDC (pCi/g)	DCGL Fraction
STOCK-2	2014 10 29 S2-01	10/29/2014	EUROPIUM-152	0.011	0.142	0.256	0.00
STOCK-2	2014 10 29 S2-01	10/29/2014	EUROPIUM-154	-0.022	0.11	0.193	0.00
STOCK-2	2014 10 29 S2-01	10/29/2014	SILVER-108M	0	0.086	0.162	0.00
STOCK-2	2014 10 29 S2-01	10/29/2014	PLUTONIUM-238	-0.008	0.021	0.045	0.00
STOCK-2	2014 10 29 S2-01	10/29/2014	PU-239/240	0.005	0.012	0.024	0.00
STOCK-2	2014 10 29 S2-01	10/29/2014	CARBON-14	-0.063	0.434	0.794	0.00
STOCK-2	2014 10 29 S2-01	10/29/2014	NICKEL-63	1.575	1.514	4.418	0.00
STOCK-2	2014 10 29 S2-01	10/29/2014	TRITIUM	0.293	0.648	1.11	0.00
STOCK-2	2014 10 29 S2-02	10/29/2014	STRONTIUM-90	0.011	0.102	0.241	0.01
STOCK-2	2014 10 29 S2-02	10/29/2014	AMERICIUM-241	-0.004	1.394	0.582	0.00
STOCK-2	2014 10 29 S2-02	10/29/2014	CESIUM-137	0	0.051	0.096	0.00
STOCK-2	2014 10 29 S2-02	10/29/2014	COBALT-60	0.013	0.06	0.115	0.00
STOCK-2	2014 10 29 S2-02	10/29/2014	EUROPIUM-152	-0.072	0.168	0.284	0.00
STOCK-2	2014 10 29 S2-02	10/29/2014	EUROPIUM-154	0.021	0.026	0.212	0.00
STOCK-2	2014 10 29 S2-02	10/29/2014	SILVER-108M	0.012	0.024	0.171	0.00
STOCK-2	2014 10 29 S2-02	10/29/2014	PLUTONIUM-238	0.01	0.02	0.038	0.00
STOCK-2	2014 10 29 S2-02	10/29/2014	PU-239/240	0.007	0.011	0.021	0.00
STOCK-2	2014 10 29 S2-02	10/29/2014	CARBON-14	0.371	0.467	0.78	0.03
STOCK-2	2014 10 29 S2-02	10/29/2014	NICKEL-63	0.826	1.423	4.171	0.00
STOCK-2	2014 10 29 S2-02	10/29/2014	TRITIUM	0.101	0.954	1.68	0.00
STOCK-2	2014 10 30 S2-01	10/30/2014	STRONTIUM-90	0.034	0.104	0.244	0.02
STOCK-2	2014 10 30 S2-01	10/30/2014	AMERICIUM-241	0.012	0.151	0.267	0.01
STOCK-2	2014 10 30 S2-01	10/30/2014	CESIUM-137	-0.002	0.067	0.102	0.00
STOCK-2	2014 10 30 S2-01	10/30/2014	COBALT-60	-0.014	0.547	0.08	0.00
STOCK-2	2014 10 30 S2-01	10/30/2014	EUROPIUM-152	-0.079	0.192	0.292	0.00
STOCK-2	2014 10 30 S2-01	10/30/2014	EUROPIUM-154	0.051	0.094	0.159	0.01
STOCK-2	2014 10 30 S2-01	10/30/2014	SILVER-108M	0.002	0.072	0.137	0.00
STOCK-2	2014 10 30 S2-01	10/30/2014	PLUTONIUM-238	0.001	0.016	0.035	0.00
STOCK-2	2014 10 30 S2-01	10/30/2014	PU-239/240	0.006	0.01	0.02	0.00
STOCK-2	2014 10 30 S2-01	10/30/2014	CARBON-14	-0.08	0.411	0.756	0.00
STOCK-2	2014 10 30 S2-01	10/30/2014	NICKEL-63	0	1.203	3.244	0.00
STOCK-2	2014 10 30 S2-01	10/30/2014	TRITIUM	-0.151	0.876	1.57	0.00
STOCK-2	2014 10 30 S2-02	10/30/2014	STRONTIUM-90	0.0426	0.0993	0.23	0.03
STOCK-2	2014 10 30 S2-02	10/30/2014	AMERICIUM-241	-0.002	0.1	0.671	0.00
STOCK-2	2014 10 30 S2-02	10/30/2014	CESIUM-137	0.024	0.06	0.104	0.00
STOCK-2	2014 10 30 S2-02	10/30/2014	COBALT-60	0.006	0.063	0.123	0.00
STOCK-2	2014 10 30 S2-02	10/30/2014	EUROPIUM-152	0	0.005	0.328	0.00
STOCK-2	2014 10 30 S2-02	10/30/2014	EUROPIUM-154	0.004	0.102	0.181	0.00
STOCK-2	2014 10 30 S2-02	10/30/2014	SILVER-108M	-0.03	0.081	0.14	0.00
STOCK-2	2014 10 30 S2-02	10/30/2014	PLUTONIUM-238	-0.004	0.02	0.043	0.00
STOCK-2	2014 10 30 S2-02	10/30/2014	PU-239/240	0	0.01	0.024	0.00
STOCK-2	2014 10 30 S2-02	10/30/2014	CARBON-14	-0.302	0.425	0.816	0.00

Appendix F1 - Laboratory Results Table

Survey Area	Sample ID	Sample Date	Analyte	Result (pCi/g)	Uncertainty (pCi/g)	MDC (pCi/g)	DCGL Fraction
STOCK-2	2014 10 30 S2-02	10/30/2014	NICKEL-63	0.549	1.262	3.325	0.00
STOCK-2	2014 10 30 S2-02	10/30/2014	TRITIUM	0.225	0.545	0.938	0.00
STOCK-2	2014 11 01 S2-01	11/1/2014	STRONTIUM-90	-0.0003	0.0997	0.245	0.00
STOCK-2	2014 11 01 S2-01	11/1/2014	AMERICIUM-241	0.01	0.171	0.301	0.00
STOCK-2	2014 11 01 S2-01	11/1/2014	CESIUM-137	-0.002	0.068	0.187	0.00
STOCK-2	2014 11 01 S2-01	11/1/2014	COBALT-60	-0.001	0.084	0.15	0.00
STOCK-2	2014 11 01 S2-01	11/1/2014	EUROPIUM-152	-0.021	0.233	0.265	0.00
STOCK-2	2014 11 01 S2-01	11/1/2014	EUROPIUM-154	0.012	0.09	0.159	0.00
STOCK-2	2014 11 01 S2-01	11/1/2014	SILVER-108M	-0.007	0.086	0.158	0.00
STOCK-2	2014 11 01 S2-01	11/1/2014	PLUTONIUM-238	-0.03	0.033	0.074	0.00
STOCK-2	2014 11 01 S2-01	11/1/2014	PU-239/240	0.005	0.011	0.022	0.00
STOCK-2	2014 11 01 S2-01	11/1/2014	CARBON-14	-0.104	0.426	0.787	0.00
STOCK-2	2014 11 01 S2-01	11/1/2014	NICKEL-63	-0.927	1.181	3.512	0.00
STOCK-2	2014 11 01 S2-01	11/1/2014	TRITIUM	0.646	0.739	1.23	0.01
STOCK-2	2014 11 01 S2-02	11/7/2014	STRONTIUM-90	-0.0093	0.0952	0.239	0.00
STOCK-2	2014 11 01 S2-02	11/7/2014	AMERICIUM-241	0.187	0.375	0.634	0.09
STOCK-2	2014 11 01 S2-02	11/7/2014	CESIUM-137	0.035	0.063	0.107	0.00
STOCK-2	2014 11 01 S2-02	11/7/2014	COBALT-60	-0.014	0.556	0.059	0.00
STOCK-2	2014 11 01 S2-02	11/7/2014	EUROPIUM-152	0.023	0.144	0.254	0.00
STOCK-2	2014 11 01 S2-02	11/7/2014	EUROPIUM-154	-0.019	0.109	0.19	0.00
STOCK-2	2014 11 01 S2-02	11/7/2014	SILVER-108M	-0.013	0.078	0.138	0.00
STOCK-2	2014 11 01 S2-02	11/7/2014	PLUTONIUM-238	0.014	0.024	0.045	0.01
STOCK-2	2014 11 01 S2-02	11/7/2014	PU-239/240	-0.002	0.011	0.027	0.00
STOCK-2	2014 11 01 S2-02	11/7/2014	CARBON-14	0.211	0.462	0.8	0.02
STOCK-2	2014 11 01 S2-02	11/7/2014	NICKEL-63	-1.029	1.15	3.389	0.00
STOCK-2	2014 11 01 S2-02	11/7/2014	TRITIUM	-0.293	0.746	1.36	0.00
STOCK-2	2014 11 01 S2-03	11/1/2014	STRONTIUM-90	0.084	0.104	0.227	0.05
STOCK-2	2014 11 01 S2-03	11/1/2014	AMERICIUM-241	0.085	0.157	0.264	0.04
STOCK-2	2014 11 01 S2-03	11/1/2014	CESIUM-137	0.057	0.081	0.136	0.01
STOCK-2	2014 11 01 S2-03	11/1/2014	COBALT-60	-0.004	0.133	0.15	0.00
STOCK-2	2014 11 01 S2-03	11/1/2014	EUROPIUM-152	0.034	0.143	0.25	0.00
STOCK-2	2014 11 01 S2-03	11/1/2014	EUROPIUM-154	-0.004	0.095	0.169	0.00
STOCK-2	2014 11 01 S2-03	11/1/2014	SILVER-108M	0	0.141	0.251	0.00
STOCK-2	2014 11 01 S2-03	11/1/2014	PLUTONIUM-238	0.027	0.024	0.04	0.01
STOCK-2	2014 11 01 S2-03	11/1/2014	PU-239/240	0.004	0.008	0.015	0.00
STOCK-2	2014 11 01 S2-03	11/1/2014	CARBON-14	-0.209	0.418	0.789	0.00
STOCK-2	2014 11 01 S2-03	11/1/2014	NICKEL-63	0.561	1.191	2.931	0.00
STOCK-2	2014 11 01 S2-03	11/1/2014	TRITIUM	0.0703	0.832	1.47	0.00
STOCK-2	2014 11 01 S2-04	11/1/2014	STRONTIUM-90	-0.0112	0.09	0.228	0.00
STOCK-2	2014 11 01 S2-04	11/1/2014	AMERICIUM-241	-0.073	0.365	0.596	0.00
STOCK-2	2014 11 01 S2-04	11/1/2014	CESIUM-137	0.012	0.057	0.103	0.00
STOCK-2	2014 11 01 S2-04	11/1/2014	COBALT-60	0.019	0.048	0.09	0.01

Appendix F1 - Laboratory Results Table

Survey Area	Sample ID	Sample Date	Analyte	Result (pCi/g)	Uncertainty (pCi/g)	MDC (pCi/g)	DCGL Fraction
STOCK-2	2014 11 01 S2-04	11/1/2014	EUROPIUM-152	0	0.004	0.316	0.00
STOCK-2	2014 11 01 S2-04	11/1/2014	EUROPIUM-154	0.074	0.067	0.104	0.01
STOCK-2	2014 11 01 S2-04	11/1/2014	SILVER-108M	-0.015	0.059	0.104	0.00
STOCK-2	2014 11 01 S2-04	11/1/2014	PLUTONIUM-238	-0.009	0.019	0.042	0.00
STOCK-2	2014 11 01 S2-04	11/1/2014	PU-239/240	-0.003	0.009	0.023	0.00
STOCK-2	2014 11 01 S2-04	11/1/2014	CARBON-14	-0.083	0.427	0.786	0.00
STOCK-2	2014 11 01 S2-04	11/1/2014	NICKEL-63	-0.19	1.116	2.871	0.00
STOCK-2	2014 11 01 S2-04	11/1/2014	TRITIUM	3.62	0.942	1.08	0.03
STOCK-2	2014 11 01 S2-05	11/1/2014	STRONTIUM-90	-0.0299	0.0698	0.189	0.00
STOCK-2	2014 11 01 S2-05	11/1/2014	AMERICIUM-241	0	0.189	0.333	0.00
STOCK-2	2014 11 01 S2-05	11/1/2014	CESIUM-137	0.003	0.082	0.154	0.00
STOCK-2	2014 11 01 S2-05	11/1/2014	COBALT-60	-0.014	0.56	0.212	0.00
STOCK-2	2014 11 01 S2-05	11/1/2014	EUROPIUM-152	-0.006	1.337	0.275	0.00
STOCK-2	2014 11 01 S2-05	11/1/2014	EUROPIUM-154	0.002	0.11	0.194	0.00
STOCK-2	2014 11 01 S2-05	11/1/2014	SILVER-108M	0.001	0.08	0.151	0.00
STOCK-2	2014 11 01 S2-05	11/1/2014	PLUTONIUM-238	0.012	0.022	0.042	0.00
STOCK-2	2014 11 01 S2-05	11/1/2014	PU-239/240	0.011	0.014	0.024	0.00
STOCK-2	2014 11 01 S2-05	11/1/2014	CARBON-14	0.759	0.504	0.776	0.06
STOCK-2	2014 11 01 S2-05	11/1/2014	NICKEL-63	0	1.262	3.569	0.00
STOCK-2	2014 11 01 S2-05	11/1/2014	TRITIUM	0.264	0.75	1.3	0.00
STOCK-2	2014 11 01 S2-06	11/1/2014	STRONTIUM-90	-0.0059	0.0876	0.222	0.00
STOCK-2	2014 11 01 S2-06	11/1/2014	AMERICIUM-241	-0.121	0.37	0.612	0.00
STOCK-2	2014 11 01 S2-06	11/1/2014	CESIUM-137	0.017	0.058	0.105	0.00
STOCK-2	2014 11 01 S2-06	11/1/2014	COBALT-60	-0.017	1.565	0.147	0.00
STOCK-2	2014 11 01 S2-06	11/1/2014	EUROPIUM-152	-0.059	0.168	0.288	0.00
STOCK-2	2014 11 01 S2-06	11/1/2014	EUROPIUM-154	0.002	0.095	0.171	0.00
STOCK-2	2014 11 01 S2-06	11/1/2014	SILVER-108M	-0.024	0.086	0.151	0.00
STOCK-2	2014 11 01 S2-06	11/1/2014	PLUTONIUM-238	0.013	0.022	0.041	0.01
STOCK-2	2014 11 01 S2-06	11/1/2014	PU-239/240	-0.007	0.01	0.029	0.00
STOCK-2	2014 11 01 S2-06	11/1/2014	CARBON-14	-0.063	0.436	0.799	0.00
STOCK-2	2014 11 01 S2-06	11/1/2014	NICKEL-63	0.334	1.296	3.617	0.00
STOCK-2	2014 11 01 S2-06	11/1/2014	TRITIUM	0.403	1.03	1.77	0.00
STOCK-2	2014 11 01 S2-07	11/1/2014	STRONTIUM-90	0.064	0.105	0.237	0.04
STOCK-2	2014 11 01 S2-07	11/1/2014	AMERICIUM-241	0.048	0.214	0.383	0.02
STOCK-2	2014 11 01 S2-07	11/1/2014	CESIUM-137	0.045	0.063	0.104	0.00
STOCK-2	2014 11 01 S2-07	11/1/2014	COBALT-60	0.026	0.079	0.144	0.01
STOCK-2	2014 11 01 S2-07	11/1/2014	EUROPIUM-152	-0.074	0.16	0.271	0.00
STOCK-2	2014 11 01 S2-07	11/1/2014	EUROPIUM-154	-0.03	0.096	0.165	0.00
STOCK-2	2014 11 01 S2-07	11/1/2014	SILVER-108M	-0.019	0.074	0.13	0.00
STOCK-2	2014 11 01 S2-07	11/1/2014	PLUTONIUM-238	0.013	0.021	0.038	0.01
STOCK-2	2014 11 01 S2-07	11/1/2014	PU-239/240	0.01	0.011	0.018	0.00
STOCK-2	2014 11 01 S2-07	11/1/2014	CARBON-14	-0.202	0.405	0.765	0.00

Appendix F1 - Laboratory Results Table

Survey Area	Sample ID	Sample Date	Analyte	Result (pCi/g)	Uncertainty (pCi/g)	MDC (pCi/g)	DCGL Fraction
STOCK-2	2014 11 01 S2-07	11/1/2014	NICKEL-63	0.594	1.226	3.105	0.00
STOCK-2	2014 11 01 S2-07	11/1/2014	TRITIUM	-0.113	0.878	1.57	0.00
STOCK-2	2014 11 01 S2-08	11/1/2014	STRONTIUM-90	0.064	0.105	0.236	0.04
STOCK-2	2014 11 01 S2-08	11/1/2014	AMERICIUM-241	0.097	0.145	0.241	0.05
STOCK-2	2014 11 01 S2-08	11/1/2014	CESIUM-137	0.018	0.063	0.117	0.00
STOCK-2	2014 11 01 S2-08	11/1/2014	COBALT-60	0.049	0.077	0.138	0.01
STOCK-2	2014 11 01 S2-08	11/1/2014	EUROPIUM-152	-0.012	0.339	0.251	0.00
STOCK-2	2014 11 01 S2-08	11/1/2014	EUROPIUM-154	0.003	0.1	0.179	0.00
STOCK-2	2014 11 01 S2-08	11/1/2014	SILVER-108M	-0.064	0.123	0.209	0.00
STOCK-2	2014 11 01 S2-08	11/1/2014	PLUTONIUM-238	-0.024	0.027	0.064	0.00
STOCK-2	2014 11 01 S2-08	11/1/2014	PU-239/240	-0.013	0.012	0.037	0.00
STOCK-2	2014 11 01 S2-08	11/1/2014	CARBON-14	-0.038	0.396	0.721	0.00
STOCK-2	2014 11 01 S2-08	11/1/2014	NICKEL-63	-0.231	1.232	3.498	0.00
STOCK-2	2014 11 01 S2-08	11/1/2014	TRITIUM	1.1	0.856	1.37	0.01
STOCK-2	2014 11 03 S2-01	11/3/2014	STRONTIUM-90	0.084	0.107	0.233	0.05
STOCK-2	2014 11 03 S2-01	11/3/2014	AMERICIUM-241	-0.205	0.394	0.648	0.00
STOCK-2	2014 11 03 S2-01	11/3/2014	CESIUM-137	-0.001	0.055	0.102	0.00
STOCK-2	2014 11 03 S2-01	11/3/2014	COBALT-60	-0.022	0.238	0.124	0.00
STOCK-2	2014 11 03 S2-01	11/3/2014	EUROPIUM-152	0.118	0.155	0.254	0.02
STOCK-2	2014 11 03 S2-01	11/3/2014	EUROPIUM-154	-0.038	0.128	0.219	0.00
STOCK-2	2014 11 03 S2-01	11/3/2014	SILVER-108M	0	0.068	0.123	0.00
STOCK-2	2014 11 03 S2-01	11/3/2014	PLUTONIUM-238	0.006	0.016	0.032	0.00
STOCK-2	2014 11 03 S2-01	11/3/2014	PU-239/240	0.009	0.013	0.024	0.00
STOCK-2	2014 11 03 S2-01	11/3/2014	CARBON-14	0.283	0.45	0.765	0.02
STOCK-2	2014 11 03 S2-01	11/3/2014	NICKEL-63	1.689	1.414	3.709	0.00
STOCK-2	2014 11 03 S2-01	11/3/2014	TRITIUM	0.506	1.12	1.92	0.00
STOCK-2	2014 11 03 S2-02	11/3/2014	STRONTIUM-90	0.008	0.101	0.248	0.00
STOCK-2	2014 11 03 S2-02	11/3/2014	AMERICIUM-241	-0.047	0.189	0.325	0.00
STOCK-2	2014 11 03 S2-02	11/3/2014	CESIUM-137	-0.021	0.107	0.164	0.00
STOCK-2	2014 11 03 S2-02	11/3/2014	COBALT-60	0.028	0.096	0.179	0.01
STOCK-2	2014 11 03 S2-02	11/3/2014	EUROPIUM-152	0.125	0.139	0.225	0.02
STOCK-2	2014 11 03 S2-02	11/3/2014	EUROPIUM-154	-0.05	0.123	0.209	0.00
STOCK-2	2014 11 03 S2-02	11/3/2014	SILVER-108M	0	0.059	0.116	0.00
STOCK-2	2014 11 03 S2-02	11/3/2014	PLUTONIUM-238	0.01	0.022	0.043	0.00
STOCK-2	2014 11 03 S2-02	11/3/2014	PU-239/240	-0.001	0.01	0.02	0.00
STOCK-2	2014 11 03 S2-02	11/3/2014	CARBON-14	-0.208	0.417	0.788	0.00
STOCK-2	2014 11 03 S2-02	11/3/2014	NICKEL-63	1.406	1.367	3.549	0.00
STOCK-2	2014 11 03 S2-02	11/3/2014	TRITIUM	0.179	0.95	1.66	0.00
STOCK-2	2014 11 03 S2-03	11/3/2014	STRONTIUM-90	-0.0004	0.0794	0.2	0.00
STOCK-2	2014 11 03 S2-03	11/3/2014	AMERICIUM-241	-0.139	0.417	0.689	0.00
STOCK-2	2014 11 03 S2-03	11/3/2014	CESIUM-137	-0.015	0.059	0.105	0.00
STOCK-2	2014 11 03 S2-03	11/3/2014	COBALT-60	-0.01	0.612	0.093	0.00

Appendix F1 - Laboratory Results Table

Survey Area	Sample ID	Sample Date	Analyte	Result (pCi/g)	Uncertainty (pCi/g)	MDC (pCi/g)	DCGL Fraction
STOCK-2	2014 11 03 S2-03	11/3/2014	EUROPIUM-152	-0.005	0.14	0.238	0.00
STOCK-2	2014 11 03 S2-03	11/3/2014	EUROPIUM-154	-0.017	0.105	0.182	0.00
STOCK-2	2014 11 03 S2-03	11/3/2014	SILVER-108M	0.008	0.055	0.1	0.00
STOCK-2	2014 11 03 S2-03	11/3/2014	PLUTONIUM-238	-0.003	0.019	0.044	0.00
STOCK-2	2014 11 03 S2-03	11/3/2014	PU-239/240	0	0.012	0.008	0.00
STOCK-2	2014 11 03 S2-03	11/3/2014	CARBON-14	-0.064	0.44	0.805	0.00
STOCK-2	2014 11 03 S2-03	11/3/2014	NICKEL-63	0.233	1.274	3.534	0.00
STOCK-2	2014 11 03 S2-03	11/3/2014	TRITIUM	-0.308	0.671	1.23	0.00
STOCK-2	2014 11 03 S2-04	11/3/2014	STRONTIUM-90	0.0117	0.0808	0.198	0.01
STOCK-2	2014 11 03 S2-04	11/3/2014	AMERICIUM-241	-0.034	0.193	0.336	0.00
STOCK-2	2014 11 03 S2-04	11/3/2014	CESIUM-137	0.066	0.08	0.129	0.01
STOCK-2	2014 11 03 S2-04	11/3/2014	COBALT-60	-0.014	2.978	0.107	0.00
STOCK-2	2014 11 03 S2-04	11/3/2014	EUROPIUM-152	-0.005	0.198	0.309	0.00
STOCK-2	2014 11 03 S2-04	11/3/2014	EUROPIUM-154	0.037	0.073	0.126	0.00
STOCK-2	2014 11 03 S2-04	11/3/2014	SILVER-108M	-0.035	0.097	0.171	0.00
STOCK-2	2014 11 03 S2-04	11/3/2014	PLUTONIUM-238	0.007	0.023	0.045	0.00
STOCK-2	2014 11 03 S2-04	11/3/2014	PU-239/240	0.004	0.014	0.031	0.00
STOCK-2	2014 11 03 S2-04	11/3/2014	CARBON-14	0.517	0.483	0.783	0.04
STOCK-2	2014 11 03 S2-04	11/3/2014	NICKEL-63	-0.256	1.236	3.531	0.00
STOCK-2	2014 11 03 S2-04	11/3/2014	TRITIUM	0.0863	1.02	1.8	0.00
STOCK-2	2014 11 04 S2-01	11/4/2014	STRONTIUM-90	0.0091	0.0741	0.183	0.01
STOCK-2	2014 11 04 S2-01	11/4/2014	AMERICIUM-241	-0.122	0.404	0.667	0.00
STOCK-2	2014 11 04 S2-01	11/4/2014	CESIUM-137	0.042	0.064	0.106	0.00
STOCK-2	2014 11 04 S2-01	11/4/2014	COBALT-60	0.019	0.058	0.108	0.01
STOCK-2	2014 11 04 S2-01	11/4/2014	EUROPIUM-152	0.106	0.134	0.22	0.02
STOCK-2	2014 11 04 S2-01	11/4/2014	EUROPIUM-154	-0.005	0.102	0.18	0.00
STOCK-2	2014 11 04 S2-01	11/4/2014	SILVER-108M	0	0.084	0.149	0.00
STOCK-2	2014 11 04 S2-01	11/4/2014	PLUTONIUM-238	0.001	0.017	0.036	0.00
STOCK-2	2014 11 04 S2-01	11/4/2014	PU-239/240	-0.002	0.01	0.026	0.00
STOCK-2	2014 11 04 S2-01	11/4/2014	CARBON-14	0.262	0.398	0.676	0.02
STOCK-2	2014 11 04 S2-01	11/4/2014	NICKEL-63	0.991	1.24	3.002	0.00
STOCK-2	2014 11 04 S2-01	11/4/2014	TRITIUM	-0.439	1.17	2.12	0.00
STOCK-2	2014 11 04 S2-02	11/4/2014	STRONTIUM-90	0.092	0.109	0.236	0.05
STOCK-2	2014 11 04 S2-02	11/4/2014	AMERICIUM-241	0	0.205	0.358	0.00
STOCK-2	2014 11 04 S2-02	11/4/2014	CESIUM-137	-0.005	0.137	0.136	0.00
STOCK-2	2014 11 04 S2-02	11/4/2014	COBALT-60	-0.016	0.669	0.141	0.00
STOCK-2	2014 11 04 S2-02	11/4/2014	EUROPIUM-152	-0.047	0.184	0.264	0.00
STOCK-2	2014 11 04 S2-02	11/4/2014	EUROPIUM-154	-0.001	0.095	0.17	0.00
STOCK-2	2014 11 04 S2-02	11/4/2014	SILVER-108M	-0.031	0.085	0.151	0.00
STOCK-2	2014 11 04 S2-02	11/4/2014	PLUTONIUM-238	0	0.014	0.033	0.00
STOCK-2	2014 11 04 S2-02	11/4/2014	PU-239/240	-0.003	0.017	0.041	0.00

Appendix F1 - Laboratory Results Table

Survey Area	Sample ID	Sample Date	Analyte	Result (pCi/g)	Uncertainty (pCi/g)	MDC (pCi/g)	DCGL Fraction
STOCK-2	2014 11 04 S2-02	11/4/2014	CARBON-14	1.15	0.497	0.674	0.10
STOCK-2	2014 11 04 S2-02	11/4/2014	NICKEL-63	-0.281	1.187	3.279	0.00
STOCK-2	2014 11 04 S2-02	11/4/2014	TRITIUM	-0.0196	0.962	1.7	0.00
STOCK-2	2014 11 04 S2-03	11/4/2014	STRONTIUM-90	0.015	0.102	0.244	0.01
STOCK-2	2014 11 04 S2-03	11/4/2014	AMERICIUM-241	0.079	0.163	0.277	0.04
STOCK-2	2014 11 04 S2-03	11/4/2014	CESIUM-137	0.002	0.077	0.146	0.00
STOCK-2	2014 11 04 S2-03	11/4/2014	COBALT-60	0.013	0.077	0.154	0.00
STOCK-2	2014 11 04 S2-03	11/4/2014	EUROPIUM-152	-0.013	0.283	0.246	0.00
STOCK-2	2014 11 04 S2-03	11/4/2014	EUROPIUM-154	0.006	0.09	0.161	0.00
STOCK-2	2014 11 04 S2-03	11/4/2014	SILVER-108M	0.016	0.082	0.15	0.00
STOCK-2	2014 11 04 S2-03	11/4/2014	PLUTONIUM-238	0.014	0.018	0.031	0.01
STOCK-2	2014 11 04 S2-03	11/4/2014	PU-239/240	0.002	0.011	0.025	0.00
STOCK-2	2014 11 04 S2-03	11/4/2014	CARBON-14	0.288	0.409	0.691	0.02
STOCK-2	2014 11 04 S2-03	11/4/2014	NICKEL-63	-1.012	1.14	3.332	0.00
STOCK-2	2014 11 04 S2-03	11/4/2014	TRITIUM	0.337	1.2	2.09	0.00
STOCK-2	2014 11 04 S2-04	11/4/2014	STRONTIUM-90	0.126	0.11	0.225	0.07
STOCK-2	2014 11 04 S2-04	11/4/2014	AMERICIUM-241	-0.014	0.333	0.438	0.00
STOCK-2	2014 11 04 S2-04	11/4/2014	CESIUM-137	0.03	0.055	0.093	0.00
STOCK-2	2014 11 04 S2-04	11/4/2014	COBALT-60	0.017	0.054	0.101	0.00
STOCK-2	2014 11 04 S2-04	11/4/2014	EUROPIUM-152	0.086	0.144	0.242	0.01
STOCK-2	2014 11 04 S2-04	11/4/2014	EUROPIUM-154	0.02	0.107	0.186	0.00
STOCK-2	2014 11 04 S2-04	11/4/2014	SILVER-108M	-0.022	0.067	0.116	0.00
STOCK-2	2014 11 04 S2-04	11/4/2014	PLUTONIUM-238	0.012	0.012	0.015	0.00
STOCK-2	2014 11 04 S2-04	11/4/2014	PU-239/240	-0.007	0.011	0.03	0.00
STOCK-2	2014 11 04 S2-04	11/4/2014	CARBON-14	0.165	0.397	0.692	0.01
STOCK-2	2014 11 04 S2-04	11/4/2014	NICKEL-63	0	1.233	3.406	0.00
STOCK-2	2014 11 04 S2-04	11/4/2014	TRITIUM	0.0675	0.833	1.47	0.00
STOCK-2	2014 11 05 S2-01	11/5/2014	STRONTIUM-90	0.009	0.112	0.268	0.01
STOCK-2	2014 11 05 S2-01	11/5/2014	AMERICIUM-241	-0.026	0.157	0.279	0.00
STOCK-2	2014 11 05 S2-01	11/5/2014	CESIUM-137	0.042	0.083	0.144	0.00
STOCK-2	2014 11 05 S2-01	11/5/2014	COBALT-60	-0.016	0.64	0.323	0.00
STOCK-2	2014 11 05 S2-01	11/5/2014	EUROPIUM-152	-0.013	0.322	0.251	0.00
STOCK-2	2014 11 05 S2-01	11/5/2014	EUROPIUM-154	0.093	0.148	0.154	0.01
STOCK-2	2014 11 05 S2-01	11/5/2014	SILVER-108M	-0.009	0.103	0.19	0.00
STOCK-2	2014 11 05 S2-01	11/5/2014	PLUTONIUM-238	-0.013	0.042	0.086	0.00
STOCK-2	2014 11 05 S2-01	11/5/2014	PU-239/240	-0.005	0.019	0.045	0.00
STOCK-2	2014 11 05 S2-01	11/5/2014	CARBON-14	0.38	0.429	0.709	0.03
STOCK-2	2014 11 05 S2-01	11/5/2014	NICKEL-63	0.846	1.377	4.014	0.00
STOCK-2	2014 11 05 S2-01	11/5/2014	TRITIUM	-0.0521	0.508	0.905	0.00

Appendix F1 - Laboratory Results Table

Survey Area	Sample ID	Sample Date	Analyte	Result (pCi/g)	Uncertainty (pCi/g)	MDC (pCi/g)	DCGL Fraction
STOCK-2	2014 11 05 S2-02	11/5/2014	STRONTIUM-90	0.068	0.116	0.261	0.04
STOCK-2	2014 11 05 S2-02	11/5/2014	AMERICIUM-241	-0.188	0.373	0.614	0.00
STOCK-2	2014 11 05 S2-02	11/5/2014	CESIUM-137	0.042	0.06	0.1	0.00
STOCK-2	2014 11 05 S2-02	11/5/2014	COBALT-60	-0.01	0.753	0.128	0.00
STOCK-2	2014 11 05 S2-02	11/5/2014	EUROPIUM-152	0.05	0.117	0.201	0.01
STOCK-2	2014 11 05 S2-02	11/5/2014	EUROPIUM-154	-0.03	0.115	0.198	0.00
STOCK-2	2014 11 05 S2-02	11/5/2014	SILVER-108M	0	0.062	0.112	0.00
STOCK-2	2014 11 05 S2-02	11/5/2014	PLUTONIUM-238	0.021	0.027	0.046	0.01
STOCK-2	2014 11 05 S2-02	11/5/2014	PU-239/240	0.02	0.019	0.026	0.01
STOCK-2	2014 11 05 S2-02	11/5/2014	CARBON-14	0.306	0.407	0.684	0.03
STOCK-2	2014 11 05 S2-02	11/5/2014	NICKEL-63	1.063	1.308	3.477	0.00
STOCK-2	2014 11 05 S2-02	11/5/2014	TRITIUM	0.522	0.79	1.33	0.00
STOCK-2	2014 11 05 S2-03	11/5/2014	STRONTIUM-90	0.305	0.145	0.249	0.18
STOCK-2	2014 11 05 S2-03	11/5/2014	AMERICIUM-241	-0.004	0.129	0.233	0.00
STOCK-2	2014 11 05 S2-03	11/5/2014	CESIUM-137	0.013	0.08	0.147	0.00
STOCK-2	2014 11 05 S2-03	11/5/2014	COBALT-60	0.018	0.073	0.146	0.00
STOCK-2	2014 11 05 S2-03	11/5/2014	EUROPIUM-152	0.066	0.135	0.231	0.01
STOCK-2	2014 11 05 S2-03	11/5/2014	EUROPIUM-154	0	0.114	0.201	0.00
STOCK-2	2014 11 05 S2-03	11/5/2014	SILVER-108M	0	0.146	0.261	0.00
STOCK-2	2014 11 05 S2-03	11/5/2014	PLUTONIUM-238	0.02	0.031	0.055	0.01
STOCK-2	2014 11 05 S2-03	11/5/2014	PU-239/240	0.005	0.015	0.031	0.00
STOCK-2	2014 11 05 S2-03	11/5/2014	CARBON-14	0.741	0.47	0.71	0.06
STOCK-2	2014 11 05 S2-03	11/5/2014	NICKEL-63	0.025	1.269	3.724	0.00
STOCK-2	2014 11 05 S2-03	11/5/2014	TRITIUM	0.0382	0.939	1.66	0.00
STOCK-2	2014 11 05 S2-04	11/5/2014	STRONTIUM-90	0.119	0.118	0.247	0.07
STOCK-2	2014 11 05 S2-04	11/5/2014	AMERICIUM-241	0.046	0.391	0.687	0.02
STOCK-2	2014 11 05 S2-04	11/5/2014	CESIUM-137	0.059	0.062	0.098	0.01
STOCK-2	2014 11 05 S2-04	11/5/2014	COBALT-60	-0.003	0.101	0.134	0.00
STOCK-2	2014 11 05 S2-04	11/5/2014	EUROPIUM-152	-0.079	0.192	0.326	0.00
STOCK-2	2014 11 05 S2-04	11/5/2014	EUROPIUM-154	0.049	0.082	0.171	0.01
STOCK-2	2014 11 05 S2-04	11/5/2014	SILVER-108M	0.008	0.062	0.113	0.00
STOCK-2	2014 11 05 S2-04	11/5/2014	PLUTONIUM-238	0.016	0.029	0.052	0.01
STOCK-2	2014 11 05 S2-04	11/5/2014	PU-239/240	0.003	0.013	0.029	0.00
STOCK-2	2014 11 05 S2-04	11/5/2014	CARBON-14	0.02	0.378	0.687	0.00
STOCK-2	2014 11 05 S2-04	11/5/2014	NICKEL-63	0.971	1.316	3.571	0.00
STOCK-2	2014 11 05 S2-04	11/5/2014	TRITIUM	0.121	0.669	1.17	0.00
STOCK-2	2014 11 06 S2-01	11/6/2014	STRONTIUM-90	0.009	0.107	0.256	0.01
STOCK-2	2014 11 06 S2-01	11/6/2014	AMERICIUM-241	0.048	0.155	0.268	0.02
STOCK-2	2014 11 06 S2-01	11/6/2014	CESIUM-137	0.037	0.081	0.141	0.00

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Survey Area	Sample ID	Sample Date	Analyte	Result (pCi/g)	Uncertainty (pCi/g)	MDC (pCi/g)	DCGL Fraction
STOCK-2	2014 11 06 S2-01	11/6/2014	COBALT-60	0.009	0.07	0.143	0.00
STOCK-2	2014 11 06 S2-01	11/6/2014	EUROPIUM-152	0.009	0.12	0.216	0.00
STOCK-2	2014 11 06 S2-01	11/6/2014	EUROPIUM-154	0.007	0.115	0.202	0.00
STOCK-2	2014 11 06 S2-01	11/6/2014	SILVER-108M	-0.035	0.092	0.162	0.00
STOCK-2	2014 11 06 S2-01	11/6/2014	PLUTONIUM-238	-0.031	0.04	0.083	0.00
STOCK-2	2014 11 06 S2-01	11/6/2014	PU-239/240	0	0.012	0.025	0.00
STOCK-2	2014 11 06 S2-01	11/6/2014	CARBON-14	0.372	0.42	0.693	0.03
STOCK-2	2014 11 06 S2-01	11/6/2014	NICKEL-63	1.862	1.324	3.184	0.00
STOCK-2	2014 11 06 S2-01	11/6/2014	TRITIUM	3.22	1.29	1.82	0.03
STOCK-2	2014 11 06 S2-02	11/6/2014	STRONTIUM-90	0.214	0.114	0.204	0.13
STOCK-2	2014 11 06 S2-02	11/6/2014	AMERICIUM-241	0.123	0.294	0.503	0.06
STOCK-2	2014 11 06 S2-02	11/6/2014	CESIUM-137	0.022	0.057	0.1	0.00
STOCK-2	2014 11 06 S2-02	11/6/2014	COBALT-60	-0.024	0.21	0.127	0.00
STOCK-2	2014 11 06 S2-02	11/6/2014	EUROPIUM-152	0	0.004	0.31	0.00
STOCK-2	2014 11 06 S2-02	11/6/2014	EUROPIUM-154	0	0.126	0.221	0.00
STOCK-2	2014 11 06 S2-02	11/6/2014	SILVER-108M	0	0.06	0.11	0.00
STOCK-2	2014 11 06 S2-02	11/6/2014	PLUTONIUM-238	0.009	0.029	0.056	0.00
STOCK-2	2014 11 06 S2-02	11/6/2014	PU-239/240	-0.001	0.015	0.033	0.00
STOCK-2	2014 11 06 S2-02	11/6/2014	CARBON-14	0.29	0.412	0.695	0.02
STOCK-2	2014 11 06 S2-02	11/6/2014	NICKEL-63	0.597	1.254	3.376	0.00
STOCK-2	2014 11 06 S2-02	11/6/2014	TRITIUM	0.0348	0.856	1.51	0.00
STOCK-2	2014 11 06 S2-03	11/6/2014	STRONTIUM-90	0.503	0.176	0.255	0.30
STOCK-2	2014 11 06 S2-03	11/6/2014	AMERICIUM-241	-0.024	0.096	0.166	0.00
STOCK-2	2014 11 06 S2-03	11/6/2014	CESIUM-137	0.021	0.045	0.079	0.00
STOCK-2	2014 11 06 S2-03	11/6/2014	COBALT-60	-0.01	1.294	0.107	0.00
STOCK-2	2014 11 06 S2-03	11/6/2014	EUROPIUM-152	0.014	0.073	0.129	0.00
STOCK-2	2014 11 06 S2-03	11/6/2014	EUROPIUM-154	0.007	0.048	0.085	0.00
STOCK-2	2014 11 06 S2-03	11/6/2014	SILVER-108M	-0.005	0.056	0.102	0.00
STOCK-2	2014 11 06 S2-03	11/6/2014	PLUTONIUM-238	0.007	0.034	0.066	0.00
STOCK-2	2014 11 06 S2-03	11/6/2014	PU-239/240	0.013	0.016	0.025	0.01
STOCK-2	2014 11 06 S2-03	11/6/2014	CARBON-14	0.021	0.38	0.689	0.00
STOCK-2	2014 11 06 S2-03	11/6/2014	NICKEL-63	-0.372	1.271	3.913	0.00
STOCK-2	2014 11 06 S2-03	11/6/2014	TRITIUM	-0.595	0.936	1.72	0.00
STOCK-2	2014 11 11 S2-01	11/11/2014	STRONTIUM-90	0.0498	0.0846	0.191	0.03
STOCK-2	2014 11 11 S2-01	11/11/2014	AMERICIUM-241	-0.059	0.339	0.584	0.00
STOCK-2	2014 11 11 S2-01	11/11/2014	CESIUM-137	0.025	0.061	0.106	0.00
STOCK-2	2014 11 11 S2-01	11/11/2014	COBALT-60	-0.014	0.347	0.116	0.00
STOCK-2	2014 11 11 S2-01	11/11/2014	EUROPIUM-152	-0.095	0.192	0.285	0.00
STOCK-2	2014 11 11 S2-01	11/11/2014	EUROPIUM-154	0.039	0.1	0.171	0.00

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Survey Area	Sample ID	Sample Date	Analyte	Result (pCi/g)	Uncertainty (pCi/g)	MDC (pCi/g)	DCGL Fraction
STOCK-2	2014 11 11 S2-01	11/11/2014	SILVER-108M	0.011	0.057	0.103	0.00
STOCK-2	2014 11 11 S2-01	11/11/2014	PLUTONIUM-238	0.002	0.039	0.062	0.00
STOCK-2	2014 11 11 S2-01	11/11/2014	PU-239/240	-0.02	0.021	0.04	0.00
STOCK-2	2014 11 11 S2-01	11/11/2014	CARBON-14	1.42	1.18	1.7	0.12
STOCK-2	2014 11 11 S2-01	11/11/2014	NICKEL-63	-0.231	0.738	2.422	0.00
STOCK-2	2014 11 11 S2-01	11/11/2014	TRITIUM	1.06	1.47	2.48	0.01
STOCK-2	2014 11 11 S2-02	11/11/2014	STRONTIUM-90	-0.0379	0.0709	0.193	0.00
STOCK-2	2014 11 11 S2-02	11/11/2014	AMERICIUM-241	-0.029	0.175	0.306	0.00
STOCK-2	2014 11 11 S2-02	11/11/2014	CESIUM-137	0.024	0.085	0.153	0.00
STOCK-2	2014 11 11 S2-02	11/11/2014	COBALT-60	-0.04	0.283	0.193	0.00
STOCK-2	2014 11 11 S2-02	11/11/2014	EUROPIUM-152	0.03	0.096	0.171	0.00
STOCK-2	2014 11 11 S2-02	11/11/2014	EUROPIUM-154	0.076	0.1	0.148	0.01
STOCK-2	2014 11 11 S2-02	11/11/2014	SILVER-108M	0.021	0.039	0.126	0.00
STOCK-2	2014 11 11 S2-02	11/11/2014	PLUTONIUM-238	0.018	0.023	0.034	0.01
STOCK-2	2014 11 11 S2-02	11/11/2014	PU-239/240	0.005	0.016	0.026	0.00
STOCK-2	2014 11 11 S2-02	11/11/2014	CARBON-14	1.32	1.17	1.73	0.11
STOCK-2	2014 11 11 S2-02	11/11/2014	NICKEL-63	-0.258	0.61	1.668	0.00
STOCK-2	2014 11 11 S2-02	11/11/2014	TRITIUM	0.35	1.28	2.27	0.00
STOCK-2	2014 11 13 S2-01	11/13/2014	STRONTIUM-90	-0.0464	0.0751	0.207	0.00
STOCK-2	2014 11 13 S2-01	11/13/2014	AMERICIUM-241	0	0.014	0.603	0.00
STOCK-2	2014 11 13 S2-01	11/13/2014	CESIUM-137	0.011	0.054	0.098	0.00
STOCK-2	2014 11 13 S2-01	11/13/2014	COBALT-60	-0.021	0.227	0.144	0.00
STOCK-2	2014 11 13 S2-01	11/13/2014	EUROPIUM-152	-0.094	0.207	0.308	0.00
STOCK-2	2014 11 13 S2-01	11/13/2014	EUROPIUM-154	0.015	0.021	0.211	0.00
STOCK-2	2014 11 13 S2-01	11/13/2014	SILVER-108M	-0.017	0.073	0.128	0.00
STOCK-2	2014 11 13 S2-01	11/13/2014	PLUTONIUM-238	0.027	0.021	0.03	0.01
STOCK-2	2014 11 13 S2-01	11/13/2014	PU-239/240	-0.011	0.013	0.026	0.00
STOCK-2	2014 11 13 S2-01	11/13/2014	CARBON-14	1.14	1.09	1.66	0.10
STOCK-2	2014 11 13 S2-01	11/13/2014	NICKEL-63	0.11	0.543	1.266	0.00
STOCK-2	2014 11 13 S2-01	11/13/2014	TRITIUM	1.4	1.41	2.31	0.01
STOCK-2	2014 11 13 S2-02	11/13/2014	STRONTIUM-90	-0.0195	0.0749	0.192	0.00
STOCK-2	2014 11 13 S2-02	11/13/2014	AMERICIUM-241	0.04	0.181	0.314	0.02
STOCK-2	2014 11 13 S2-02	11/13/2014	CESIUM-137	0.001	0.087	0.163	0.00
STOCK-2	2014 11 13 S2-02	11/13/2014	COBALT-60	0.001	0.091	0.185	0.00
STOCK-2	2014 11 13 S2-02	11/13/2014	EUROPIUM-152	0	0.144	0.259	0.00
STOCK-2	2014 11 13 S2-02	11/13/2014	EUROPIUM-154	0.048	0.088	0.181	0.01
STOCK-2	2014 11 13 S2-02	11/13/2014	SILVER-108M	0.021	0.029	0.169	0.00
STOCK-2	2014 11 13 S2-02	11/13/2014	PLUTONIUM-238	0.02	0.041	0.063	0.01
STOCK-2	2014 11 13 S2-02	11/13/2014	PU-239/240	-0.006	0.017	0.032	0.00

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Survey Area	Sample ID	Sample Date	Analyte	Result (pCi/g)	Uncertainty (pCi/g)	MDC (pCi/g)	DCGL Fraction
STOCK-2	2014 11 13 S2-02	11/13/2014	CARBON-14	-0.255	0.705	1.67	0.00
STOCK-2	2014 11 13 S2-02	11/13/2014	NICKEL-63	-0.119	0.699	2.153	0.00
STOCK-2	2014 11 13 S2-02	11/13/2014	TRITIUM	0.809	1.41	2.42	0.01
STOCK-2	2014 11 13 S2-02-DUP	11/13/2014	STRONTIUM-90	-0.0457	0.0585	0.162	0.00
STOCK-2	2014 11 13 S2-02-DUP	11/13/2014	AMERICIUM-241	0.004	0.169	0.299	0.00
STOCK-2	2014 11 13 S2-02-DUP	11/13/2014	CESIUM-137	0	0.094	0.175	0.00
STOCK-2	2014 11 13 S2-02-DUP	11/13/2014	COBALT-60	0.039	0.062	0.172	0.01
STOCK-2	2014 11 13 S2-02-DUP	11/13/2014	EUROPIUM-152	0	0.004	0.265	0.00
STOCK-2	2014 11 13 S2-02-DUP	11/13/2014	EUROPIUM-154	-0.017	0.103	0.181	0.00
STOCK-2	2014 11 13 S2-02-DUP	11/13/2014	SILVER-108M	-0.002	0.07	0.133	0.00
STOCK-2	2014 11 13 S2-02-DUP	11/13/2014	PLUTONIUM-238	0.026	0.029	0.043	0.01
STOCK-2	2014 11 13 S2-02-DUP	11/13/2014	PU-239/240	-0.009	0.015	0.029	0.00
STOCK-2	2014 11 13 S2-02-DUP	11/13/2014	CARBON-14	0.649	0.993	1.71	0.05
STOCK-2	2014 11 13 S2-02-DUP	11/13/2014	NICKEL-63	0.123	0.567	1.378	0.00
STOCK-2	2014 11 13 S2-02-DUP	11/13/2014	TRITIUM	0	1.42	2.6	0.00
STOCK-2	2014 11 14 S2-01	11/14/2014	STRONTIUM-90	-0.101	0.0916	0.251	0.00
STOCK-2	2014 11 14 S2-01	11/14/2014	AMERICIUM-241	0.109	0.305	0.525	0.05
STOCK-2	2014 11 14 S2-01	11/14/2014	CESIUM-137	0.027	0.054	0.093	0.00
STOCK-2	2014 11 14 S2-01	11/14/2014	COBALT-60	-0.01	0.392	0.048	0.00
STOCK-2	2014 11 14 S2-01	11/14/2014	EUROPIUM-152	0.055	0.147	0.252	0.01
STOCK-2	2014 11 14 S2-01	11/14/2014	EUROPIUM-154	0.029	0.092	0.159	0.00
STOCK-2	2014 11 14 S2-01	11/14/2014	SILVER-108M	-0.024	0.067	0.117	0.00
STOCK-2	2014 11 14 S2-01	11/14/2014	PLUTONIUM-238	-0.026	0.031	0.065	0.00
STOCK-2	2014 11 14 S2-01	11/14/2014	PU-239/240	0.004	0.01	0.019	0.00
STOCK-2	2014 11 14 S2-01	11/14/2014	CARBON-14	0.229	0.318	0.535	0.02
STOCK-2	2014 11 14 S2-01	11/14/2014	NICKEL-63	2.208	1.39	3.419	0.00
STOCK-2	2014 11 14 S2-01	11/14/2014	TRITIUM	0.172	1.64	2.95	0.00
STOCK-2	2014 11 14 S2-02	11/14/2014	STRONTIUM-90	0.07	0.114	0.254	0.04
STOCK-2	2014 11 14 S2-02	11/14/2014	AMERICIUM-241	0.234	0.334	0.553	0.11
STOCK-2	2014 11 14 S2-02	11/14/2014	CESIUM-137	0.032	0.06	0.102	0.00
STOCK-2	2014 11 14 S2-02	11/14/2014	COBALT-60	-0.003	0.11	0.11	0.00
STOCK-2	2014 11 14 S2-02	11/14/2014	EUROPIUM-152	-0.005	0.218	0.277	0.00
STOCK-2	2014 11 14 S2-02	11/14/2014	EUROPIUM-154	-0.028	0.104	0.178	0.00
STOCK-2	2014 11 14 S2-02	11/14/2014	SILVER-108M	0.003	0.06	0.109	0.00
STOCK-2	2014 11 14 S2-02	11/14/2014	PLUTONIUM-238	0.018	0.038	0.071	0.01
STOCK-2	2014 11 14 S2-02	11/14/2014	PU-239/240	0.008	0.021	0.042	0.00
STOCK-2	2014 11 14 S2-02	11/14/2014	CARBON-14	0.727	0.378	0.555	0.06
STOCK-2	2014 11 14 S2-02	11/14/2014	NICKEL-63	1.562	1.393	3.766	0.00
STOCK-2	2014 11 14 S2-02	11/14/2014	TRITIUM	1.68	1.75	2.87	0.02

Appendix F1 - Laboratory Results Table

Survey Area	Sample ID	Sample Date	Analyte	Result (pCi/g)	Uncertainty (pCi/g)	MDC (pCi/g)	DCGL Fraction
STOCK-2	2014 11 14 S2-03	11/14/2014	STRONTIUM-90	-0.0142	0.0749	0.187	0.00
STOCK-2	2014 11 14 S2-03	11/14/2014	AMERICIUM-241	0.023	0.152	0.267	0.01
STOCK-2	2014 11 14 S2-03	11/14/2014	CESIUM-137	0	0.052	0.105	0.00
STOCK-2	2014 11 14 S2-03	11/14/2014	COBALT-60	-0.018	0.736	0.212	0.00
STOCK-2	2014 11 14 S2-03	11/14/2014	EUROPIUM-152	0.091	0.157	0.233	0.01
STOCK-2	2014 11 14 S2-03	11/14/2014	EUROPIUM-154	-0.03	0.108	0.188	0.00
STOCK-2	2014 11 14 S2-03	11/14/2014	SILVER-108M	-0.016	0.098	0.177	0.00
STOCK-2	2014 11 14 S2-03	11/14/2014	PLUTONIUM-238	0.032	0.034	0.056	0.01
STOCK-2	2014 11 14 S2-03	11/14/2014	PU-239/240	0.012	0.014	0.021	0.01
STOCK-2	2014 11 14 S2-03	11/14/2014	CARBON-14	-0.237	0.293	0.563	0.00
STOCK-2	2014 11 14 S2-03	11/14/2014	NICKEL-63	0.053	1.302	3.912	0.00
STOCK-2	2014 11 14 S2-03	11/14/2014	TRITIUM	0.176	1.67	3.01	0.00
STOCK-2	2014 11 14 S2-04	11/14/2014	STRONTIUM-90	-0.0021	0.0809	0.199	0.00
STOCK-2	2014 11 14 S2-04	11/14/2014	AMERICIUM-241	-0.013	0.368	0.482	0.00
STOCK-2	2014 11 14 S2-04	11/14/2014	CESIUM-137	0.038	0.054	0.09	0.00
STOCK-2	2014 11 14 S2-04	11/14/2014	COBALT-60	0.061	0.06	0.096	0.02
STOCK-2	2014 11 14 S2-04	11/14/2014	EUROPIUM-152	-0.033	0.119	0.206	0.00
STOCK-2	2014 11 14 S2-04	11/14/2014	EUROPIUM-154	0.031	0.062	0.172	0.00
STOCK-2	2014 11 14 S2-04	11/14/2014	SILVER-108M	0.038	0.038	0.097	0.00
STOCK-2	2014 11 14 S2-04	11/14/2014	PLUTONIUM-238	-0.017	0.031	0.067	0.00
STOCK-2	2014 11 14 S2-04	11/14/2014	PU-239/240	0.006	0.018	0.036	0.00
STOCK-2	2014 11 14 S2-04	11/14/2014	CARBON-14	1.22	0.424	0.544	0.10
STOCK-2	2014 11 14 S2-04	11/14/2014	NICKEL-63	0.031	0.632	0.913	0.00
STOCK-2	2014 11 14 S2-04	11/14/2014	TRITIUM	1.01	1.89	3.26	0.01
STOCK-2	2014 11 15 S2-01	11/15/2014	STRONTIUM-90	0.121	0.101	0.204	0.07
STOCK-2	2014 11 15 S2-01	11/15/2014	AMERICIUM-241	0.07	0.139	0.236	0.03
STOCK-2	2014 11 15 S2-01	11/15/2014	CESIUM-137	0	0.096	0.178	0.00
STOCK-2	2014 11 15 S2-01	11/15/2014	COBALT-60	-0.046	0.22	0.183	0.00
STOCK-2	2014 11 15 S2-01	11/15/2014	EUROPIUM-152	0.114	0.14	0.216	0.02
STOCK-2	2014 11 15 S2-01	11/15/2014	EUROPIUM-154	0.045	0.085	0.144	0.01
STOCK-2	2014 11 15 S2-01	11/15/2014	SILVER-108M	0.01	0.055	0.105	0.00
STOCK-2	2014 11 15 S2-01	11/15/2014	PLUTONIUM-238	0.003	0.034	0.066	0.00
STOCK-2	2014 11 15 S2-01	11/15/2014	PU-239/240	-0.011	0.016	0.041	0.00
STOCK-2	2014 11 15 S2-01	11/15/2014	CARBON-14	-0.106	0.292	0.542	0.00
STOCK-2	2014 11 15 S2-01	11/15/2014	NICKEL-63	1.047	1.367	3.851	0.00
STOCK-2	2014 11 15 S2-01	11/15/2014	TRITIUM	0.584	1.49	2.59	0.01
STOCK-2	2014 11 15 S2-02	11/15/2014	STRONTIUM-90	0.304	0.132	0.209	0.18
STOCK-2	2014 11 15 S2-02	11/15/2014	AMERICIUM-241	0.012	0.296	0.526	0.01
STOCK-2	2014 11 15 S2-02	11/15/2014	CESIUM-137	0.013	0.06	0.107	0.00

Appendix F1 - Laboratory Results Table

Survey Area	Sample ID	Sample Date	Analyte	Result (pCi/g)	Uncertainty (pCi/g)	MDC (pCi/g)	DCGL Fraction
STOCK-2	2014 11 15 S2-02	11/15/2014	COBALT-60	-0.036	0.117	0.122	0.00
STOCK-2	2014 11 15 S2-02	11/15/2014	EUROPIUM-152	0.043	0.084	0.214	0.01
STOCK-2	2014 11 15 S2-02	11/15/2014	EUROPIUM-154	0.068	0.086	0.14	0.01
STOCK-2	2014 11 15 S2-02	11/15/2014	SILVER-108M	0	0.031	0.061	0.00
STOCK-2	2014 11 15 S2-02	11/15/2014	PLUTONIUM-238	-0.004	0.024	0.052	0.00
STOCK-2	2014 11 15 S2-02	11/15/2014	PU-239/240	0.005	0.014	0.029	0.00
STOCK-2	2014 11 15 S2-02	11/15/2014	CARBON-14	-0.257	0.28	0.542	0.00
STOCK-2	2014 11 15 S2-02	11/15/2014	NICKEL-63	1.622	1.334	3.361	0.00
STOCK-2	2014 11 15 S2-02	11/15/2014	TRITIUM	1.04	1.48	2.49	0.01
STOCK-2	2014 12 08 S2-01	12/8/2014	STRONTIUM-90	0.0395	0.0989	0.227	0.02
STOCK-2	2014 12 08 S2-01	12/8/2014	AMERICIUM-241	0	0.173	0.305	0.00
STOCK-2	2014 12 08 S2-01	12/8/2014	CESIUM-137	0.018	0.074	0.134	0.00
STOCK-2	2014 12 08 S2-01	12/8/2014	COBALT-60	-0.018	0.721	0.083	0.00
STOCK-2	2014 12 08 S2-01	12/8/2014	EUROPIUM-152	0.072	0.134	0.226	0.01
STOCK-2	2014 12 08 S2-01	12/8/2014	EUROPIUM-154	0.028	0.049	0.181	0.00
STOCK-2	2014 12 08 S2-01	12/8/2014	SILVER-108M	0.181	0.069	0.138	0.02
STOCK-2	2014 12 08 S2-01	12/8/2014	PLUTONIUM-238	0.005	0.019	0.034	0.00
STOCK-2	2014 12 08 S2-01	12/8/2014	PU-239/240	0	0.009	0.019	0.00
STOCK-2	2014 12 08 S2-01	12/8/2014	CARBON-14	-0.065	0.398	0.738	0.00
STOCK-2	2014 12 08 S2-01	12/8/2014	NICKEL-63	1.317	1.282	3.405	0.00
STOCK-2	2014 12 08 S2-01	12/8/2014	TRITIUM	-0.512	1.8	3.33	0.00
STOCK-2	2014 12 09 S2-01	12/9/2014	STRONTIUM-90	-0.12	0.0943	0.268	0.00
STOCK-2	2014 12 09 S2-01	12/9/2014	AMERICIUM-241	-0.087	0.31	0.538	0.00
STOCK-2	2014 12 09 S2-01	12/9/2014	CESIUM-137	0.021	0.056	0.098	0.00
STOCK-2	2014 12 09 S2-01	12/9/2014	COBALT-60	0.013	0.06	0.112	0.00
STOCK-2	2014 12 09 S2-01	12/9/2014	EUROPIUM-152	-0.033	0.169	0.292	0.00
STOCK-2	2014 12 09 S2-01	12/9/2014	EUROPIUM-154	-0.002	0.193	0.201	0.00
STOCK-2	2014 12 09 S2-01	12/9/2014	SILVER-108M	0.047	0.042	0.1	0.01
STOCK-2	2014 12 09 S2-01	12/9/2014	PLUTONIUM-238	0.009	0.027	0.048	0.00
STOCK-2	2014 12 09 S2-01	12/9/2014	PU-239/240	0.009	0.015	0.026	0.00
STOCK-2	2014 12 09 S2-01	12/9/2014	CARBON-14	0.211	0.415	0.717	0.02
STOCK-2	2014 12 09 S2-01	12/9/2014	NICKEL-63	-0.537	1.159	3.57	0.00
STOCK-2	2014 12 09 S2-01	12/9/2014	TRITIUM	0.24	1.75	3.12	0.00
STOCK-2	2014 12 10 S2-01	12/10/2014	STRONTIUM-90	-0.119	0.0949	0.268	0.00
STOCK-2	2014 12 10 S2-01	12/10/2014	AMERICIUM-241	0.058	0.126	0.216	0.03
STOCK-2	2014 12 10 S2-01	12/10/2014	CESIUM-137	-0.012	0.081	0.132	0.00
STOCK-2	2014 12 10 S2-01	12/10/2014	COBALT-60	-0.017	2.158	0.167	0.00
STOCK-2	2014 12 10 S2-01	12/10/2014	EUROPIUM-152	-0.01	0.295	0.22	0.00
STOCK-2	2014 12 10 S2-01	12/10/2014	EUROPIUM-154	0.016	0.085	0.15	0.00

Appendix F1 - Laboratory Results Table

Survey Area	Sample ID	Sample Date	Analyte	Result (pCi/g)	Uncertainty (pCi/g)	MDC (pCi/g)	DCGL Fraction
STOCK-2	2014 12 10 S2-01	12/10/2014	SILVER-108M	-0.01	0.084	0.153	0.00
STOCK-2	2014 12 10 S2-01	12/10/2014	PLUTONIUM-238	-0.012	0.032	0.061	0.00
STOCK-2	2014 12 10 S2-01	12/10/2014	PU-239/240	0.003	0.009	0.018	0.00
STOCK-2	2014 12 10 S2-01	12/10/2014	CARBON-14	0.38	0.433	0.715	0.03
STOCK-2	2014 12 10 S2-01	12/10/2014	NICKEL-63	0.964	1.104	2.541	0.00
STOCK-2	2014 12 10 S2-01	12/10/2014	TRITIUM	0.0903	1.64	2.93	0.00
STOCK-2	2014 12 10 S2-02	12/10/2014	STRONTIUM-90	-0.168	0.0945	0.265	0.00
STOCK-2	2014 12 10 S2-02	12/10/2014	AMERICIUM-241	0.183	0.287	0.478	0.09
STOCK-2	2014 12 10 S2-02	12/10/2014	CESIUM-137	-0.014	0.053	0.093	0.00
STOCK-2	2014 12 10 S2-02	12/10/2014	COBALT-60	-0.001	0.067	0.094	0.00
STOCK-2	2014 12 10 S2-02	12/10/2014	EUROPIUM-152	0	0.153	0.267	0.00
STOCK-2	2014 12 10 S2-02	12/10/2014	EUROPIUM-154	0.028	0.089	0.153	0.00
STOCK-2	2014 12 10 S2-02	12/10/2014	SILVER-108M	0.036	0.055	0.093	0.00
STOCK-2	2014 12 10 S2-02	12/10/2014	PLUTONIUM-238	0.027	0.03	0.048	0.01
STOCK-2	2014 12 10 S2-02	12/10/2014	PU-239/240	-0.006	0.014	0.032	0.00
STOCK-2	2014 12 10 S2-02	12/10/2014	CARBON-14	0.278	0.428	0.726	0.02
STOCK-2	2014 12 10 S2-02	12/10/2014	NICKEL-63	-0.3	1.074	2.994	0.00
STOCK-2	2014 12 10 S2-02	12/10/2014	TRITIUM	-0.375	1.66	3.04	0.00
STOCK-2	2014 12 10 S2-02-DUP	12/10/2014	STRONTIUM-90	0.086	0.118	0.257	0.05
STOCK-2	2014 12 10 S2-02-DUP	12/10/2014	AMERICIUM-241	0.038	0.142	0.245	0.02
STOCK-2	2014 12 10 S2-02-DUP	12/10/2014	CESIUM-137	0.013	0.049	0.092	0.00
STOCK-2	2014 12 10 S2-02-DUP	12/10/2014	COBALT-60	0.003	0.061	0.128	0.00
STOCK-2	2014 12 10 S2-02-DUP	12/10/2014	EUROPIUM-152	0.024	0.111	0.196	0.00
STOCK-2	2014 12 10 S2-02-DUP	12/10/2014	EUROPIUM-154	0.013	0.023	0.163	0.00
STOCK-2	2014 12 10 S2-02-DUP	12/10/2014	SILVER-108M	0.034	0.043	0.124	0.00
STOCK-2	2014 12 10 S2-02-DUP	12/10/2014	PLUTONIUM-238	0.014	0.022	0.038	0.01
STOCK-2	2014 12 10 S2-02-DUP	12/10/2014	PU-239/240	-0.01	0.008	0.022	0.00
STOCK-2	2014 12 10 S2-02-DUP	12/10/2014	CARBON-14	0.278	0.427	0.725	0.02
STOCK-2	2014 12 10 S2-02-DUP	12/10/2014	NICKEL-63	2.948	1.468	3.776	0.00
STOCK-2	2014 12 10 S2-02-DUP	12/10/2014	TRITIUM	-0.622	1.9	3.52	0.00
STOCK-2	2014 12 12 S2-01	12/12/2014	AMERICIUM-241	-0.005	0.193	0.288	0.00
STOCK-2	2014 12 12 S2-01	12/12/2014	CESIUM-137	-0.017	0.083	0.151	0.00
STOCK-2	2014 12 12 S2-01	12/12/2014	COBALT-60	0.018	0.117	0.222	0.00
STOCK-2	2014 12 12 S2-01	12/12/2014	EUROPIUM-152	0.011	0.11	0.2	0.00
STOCK-2	2014 12 12 S2-01	12/12/2014	EUROPIUM-154	0.06	0.098	0.164	0.01
STOCK-2	2014 12 12 S2-01	12/12/2014	SILVER-108M	0	0.085	0.161	0.00
STOCK-2	2014 12 12 S2-01	12/12/2014	TRITIUM	-0.106	1.14	2.08	0.00
STOCK-2	2014 12 12 S2-02	12/12/2014	AMERICIUM-241	-0.067	0.175	0.296	0.00
STOCK-2	2014 12 12 S2-02	12/12/2014	CESIUM-137	0.025	0.078	0.14	0.00

Appendix F1 - Laboratory Results Table

Survey Area	Sample ID	Sample Date	Analyte	Result (pCi/g)	Uncertainty (pCi/g)	MDC (pCi/g)	DCGL Fraction
STOCK-2	2014 12 12 S2-02	12/12/2014	COBALT-60	-0.047	0.366	0.191	0.00
STOCK-2	2014 12 12 S2-02	12/12/2014	EUROPIUM-152	-0.003	29.46	0.262	0.00
STOCK-2	2014 12 12 S2-02	12/12/2014	EUROPIUM-154	-0.019	0.113	0.194	0.00
STOCK-2	2014 12 12 S2-02	12/12/2014	SILVER-108M	0.006	0.097	0.179	0.00
STOCK-2	2014 12 12 S2-02	12/12/2014	TRITIUM	0.996	1.84	3.16	0.01
STOCK-2	2015 01 29 S2-01	1/29/2015	STRONTIUM-90	-0.016	0.0906	0.206	0.00
STOCK-2	2015 01 29 S2-01	1/29/2015	AMERICIUM-241	0	0.07	0.333	0.00
STOCK-2	2015 01 29 S2-01	1/29/2015	CESIUM-137	-0.018	0.108	0.131	0.00
STOCK-2	2015 01 29 S2-01	1/29/2015	COBALT-60	0.078	0.045	0.084	0.02
STOCK-2	2015 01 29 S2-01	1/29/2015	EUROPIUM-152	0.142	0.103	0.283	0.02
STOCK-2	2015 01 29 S2-01	1/29/2015	EUROPIUM-154	0.102	0.079	0.184	0.01
STOCK-2	2015 01 29 S2-01	1/29/2015	SILVER-108M	0	0.028	0.169	0.00
STOCK-2	2015 01 29 S2-01	1/29/2015	PLUTONIUM-238	0.011	0.023	0.041	0.00
STOCK-2	2015 01 29 S2-01	1/29/2015	PU-239/240	0.01	0.012	0.019	0.00
STOCK-2	2015 01 29 S2-01	1/29/2015	CARBON-14	-0.532	0.391	0.746	0.00
STOCK-2	2015 01 29 S2-01	1/29/2015	NICKEL-63	-0.882	0.935	2.627	0.00
STOCK-2	2015 01 29 S2-01	1/29/2015	TRITIUM	-0.811	1.34	2.52	0.00
STOCK-2	2015 01 29 S2-01-dup	1/29/2015	STRONTIUM-90	-0.0369	0.0758	0.177	0.00
STOCK-2	2015 01 29 S2-01-dup	1/29/2015	AMERICIUM-241	0	0.278	0.672	0.00
STOCK-2	2015 01 29 S2-01-dup	1/29/2015	CESIUM-137	0	0.012	0.147	0.00
STOCK-2	2015 01 29 S2-01-dup	1/29/2015	COBALT-60	0	0.022	0.133	0.00
STOCK-2	2015 01 29 S2-01-dup	1/29/2015	EUROPIUM-152	0	0.048	0.275	0.00
STOCK-2	2015 01 29 S2-01-dup	1/29/2015	EUROPIUM-154	0	0.043	0.221	0.00
STOCK-2	2015 01 29 S2-01-dup	1/29/2015	SILVER-108M	0.053	0.095	0.098	0.01
STOCK-2	2015 01 29 S2-01-dup	1/29/2015	PLUTONIUM-238	-0.001	0.015	0.031	0.00
STOCK-2	2015 01 29 S2-01-dup	1/29/2015	PU-239/240	0.006	0.009	0.014	0.00
STOCK-2	2015 01 29 S2-01-dup	1/29/2015	CARBON-14	-0.298	0.379	0.703	0.00
STOCK-2	2015 01 29 S2-01-dup	1/29/2015	NICKEL-63	0.432	1.283	3.95	0.00
STOCK-2	2015 01 29 S2-01-dup	1/29/2015	TRITIUM	-0.237	1.79	3.25	0.00
STOCK-3	2014 11 01 S3-01	11/1/2014	STRONTIUM-90	0.0632	0.0618	0.129	0.04
STOCK-3	2014 11 01 S3-01	11/1/2014	AMERICIUM-241	-0.12	0.427	0.704	0.00
STOCK-3	2014 11 01 S3-01	11/1/2014	CESIUM-137	0.052	0.063	0.103	0.00
STOCK-3	2014 11 01 S3-01	11/1/2014	COBALT-60	0.023	0.065	0.12	0.01
STOCK-3	2014 11 01 S3-01	11/1/2014	EUROPIUM-152	-0.001	0.214	0.287	0.00
STOCK-3	2014 11 01 S3-01	11/1/2014	EUROPIUM-154	-0.046	0.123	0.21	0.00
STOCK-3	2014 11 01 S3-01	11/1/2014	SILVER-108M	0	0.05	0.095	0.00
STOCK-3	2014 11 01 S3-01	11/1/2014	PLUTONIUM-238	-0.006	0.031	0.064	0.00
STOCK-3	2014 11 01 S3-01	11/1/2014	PU-239/240	-0.001	0.015	0.035	0.00
STOCK-3	2014 11 01 S3-01	11/1/2014	CARBON-14	-0.043	0.388	0.716	0.00

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Survey Area	Sample ID	Sample Date	Analyte	Result (pCi/g)	Uncertainty (pCi/g)	MDC (pCi/g)	DCGL Fraction
STOCK-3	2014 11 01 S3-01	11/1/2014	NICKEL-63	-0.103	1.267	3.773	0.00
STOCK-3	2014 11 01 S3-01	11/1/2014	TRITIUM	0.394	0.994	1.71	0.00
STOCK-3	2014 11 01 S3-02	11/1/2014	STRONTIUM-90	0.343	0.144	0.228	0.20
STOCK-3	2014 11 01 S3-02	11/1/2014	AMERICIUM-241	0.004	0.16	0.286	0.00
STOCK-3	2014 11 01 S3-02	11/1/2014	CESIUM-137	0.12	0.108	0.165	0.01
STOCK-3	2014 11 01 S3-02	11/1/2014	COBALT-60	0.041	0.088	0.163	0.01
STOCK-3	2014 11 01 S3-02	11/1/2014	EUROPIUM-152	-0.028	0.196	0.243	0.00
STOCK-3	2014 11 01 S3-02	11/1/2014	EUROPIUM-154	-0.019	0.101	0.178	0.00
STOCK-3	2014 11 01 S3-02	11/1/2014	SILVER-108M	-0.053	0.112	0.192	0.00
STOCK-3	2014 11 01 S3-02	11/1/2014	PLUTONIUM-238	0.013	0.049	0.093	0.01
STOCK-3	2014 11 01 S3-02	11/1/2014	PU-239/240	-0.012	0.023	0.058	0.00
STOCK-3	2014 11 01 S3-02	11/1/2014	CARBON-14	-0.379	0.349	0.707	0.00
STOCK-3	2014 11 01 S3-02	11/1/2014	NICKEL-63	0.991	1.25	3.169	0.00
STOCK-3	2014 11 01 S3-02	11/1/2014	TRITIUM	0.768	0.952	1.59	0.01
STOCK-3	2014 11 04 S3-01	11/4/2014	STRONTIUM-90	0.089	0.101	0.215	0.05
STOCK-3	2014 11 04 S3-01	11/4/2014	AMERICIUM-241	-0.03	0.391	0.594	0.00
STOCK-3	2014 11 04 S3-01	11/4/2014	CESIUM-137	0.073	0.064	0.099	0.01
STOCK-3	2014 11 04 S3-01	11/4/2014	COBALT-60	0.037	0.057	0.1	0.01
STOCK-3	2014 11 04 S3-01	11/4/2014	EUROPIUM-152	0.055	0.104	0.224	0.01
STOCK-3	2014 11 04 S3-01	11/4/2014	EUROPIUM-154	-0.008	0.067	0.12	0.00
STOCK-3	2014 11 04 S3-01	11/4/2014	SILVER-108M	-0.031	0.069	0.118	0.00
STOCK-3	2014 11 04 S3-01	11/4/2014	PLUTONIUM-238	-0.006	0.025	0.053	0.00
STOCK-3	2014 11 04 S3-01	11/4/2014	PU-239/240	0.005	0.015	0.03	0.00
STOCK-3	2014 11 04 S3-01	11/4/2014	CARBON-14	0	0.379	0.693	0.00
STOCK-3	2014 11 04 S3-01	11/4/2014	NICKEL-63	0.947	1.222	3.03	0.00
STOCK-3	2014 11 04 S3-01	11/4/2014	TRITIUM	0.0647	0.798	1.4	0.00
SU-1	SU1-005	1/27/2015	AMERICIUM-241	0.00154	0.0996	0.174	0.00
SU-1	SU1-005	1/27/2015	CESIUM-137	0.0161	0.0459	0.0813	0.00
SU-1	SU1-005	1/27/2015	COBALT-60	0.00746	0.0525	0.1	0.00
SU-1	SU1-005	1/27/2015	EUROPIUM-152	0.05	0.0562	0.163	0.01
SU-1	SU1-005	1/27/2015	EUROPIUM-154	0.03	0.0643	0.605	0.00
SU-1	SU1-005	1/27/2015	SILVER-108M	0.0228	0.0355	0.0596	0.00
SU-1	SU1-005	1/27/2015	TOTAL BETA STRONTIUM	0.0246	0.168	0.299	0.01
SU-1	SU1-005	1/27/2015	TRITIUM	0.151	0.356	0.603	0.00
SU-1	SU1-005	1/27/2015	PU-242 (T)	7.94	0.864	0.0541	
SU-1	SU1-005	1/27/2015	PLUTONIUM-238	0.00655	0.0285	0.0677	0.00
SU-1	SU1-005	1/27/2015	PLUTONIUM-239/240	-0.00357	0.00506	0.0495	
SU-1	SU1-005(160-10308-7)	1/27/2015	CARBON-14	-2.00E-01	2.30E-01	5.02E-01	0.00
SU-1	SU1-005(160-10308-7)	1/27/2015	NICKEL-63	1.21E+00	2.90E+00	6.68E+00	0.00

Appendix F1 - Laboratory Results Table

Survey Area	Sample ID	Sample Date	Analyte	Result (pCi/g)	Uncertainty (pCi/g)	MDC (pCi/g)	DCGL Fraction
SU-1	SU1-005(160-10308-7)	1/27/2015	CARBON-14	-2.00E-01	2.30E-01	5.02E-01	0.00
SU-1	SU1-005(160-10308-7)	1/27/2015	NICKEL-63	1.21E+00	2.90E+00	6.68E+00	0.00
SU-1	SU1-02(160-10376-1)	2/3/2015	CARBON-14	1.03E-01	2.30E-01	4.88E-01	0.01
SU-1	SU1-02(160-10376-1)	2/3/2015	NICKEL-63	3.04E+00	3.10E+00	6.80E+00	0.00
SU-1	SU1-02(160-10376-1) DUP	2/3/2015	CARBON-14	-1.13E-01	2.20E-01	4.89E-01	0.00
SU-1	SU1-04(160-10376-2)	2/3/2015	CARBON-14	6.02E-02	2.30E-01	4.93E-01	0.01
SU-1	SU1-04(160-10376-2)	2/3/2015	NICKEL-63	4.83E+00	3.00E+00	6.41E+00	0.00
SU-1	SU1-04(160-10376-2) DUP	2/3/2015	NICKEL-63	4.67E+00	3.10E+00	6.67E+00	0.00
SU-1	SU1-06(160-10376-3)	2/3/2015	CARBON-14	6.42E-02	2.30E-01	4.87E-01	0.01
SU-1	SU1-06(160-10376-3)	2/3/2015	NICKEL-63	9.44E-01	2.80E+00	6.30E+00	0.00
SU-1	SU1-06-DUP(160-10376-4)	2/3/2015	CARBON-14	9.78E-03	2.20E-01	4.70E-01	0.00
SU-1	SU1-06-DUP(160-10376-4)	2/3/2015	NICKEL-63	-2.23E-01	2.70E+00	6.26E+00	0.00
SU-1	SU1-07(160-10376-5)	2/3/2015	CARBON-14	-5.81E-02	2.20E-01	4.80E-01	0.00
SU-1	SU1-07(160-10376-5)	2/3/2015	NICKEL-63	3.81E+00	3.10E+00	6.63E+00	0.00
SU-1	SU1-09(160-10376-6)	2/3/2015	CARBON-14	-3.49E-02	2.30E-01	4.90E-01	0.00
SU-1	SU1-09(160-10376-6)	2/3/2015	NICKEL-63	3.14E+00	2.80E+00	6.01E+00	0.00
SU-1	SU1-16(160-10376-7)	2/3/2015	CARBON-14	-2.44E-01	2.10E-01	4.72E-01	0.00
SU-1	SU1-16(160-10376-7)	2/3/2015	NICKEL-63	1.81E+00	3.00E+00	6.63E+00	0.00
SU-2	SU2-1(160-10413-9)	2/6/2015	CARBON-14	9.83E-02	2.10E-01	4.63E-01	0.01
SU-2	SU2-1(160-10413-9)	2/6/2015	NICKEL-63	5.21E-01	2.70E+00	6.37E+00	0.00
SU-2	SU2-11(160-10413-11)	2/6/2015	CARBON-14	8.50E-02	2.10E-01	4.73E-01	0.01
SU-2	SU2-11(160-10413-11)	2/6/2015	NICKEL-63	2.43E+00	2.80E+00	6.53E+00	0.00
SU-2	SU2-16(160-10413-12)	2/6/2015	CARBON-14	1.07E-01	2.10E-01	4.54E-01	0.01
SU-2	SU2-16(160-10413-12)	2/6/2015	NICKEL-63	2.49E+00	2.90E+00	6.71E+00	0.00
SU-2	SU2-17(160-10413-13)	2/6/2015	CARBON-14	1.03E-02	2.00E-01	4.56E-01	0.00
SU-2	SU2-17(160-10413-13)	2/6/2015	NICKEL-63	1.11E+00	2.90E+00	6.77E+00	0.00
SU-2	SU2-22(160-10413-14)	2/6/2015	CARBON-14	7.19E-02	2.00E-01	4.56E-01	0.01
SU-2	SU2-22(160-10413-14)	2/6/2015	NICKEL-63	1.74E+00	2.80E+00	6.53E+00	0.00
SU-2	SU2-22-DUP(160-10413-15)	2/6/2015	CARBON-14	-1.29E-01	2.00E-01	4.61E-01	0.00
SU-2	SU2-22-DUP(160-10413-15)	2/6/2015	NICKEL-63	3.60E+00	3.00E+00	6.66E+00	0.00
SU-2	SU2-29(160-10413-16)	2/6/2015	CARBON-14	3.88E-02	2.10E-01	4.64E-01	0.00
SU-2	SU2-29(160-10413-16)	2/6/2015	NICKEL-63	5.00E+00	2.80E+00	6.04E+00	0.00
SU-2	SU2-30(160-10413-17)	2/6/2015	CARBON-14	3.41E-01	2.20E-01	4.49E-01	0.03
SU-2	SU2-30(160-10413-17)	2/6/2015	NICKEL-63	2.59E+00	2.60E+00	5.77E+00	0.00
SU-2	SU2-6(160-10413-10)	2/6/2015	CARBON-14	2.12E-01	2.20E-01	4.64E-01	0.02
SU-2	SU2-6(160-10413-10)	2/6/2015	NICKEL-63	1.63E+00	2.80E+00	6.47E+00	0.00
SU-3	SU3-010	1/29/2015	AMERICIUM-241	0.0928	0.144	0.247	0.04
SU-3	SU3-010	1/29/2015	CESIUM-137	-0.00486	0.0595	0.105	0.00
SU-3	SU3-010	1/29/2015	COBALT-60	0.000178	0.0716	0.152	0.00

Appendix F1 - Laboratory Results Table

Survey Area	Sample ID	Sample Date	Analyte	Result (pCi/g)	Uncertainty (pCi/g)	MDC (pCi/g)	DCGL Fraction
SU-3	SU3-010	1/29/2015	EUROPIUM-152	0.000645	0.133	0.248	0.00
SU-3	SU3-010	1/29/2015	EUROPIUM-154	0.0574	0.116	0.966	0.01
SU-3	SU3-010	1/29/2015	SILVER-108M	0.0202	0.0366	0.0812	0.00
SU-3	SU3-010	1/29/2015	TOTAL BETA STRONTIUM	0.122	0.12	0.194	0.07
SU-3	SU3-010	1/29/2015	TRITIUM	-0.473	0.337	0.671	0.00
SU-3	SU3-010	1/29/2015	PU-242 (T)	7.72	0.837	0.0517	
SU-3	SU3-010	1/29/2015	PLUTONIUM-238	-0.00116	0.0204	0.0631	0.00
SU-3	SU3-010	1/29/2015	PLUTONIUM-239/240	-0.00174	0.00348	0.0423	
SU-3	SU3-010(160-10329-5)	2/3/2015	CARBON-14	-1.41E-01	2.30E-01	5.09E-01	0.00
SU-3	SU3-010(160-10329-5)	2/3/2015	NICKEL-63	1.94E+00	2.90E+00	6.39E+00	0.00
SU-3	SU3-010(160-10329-5)	1/29/2015	CARBON-14	-1.41E-01	2.30E-01	5.09E-01	0.00
SU-3	SU3-010(160-10329-5)	1/29/2015	NICKEL-63	1.94E+00	2.90E+00	6.39E+00	0.00
SU-3	SU3-013	1/29/2015	AMERICIUM-241	0.017	0.116	0.203	0.01
SU-3	SU3-013	1/29/2015	CESIUM-137	-0.0102	0.0541	0.0979	0.00
SU-3	SU3-013	1/29/2015	COBALT-60	0.0278	0.0527	0.0922	0.01
SU-3	SU3-013	1/29/2015	EUROPIUM-152	0.0389	0.0867	0.22	0.01
SU-3	SU3-013	1/29/2015	EUROPIUM-154	0.0291	0.23	0.6	0.00
SU-3	SU3-013	1/29/2015	SILVER-108M	0.0372	0.0251	0.062	0.00
SU-3	SU3-013	1/29/2015	TOTAL BETA STRONTIUM	0.214	0.101	0.143	0.13
SU-3	SU3-013	1/29/2015	TRITIUM	-0.432	0.31	0.617	0.00
SU-3	SU3-013	1/29/2015	PU-242 (T)	4.95	0.6	0.0575	
SU-3	SU3-013	1/29/2015	PLUTONIUM-238	0.00657	0.0316	0.0854	0.00
SU-3	SU3-013	1/29/2015	PLUTONIUM-239/240	0.0864	0.0875	0.126	
SU-3	SU3-013(160-10329-2)	2/3/2015	CARBON-14	1.58E-02	2.40E-01	5.05E-01	0.00
SU-3	SU3-013(160-10329-2)	2/3/2015	NICKEL-63	1.62E+00	3.10E+00	7.00E+00	0.00
SU-3	SU3-013(160-10329-2)	1/29/2015	CARBON-14	1.58E-02	2.40E-01	5.05E-01	0.00
SU-3	SU3-013(160-10329-2)	1/29/2015	NICKEL-63	1.62E+00	3.10E+00	7.00E+00	0.00
SU-3	SU3-013(160-10329-2) DUP	2/3/2015	NICKEL-63	8.72E-01	3.00E+00	6.75E+00	0.00
SU-3	SU3-013(160-10329-2) DUP	1/29/2015	NICKEL-63	8.72E-01	3.00E+00	6.75E+00	0.00
SU-3	SU3-016	1/29/2015	AMERICIUM-241	-0.0042	0.129	0.221	0.00
SU-3	SU3-016	1/29/2015	CESIUM-137	-0.00761	0.0617	0.111	0.00
SU-3	SU3-016	1/29/2015	COBALT-60	0.00956	0.03	0.118	0.00
SU-3	SU3-016	1/29/2015	EUROPIUM-152	0.0844	0.209	0.204	0.01
SU-3	SU3-016	1/29/2015	EUROPIUM-154	0.00277	0.0377	0.862	0.00
SU-3	SU3-016	1/29/2015	SILVER-108M	0	0.0153	0.0822	0.00
SU-3	SU3-016	1/29/2015	TOTAL BETA STRONTIUM	0.0106	0.0952	0.169	0.01
SU-3	SU3-016	1/29/2015	TRITIUM	-0.281	0.323	0.621	0.00
SU-3	SU3-016	1/29/2015	PU-242 (T)	6.68	0.752	0.0534	
SU-3	SU3-016	1/29/2015	PLUTONIUM-238	0.0407	0.0507	0.0785	0.02

Appendix F1 - Laboratory Results Table

Survey Area	Sample ID	Sample Date	Analyte	Result (pCi/g)	Uncertainty (pCi/g)	MDC (pCi/g)	DCGL Fraction
SU-3	SU3-016	1/29/2015	PLUTONIUM-239/240	-0.00415	0.00587	0.0574	
SU-3	SU3-016(160-10329-6)	2/3/2015	CARBON-14	-1.22E-01	2.30E-01	4.92E-01	0.00
SU-3	SU3-016(160-10329-6)	2/3/2015	NICKEL-63	-1.46E+00	2.70E+00	6.39E+00	0.00
SU-3	SU3-016(160-10329-6)	1/29/2015	CARBON-14	-1.22E-01	2.30E-01	4.92E-01	0.00
SU-3	SU3-016(160-10329-6)	1/29/2015	NICKEL-63	-1.46E+00	2.70E+00	6.39E+00	0.00
SU-3	SU3-018	1/27/2015	AMERICIUM-241	0.00604	0.0771	0.135	0.00
SU-3	SU3-018	1/27/2015	CESIUM-137	0.00192	0.0305	0.0573	0.00
SU-3	SU3-018	1/27/2015	COBALT-60	0.0118	0.0196	0.0619	0.00
SU-3	SU3-018	1/27/2015	EUROPIUM-152	0.0503	0.0645	0.114	0.01
SU-3	SU3-018	1/27/2015	EUROPIUM-154	0.0274	0.199	0.47	0.00
SU-3	SU3-018	1/27/2015	SILVER-108M	0.0207	0.0191	0.0479	0.00
SU-3	SU3-018	1/27/2015	TOTAL BETA STRONTIUM	0.205	0.118	0.176	0.12
SU-3	SU3-018	1/27/2015	TRITIUM	0.313	0.354	0.578	0.00
SU-3	SU3-018	1/27/2015	PU-242 (T)	7.57	0.834	0.0499	
SU-3	SU3-018	1/27/2015	PLUTONIUM-238	0.0175	0.042	0.0837	0.01
SU-3	SU3-018	1/27/2015	PLUTONIUM-239/240	-0.00188	0.00375	0.0455	
SU-3	SU3-018	1/27/2015	TRITIUM	12.66	1.45	0.568	0.12
SU-3	SU3-018(160-10308-5)	1/27/2015	CARBON-14	9.02E-02	2.50E-01	5.17E-01	0.01
SU-3	SU3-018(160-10308-5)	1/27/2015	NICKEL-63	8.67E-01	3.00E+00	6.84E+00	0.00
SU-3	SU3-018(160-10308-5)	1/27/2015	CARBON-14	9.02E-02	2.50E-01	5.17E-01	0.01
SU-3	SU3-018(160-10308-5)	1/27/2015	NICKEL-63	8.67E-01	3.00E+00	6.84E+00	0.00
SU-3	SU3-019	1/29/2015	AMERICIUM-241	-0.0326	15.5	0.184	0.00
SU-3	SU3-019	1/29/2015	CESIUM-137	0.00486	0.044	0.0796	0.00
SU-3	SU3-019	1/29/2015	COBALT-60	-0.0233	1.08	0.0937	0.00
SU-3	SU3-019	1/29/2015	EUROPIUM-152	0.0454	0.096	0.189	0.01
SU-3	SU3-019	1/29/2015	EUROPIUM-154	0.015	0.049	0.603	0.00
SU-3	SU3-019	1/29/2015	SILVER-108M	0.0191	0.0253	0.0588	0.00
SU-3	SU3-019	1/29/2015	TOTAL BETA STRONTIUM	0.0821	0.0907	0.148	0.05
SU-3	SU3-019	1/29/2015	TRITIUM	0.118	0.377	0.65	0.00
SU-3	SU3-019	1/29/2015	PU-242 (T)	7.09	0.792	0.0497	
SU-3	SU3-019	1/29/2015	PLUTONIUM-238	-0.00794	0.00797	0.0647	0.00
SU-3	SU3-019	1/29/2015	PLUTONIUM-239/240	0	0.00398	0.0318	
SU-3	SU3-019(160-10329-3)	2/3/2015	CARBON-14	7.23E-02	2.30E-01	4.75E-01	0.01
SU-3	SU3-019(160-10329-3)	2/3/2015	NICKEL-63	-9.50E-01	3.00E+00	7.13E+00	0.00
SU-3	SU3-019(160-10329-3)	1/29/2015	CARBON-14	7.23E-02	2.30E-01	4.75E-01	0.01
SU-3	SU3-019(160-10329-3)	1/29/2015	NICKEL-63	-9.50E-01	3.00E+00	7.13E+00	0.00
SU-3	SU3-024	1/27/2015	AMERICIUM-241	0.0156	0.0868	0.152	0.01
SU-3	SU3-024	1/27/2015	CESIUM-137	0.000658	0.0247	0.0477	0.00
SU-3	SU3-024	1/27/2015	COBALT-60	-0.00933	0.0917	0.0717	0.00

Appendix F1 - Laboratory Results Table

Survey Area	Sample ID	Sample Date	Analyte	Result (pCi/g)	Uncertainty (pCi/g)	MDC (pCi/g)	DCGL Fraction
SU-3	SU3-024	1/27/2015	EUROPIUM-152	0.054	0.0809	0.137	0.01
SU-3	SU3-024	1/27/2015	EUROPIUM-154	0.101	0.134	0.412	0.01
SU-3	SU3-024	1/27/2015	SILVER-108M	0.00373	0.0136	0.0435	0.00
SU-3	SU3-024	1/27/2015	TOTAL BETA STRONTIUM	0.187	0.0889	0.132	0.11
SU-3	SU3-024	1/27/2015	TRITIUM	0.565	0.364	0.552	0.01
SU-3	SU3-024	1/27/2015	PU-242 (T)	7.25	0.807	0.0549	
SU-3	SU3-024	1/27/2015	PLUTONIUM-238	-0.00929	0.0247	0.0839	0.00
SU-3	SU3-024	1/27/2015	PLUTONIUM-239/240	-0.00199	0.00399	0.0484	
SU-3	SU3-024	1/27/2015	TRITIUM	0.4477	0.355	0.555	0.00
SU-3	SU3-024(160-10308-4)	1/27/2015	CARBON-14	-1.65E-01	2.30E-01	5.02E-01	0.00
SU-3	SU3-024(160-10308-4)	1/27/2015	NICKEL-63	2.83E+00	3.00E+00	6.61E+00	0.00
SU-3	SU3-024(160-10308-4)	1/27/2015	CARBON-14	-1.65E-01	2.30E-01	5.02E-01	0.00
SU-3	SU3-024(160-10308-4)	1/27/2015	NICKEL-63	2.83E+00	3.00E+00	6.61E+00	0.00
SU-3	SU3-025	1/27/2015	AMERICIUM-241	-0.039	0.815	0.201	0.00
SU-3	SU3-025	1/27/2015	CESIUM-137	-0.0334	6.67	0.125	0.00
SU-3	SU3-025	1/27/2015	COBALT-60	-0.0335	0.679	0.16	0.00
SU-3	SU3-025	1/27/2015	EUROPIUM-152	0.0534	0.179	0.203	0.01
SU-3	SU3-025	1/27/2015	EUROPIUM-154	0.11	0.255	0.823	0.01
SU-3	SU3-025	1/27/2015	SILVER-108M	0.00216	0.0381	0.0713	0.00
SU-3	SU3-025	1/27/2015	TOTAL BETA STRONTIUM	0.0302	0.124	0.217	0.02
SU-3	SU3-025	1/27/2015	TRITIUM	-0.275	0.317	0.602	0.00
SU-3	SU3-025	1/27/2015	PU-242 (T)	7.75	0.841	0.052	
SU-3	SU3-025	1/27/2015	PLUTONIUM-238	-0.0105	0.00864	0.0636	0.00
SU-3	SU3-025	1/27/2015	PLUTONIUM-239/240	-0.00176	0.00351	0.0426	
SU-3	SU3-025(160-10308-6)	1/27/2015	CARBON-14	-2.25E-01	2.20E-01	4.85E-01	0.00
SU-3	SU3-025(160-10308-6)	1/27/2015	NICKEL-63	1.47E+00	2.90E+00	6.67E+00	0.00
SU-3	SU3-025(160-10308-6)	1/27/2015	CARBON-14	-2.25E-01	2.20E-01	4.85E-01	0.00
SU-3	SU3-025(160-10308-6)	1/27/2015	NICKEL-63	1.47E+00	2.90E+00	6.67E+00	0.00
SU-3	SU3-13(160-10446-11)	2/10/2015	CARBON-14	3.75E-01	2.10E-01	4.16E-01	0.03
SU-3	SU3-13(160-10446-11)	2/10/2015	NICKEL-63	-9.50E-01	2.60E+00	6.60E+00	0.00
SU-3	SU3-17(160-10446-12)	2/10/2015	CARBON-14	3.21E-01	2.00E-01	4.02E-01	0.03
SU-3	SU3-17(160-10446-12)	2/10/2015	NICKEL-63	3.67E+00	2.70E+00	6.17E+00	0.00
SU-3	SU3-4(160-10446-8)	2/10/2015	CARBON-14	1.65E-01	1.90E-01	4.10E-01	0.01
SU-3	SU3-4(160-10446-8)	2/10/2015	NICKEL-63	4.86E-01	2.50E+00	6.05E+00	0.00
SU-3	SU3-5(160-10446-9)	2/10/2015	CARBON-14	3.09E-01	2.00E-01	4.09E-01	0.03
SU-3	SU3-5(160-10446-9)	2/10/2015	NICKEL-63	1.97E+00	3.00E+00	6.93E+00	0.00
SU-3	SU3-5-DUP(160-10446-13)	2/10/2015	CARBON-14	1.75E-01	1.90E-01	4.03E-01	0.01
SU-3	SU3-5-DUP(160-10446-13)	2/10/2015	NICKEL-63	2.59E+00	3.20E+00	7.40E+00	0.00
SU-3	SU3-7(160-10446-10)	2/10/2015	CARBON-14	3.39E-01	2.00E-01	3.97E-01	0.03

Appendix F1 - Laboratory Results Table

Survey Area	Sample ID	Sample Date	Analyte	Result (pCi/g)	Uncertainty (pCi/g)	MDC (pCi/g)	DCGL Fraction
SU-3	SU3-7(160-10446-10)	2/10/2015	NICKEL-63	4.26E+00	3.10E+00	6.97E+00	0.00
SU-4	SU4-001	1/28/2015	AMERICIUM-241	0.0663	0.159	0.269	0.03
SU-4	SU4-001	1/28/2015	CESIUM-137	0	0.0214	0.134	0.00
SU-4	SU4-001	1/28/2015	COBALT-60	0.00535	0.0653	0.123	0.00
SU-4	SU4-001	1/28/2015	EUROPIUM-152	0.0482	0.141	0.247	0.01
SU-4	SU4-001	1/28/2015	EUROPIUM-154	-0.127	0.417	0.749	0.00
SU-4	SU4-001	1/28/2015	SILVER-108M	0	0.0309	0.0789	0.00
SU-4	SU4-001	1/28/2015	TOTAL BETA STRONTIUM	0.182	0.131	0.202	0.11
SU-4	SU4-001	1/28/2015	TRITIUM	0.214	0.35	0.58	0.00
SU-4	SU4-001	1/28/2015	PU-242 (T)	7.84	0.856	0.0496	
SU-4	SU4-001	1/28/2015	PLUTONIUM-238	0.0298	0.0398	0.0629	0.01
SU-4	SU4-001	1/28/2015	PLUTONIUM-239/240	0.00791	0.0198	0.0443	
SU-4	SU4-001	1/28/2015	AMERICIUM-241	-0.01386	0.098	0.171	0.00
SU-4	SU4-001	1/28/2015	CESIUM-137	0.01638	0.0445	0.0787	0.00
SU-4	SU4-001	1/28/2015	COBALT-60	0.0153	0.0609	0.111	0.00
SU-4	SU4-001	1/28/2015	EUROPIUM-152	-0.003504	0.107	0.197	0.00
SU-4	SU4-001	1/28/2015	EUROPIUM-154	-0.001813	0.446	0.822	0.00
SU-4	SU4-001	1/28/2015	SILVER-108M	-0.009703	0.0435	0.0767	0.00
SU-4	SU4-001	1/28/2015	TOTAL BETA STRONTIUM	0.04986	0.12	0.207	0.03
SU-4	SU4-001	1/28/2015	PU-242 (T)	7.796	0.848	0.0634	
SU-4	SU4-001	1/28/2015	PLUTONIUM-238	0.008272	0.0281	0.0643	0.00
SU-4	SU4-001	1/28/2015	PLUTONIUM-239/240	0.005915	0.0196	0.0492	
SU-4	SU4-001 DUP(160-10308-3)	1/29/2015	CARBON-14	-2.86E-01	2.30E-01	5.05E-01	0.00
SU-4	SU4-001 DUP(160-10308-3)	1/29/2015	NICKEL-63	7.44E-01	2.90E+00	6.74E+00	0.00
SU-4	SU4-001 DUP(160-10308-3)	1/29/2015	CARBON-14	-2.86E-01	2.30E-01	5.05E-01	0.00
SU-4	SU4-001 DUP(160-10308-3)	1/29/2015	NICKEL-63	7.44E-01	2.90E+00	6.74E+00	0.00
SU-4	SU4-001(160-10308-1)	1/28/2015	CARBON-14	-1.32E-01	2.30E-01	5.10E-01	0.00
SU-4	SU4-001(160-10308-1)	1/28/2015	NICKEL-63	3.94E+00	3.30E+00	7.24E+00	0.00
SU-4	SU4-001(160-10308-1)	1/28/2015	CARBON-14	-1.32E-01	2.30E-01	5.10E-01	0.00
SU-4	SU4-001(160-10308-1)	1/28/2015	NICKEL-63	3.94E+00	3.30E+00	7.24E+00	0.00
SU-4	SU4-001(160-10308-1) DUP	1/28/2015	CARBON-14	-3.28E-02	2.30E-01	4.94E-01	0.00
SU-4	SU4-001(160-10308-1) DUP	1/28/2015	CARBON-14	-3.28E-02	2.30E-01	4.94E-01	0.00
SU-4	SU4-001-DUP	1/29/2015	AMERICIUM-241	-0.033	1.61	0.329	0.00
SU-4	SU4-001-DUP	1/29/2015	CESIUM-137	0.00135	0.0753	0.141	0.00
SU-4	SU4-001-DUP	1/29/2015	COBALT-60	0.0346	0.0855	0.153	0.01
SU-4	SU4-001-DUP	1/29/2015	EUROPIUM-152	0	0.0675	0.426	0.00
SU-4	SU4-001-DUP	1/29/2015	EUROPIUM-154	0.0373	0.0573	1.28	0.00
SU-4	SU4-001-DUP	1/29/2015	SILVER-108M	0.0149	0.0382	0.0662	0.00
SU-4	SU4-001-DUP	1/29/2015	TOTAL BETA STRONTIUM	-0.0536	0.135	0.248	0.00

Appendix F1 - Laboratory Results Table

Survey Area	Sample ID	Sample Date	Analyte	Result (pCi/g)	Uncertainty (pCi/g)	MDC (pCi/g)	DCGL Fraction
SU-4	SU4-001-DUP	1/29/2015	TRITIUM	0.417	0.379	0.602	0.00
SU-4	SU4-001-DUP	1/29/2015	PU-242 (T)	7.62	0.841	0.0505	
SU-4	SU4-001-DUP	1/29/2015	PLUTONIUM-238	0.000634	0.022	0.0656	0.00
SU-4	SU4-001-DUP	1/29/2015	PLUTONIUM-239/240	0	0.00381	0.0305	
SU-4	SU4-013	1/27/2015	AMERICIUM-241	-0.0213	0.069	0.119	0.00
SU-4	SU4-013	1/27/2015	CESIUM-137	0.000907	0.0304	0.0581	0.00
SU-4	SU4-013	1/27/2015	COBALT-60	0	0.0133	0.0952	0.00
SU-4	SU4-013	1/27/2015	EUROPIUM-152	-0.00703	0.0327	0.158	0.00
SU-4	SU4-013	1/27/2015	EUROPIUM-154	0.0607	0.0775	0.486	0.01
SU-4	SU4-013	1/27/2015	SILVER-108M	0.0452	0.022	0.0268	0.01
SU-4	SU4-013	1/27/2015	TOTAL BETA STRONTIUM	0.185	0.107	0.16	0.11
SU-4	SU4-013	1/27/2015	TRITIUM	0.423	0.362	0.572	0.00
SU-4	SU4-013	1/27/2015	PU-242 (T)	7.99	0.865	0.0566	
SU-4	SU4-013	1/27/2015	PLUTONIUM-238	-0.0156	0.0105	0.0707	0.00
SU-4	SU4-013	1/27/2015	PLUTONIUM-239/240	0.00578	0.0191	0.0481	
SU-4	SU4-013(160-10308-2)	1/27/2015	CARBON-14	-7.44E-02	2.40E-01	5.17E-01	0.00
SU-4	SU4-013(160-10308-2)	1/27/2015	NICKEL-63	2.84E+00	2.70E+00	5.99E+00	0.00
SU-4	SU4-013(160-10308-2)	1/27/2015	CARBON-14	-7.44E-02	2.40E-01	5.17E-01	0.00
SU-4	SU4-013(160-10308-2)	1/27/2015	NICKEL-63	2.84E+00	2.70E+00	5.99E+00	0.00
SU-4	SU4-013(160-10308-2) DUP	1/27/2015	NICKEL-63	5.36E+00	3.20E+00	6.79E+00	0.00
SU-4	SU4-013(160-10308-2) DUP	1/27/2015	NICKEL-63	5.36E+00	3.20E+00	6.79E+00	0.00
SU-5	SU5-005	1/29/2015	AMERICIUM-241	-0.0393	0.137	0.235	0.00
SU-5	SU5-005	1/29/2015	CESIUM-137	0.00279	0.0503	0.0939	0.00
SU-5	SU5-005	1/29/2015	COBALT-60	0.0179	0.0444	0.103	0.00
SU-5	SU5-005	1/29/2015	EUROPIUM-152	0.0547	0.162	0.264	0.01
SU-5	SU5-005	1/29/2015	EUROPIUM-154	0.297	0.184	0.837	0.04
SU-5	SU5-005	1/29/2015	SILVER-108M	0.175	0.0513	0.0584	0.02
SU-5	SU5-005	1/29/2015	TOTAL BETA STRONTIUM	-0.0307	0.116	0.212	0.00
SU-5	SU5-005	1/29/2015	TRITIUM	-0.0521	0.342	0.616	0.00
SU-5	SU5-005	1/29/2015	PU-242 (T)	7.54	0.829	0.0542	
SU-5	SU5-005	1/29/2015	PLUTONIUM-238	0.0244	0.0353	0.0569	0.01
SU-5	SU5-005	1/29/2015	PLUTONIUM-239/240	-0.00375	0.00532	0.052	
SU-5	SU5-005	1/29/2015	TRITIUM	11.34	1.34	0.604	0.10
SU-5	SU5-005(160-10329-4)	2/3/2015	CARBON-14	-1.55E-01	2.20E-01	4.74E-01	0.00
SU-5	SU5-005(160-10329-4)	2/3/2015	NICKEL-63	3.40E+00	3.30E+00	7.06E+00	0.00
SU-5	SU5-005(160-10329-4)	1/29/2015	CARBON-14	-1.55E-01	2.20E-01	4.74E-01	0.00
SU-5	SU5-005(160-10329-4)	1/29/2015	NICKEL-63	3.40E+00	3.30E+00	7.06E+00	0.00
SU-5	SU5-01(160-10413-1)	2/5/2015	CARBON-14	2.61E-01	2.20E-01	4.64E-01	0.02
SU-5	SU5-01(160-10413-1)	2/5/2015	NICKEL-63	2.36E+00	2.70E+00	6.27E+00	0.00

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Survey Area	Sample ID	Sample Date	Analyte	Result (pCi/g)	Uncertainty (pCi/g)	MDC (pCi/g)	DCGL Fraction
SU-5	SU5-01(160-10413-1) DUP	2/5/2015	CARBON-14	9.43E-04	2.00E-01	4.52E-01	0.00
SU-5	SU5-01(160-10413-1) DUP	2/5/2015	NICKEL-63	1.46E+00	2.90E+00	6.76E+00	0.00
SU-5	SU5-02(160-10413-2)	2/5/2015	CARBON-14	1.14E-01	2.10E-01	4.62E-01	0.01
SU-5	SU5-02(160-10413-2)	2/5/2015	NICKEL-63	2.52E+00	2.60E+00	6.02E+00	0.00
SU-5	SU5-03(160-10413-3)	2/5/2015	CARBON-14	1.24E-01	2.10E-01	4.59E-01	0.01
SU-5	SU5-03(160-10413-3)	2/5/2015	NICKEL-63	5.33E+00	3.10E+00	6.68E+00	0.00
SU-5	SU5-04(160-10413-4)	2/5/2015	CARBON-14	2.02E-01	2.00E-01	4.36E-01	0.02
SU-5	SU5-04(160-10413-4)	2/5/2015	NICKEL-63	3.41E+00	2.80E+00	6.37E+00	0.00
SU-5	SU5-06(160-10413-5)	2/5/2015	CARBON-14	3.52E-02	1.90E-01	4.28E-01	0.00
SU-5	SU5-06(160-10413-5)	2/5/2015	NICKEL-63	2.73E+00	2.60E+00	6.01E+00	0.00
SU-5	SU5-07(160-10413-6)	2/5/2015	CARBON-14	1.43E-01	2.10E-01	4.63E-01	0.01
SU-5	SU5-07(160-10413-6)	2/5/2015	NICKEL-63	3.57E+00	3.00E+00	6.63E+00	0.00
SU-5	SU5-07-DUP(160-10413-7)	2/5/2015	CARBON-14	2.06E-01	2.10E-01	4.53E-01	0.02
SU-5	SU5-07-DUP(160-10413-7)	2/5/2015	NICKEL-63	1.37E+00	2.70E+00	6.36E+00	0.00
SU-5	SU5-09(160-10412-1)	2/5/2015	CARBON-14	3.28E-01	2.20E-01	4.45E-01	0.03
SU-5	SU5-09(160-10412-1)	2/5/2015	NICKEL-63	3.01E+00	2.90E+00	6.62E+00	0.00
SU-5	SU5-09(160-10412-1) DUP	2/5/2015	CARBON-14	2.91E-01	2.10E-01	4.44E-01	0.02
SU-5	SU5-09(160-10412-1) DUP	2/5/2015	NICKEL-63	3.13E+00	2.50E+00	5.61E+00	0.00
SU-5	SU5-09(160-10412-1) DUP	2/5/2015	CARBON-14	2.91E-01	2.10E-01	4.44E-01	0.02
SU-5	SU5-09(160-10412-1) DUP	2/5/2015	NICKEL-63	3.13E+00	2.50E+00	5.61E+00	0.00
SU-5	SU5-09(160-10412-1) DUP	2/5/2015	NICKEL-63	3.13E+00	2.50E+00	5.61E+00	0.00
SU-5	SU5-10(160-10446-2)	2/6/2015	CARBON-14	2.67E-01	2.00E-01	4.11E-01	0.02
SU-5	SU5-10(160-10446-2)	2/6/2015	NICKEL-63	4.18E+00	2.90E+00	6.54E+00	0.00
SU-5	SU5-11(160-10412-2)	2/5/2015	CARBON-14	1.33E-01	2.00E-01	4.36E-01	0.01
SU-5	SU5-11(160-10412-2)	2/5/2015	NICKEL-63	-7.59E-01	2.40E+00	5.83E+00	0.00
SU-5	SU5-11-DUP(160-10412-3)	2/5/2015	CARBON-14	3.98E-01	2.20E-01	4.43E-01	0.03
SU-5	SU5-11-DUP(160-10412-3)	2/5/2015	NICKEL-63	1.99E+00	2.70E+00	6.22E+00	0.00
SU-5	SU5-12(160-10412-4)	2/5/2015	CARBON-14	2.40E-01	2.10E-01	4.35E-01	0.02
SU-5	SU5-12(160-10412-4)	2/5/2015	NICKEL-63	1.05E+00	2.70E+00	6.24E+00	0.00
SU-5	SU5-13(160-10446-3)	2/6/2015	CARBON-14	8.43E-02	1.80E-01	4.04E-01	0.01
SU-5	SU5-13(160-10446-3)	2/6/2015	NICKEL-63	1.97E+00	3.00E+00	6.98E+00	0.00
SU-5	SU5-14(160-10446-4)	2/6/2015	CARBON-14	6.18E-02	1.90E-01	4.12E-01	0.01
SU-5	SU5-14(160-10446-4)	2/6/2015	NICKEL-63	1.02E+00	2.60E+00	6.27E+00	0.00
SU-5	SU5-15(160-10412-5)	2/5/2015	CARBON-14	2.04E-01	2.10E-01	4.47E-01	0.02
SU-5	SU5-15(160-10412-5)	2/5/2015	NICKEL-63	2.13E+00	2.50E+00	5.68E+00	0.00
SU-5	SU5-17(160-10446-5)	2/10/2015	CARBON-14	1.52E-01	1.90E-01	4.10E-01	0.01
SU-5	SU5-17(160-10446-5)	2/10/2015	NICKEL-63	1.39E+00	2.80E+00	6.59E+00	0.00
SU-5	SU5-18(160-10446-6)	2/10/2015	CARBON-14	1.24E-01	1.90E-01	4.15E-01	0.01
SU-5	SU5-18(160-10446-6)	2/10/2015	NICKEL-63	3.75E+00	2.70E+00	6.07E+00	0.00

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Survey Area	Sample ID	Sample Date	Analyte	Result (pCi/g)	Uncertainty (pCi/g)	MDC (pCi/g)	DCGL Fraction
SU-5	SU5-20(160-10446-7)	2/10/2015	CARBON-14	3.27E-01	2.00E-01	4.10E-01	0.03
SU-5	SU5-20(160-10446-7)	2/10/2015	NICKEL-63	-9.06E-01	2.50E+00	6.30E+00	0.00
SU-5	SU5-8(160-10446-1)	2/6/2015	CARBON-14	1.48E-01	1.90E-01	4.18E-01	0.01
SU-5	SU5-8(160-10446-1)	2/6/2015	NICKEL-63	-8.01E-01	2.60E+00	6.59E+00	0.00
SU-5	SU5-8(160-10446-1) DUP	2/6/2015	CARBON-14	1.58E-01	1.90E-01	4.12E-01	0.01
SU-5	SU5-8(160-10446-1) DUP	2/6/2015	NICKEL-63	7.72E-01	2.70E+00	6.61E+00	0.00
SU-6	SU6-001(160-10386-1)	2/4/2015	CARBON-14	1.53E-01	2.10E-01	4.62E-01	0.01
SU-6	SU6-002(160-10386-2)	2/4/2015	CARBON-14	7.08E-02	2.00E-01	4.54E-01	0.01
SU-6	SU6-002(160-10386-2) DUP	2/4/2015	CARBON-14	1.98E-03	2.00E-01	4.52E-01	0.00
SU-6	SU6-004(160-10386-3)	2/4/2015	CARBON-14	9.71E-02	2.00E-01	4.52E-01	0.01
SU-6	SU6-005(160-10386-4)	2/4/2015	CARBON-14	-1.32E-02	2.00E-01	4.45E-01	0.00
SU-6	SU6-006(160-10386-5)	2/4/2015	CARBON-14	-6.01E-02	1.90E-01	4.42E-01	0.00
SU-6	SU6-008	1/29/2015	AMERICIUM-241	0.0747	0.105	0.174	0.04
SU-6	SU6-008	1/29/2015	CESIUM-137	0	0.0175	0.0844	0.00
SU-6	SU6-008	1/29/2015	COBALT-60	0	0.0374	0.0487	0.00
SU-6	SU6-008	1/29/2015	EUROPIUM-152	0.0589	0.093	0.241	0.01
SU-6	SU6-008	1/29/2015	EUROPIUM-154	0.0114	0.0464	0.75	0.00
SU-6	SU6-008	1/29/2015	SILVER-108M	0.0029	0.0352	0.057	0.00
SU-6	SU6-008	1/29/2015	TOTAL BETA STRONTIUM	0.0327	0.103	0.179	0.02
SU-6	SU6-008	1/29/2015	TRITIUM	-0.116	0.35	0.639	0.00
SU-6	SU6-008	1/29/2015	PU-242 (T)	6.78	0.769	0.0447	
SU-6	SU6-008	1/29/2015	PLUTONIUM-238	-0.00638	0.00738	0.0645	0.00
SU-6	SU6-008	1/29/2015	PLUTONIUM-239/240	-0.00213	0.00426	0.0517	
SU-6	SU6-008	1/29/2015	AMERICIUM-241	-0.02613	0.119	0.204	0.00
SU-6	SU6-008	1/29/2015	CESIUM-137	0.01759	0.0407	0.071	0.00
SU-6	SU6-008	1/29/2015	COBALT-60	0.0124	0.0312	0.0575	0.00
SU-6	SU6-008	1/29/2015	EUROPIUM-152	0.004293	0.0177	0.18	0.00
SU-6	SU6-008	1/29/2015	EUROPIUM-154	0.03072	0.0359	0.606	0.00
SU-6	SU6-008	1/29/2015	SILVER-108M	0.01142	0.0282	0.0493	0.00
SU-6	SU6-008	1/29/2015	TOTAL BETA STRONTIUM	0.002088	0.107	0.192	0.00
SU-6	SU6-008	1/29/2015	TRITIUM	-0.3684	0.327	0.639	0.00
SU-6	SU6-008	1/29/2015	PU-242 (T)	7.498	0.824	0.0282	
SU-6	SU6-008	1/29/2015	PLUTONIUM-238	0.01616	0.0286	0.0517	0.01
SU-6	SU6-008	1/29/2015	PLUTONIUM-239/240	-0.003733	0.00529	0.0517	
SU-6	SU6-008(160-10329-1)	2/3/2015	CARBON-14	-1.78E-01	2.30E-01	5.08E-01	0.00
SU-6	SU6-008(160-10329-1)	2/3/2015	NICKEL-63	9.00E-01	3.10E+00	7.03E+00	0.00
SU-6	SU6-008(160-10329-1)	1/29/2015	CARBON-14	-1.78E-01	2.30E-01	5.08E-01	0.00
SU-6	SU6-008(160-10329-1)	1/29/2015	NICKEL-63	9.00E-01	3.10E+00	7.03E+00	0.00
SU-6	SU6-008(160-10329-1) DUP	2/3/2015	CARBON-14	-1.06E-01	2.30E-01	4.94E-01	0.00

Appendix F1 - Laboratory Results Table

Survey Area	Sample ID	Sample Date	Analyte	Result (pCi/g)	Uncertainty (pCi/g)	MDC (pCi/g)	DCGL Fraction
SU-6	SU6-008(160-10329-1) DUP	1/29/2015	CARBON-14	-1.06E-01	2.30E-01	4.94E-01	0.00
SU-6	SU6-009(160-10386-6)	2/4/2015	CARBON-14	3.08E-03	2.00E-01	4.67E-01	0.00
SU-6	SU6-010(160-10386-7)	2/4/2015	CARBON-14	-1.15E-01	1.90E-01	4.47E-01	0.00
SU-6	SU6-010-DUP(160-10386-8)	2/4/2015	CARBON-14	-2.14E-02	1.90E-01	4.45E-01	0.00
SU-6	SU6-011(160-10386-9)	2/4/2015	CARBON-14	4.29E-02	2.00E-01	4.45E-01	0.00
SU-6	SU6-012(160-10386-10)	2/4/2015	CARBON-14	-7.27E-02	2.00E-01	4.63E-01	0.00
SU-6	SU6-015(160-10386-11)	2/4/2015	CARBON-14	-4.22E-02	2.00E-01	4.67E-01	0.00
SU-6	SU6-015-DUP(160-10386-12)	2/4/2015	CARBON-14	1.55E-01	2.10E-01	4.64E-01	0.01
SU-6	SU6-016(160-10386-13)	2/4/2015	CARBON-14	-2.61E-02	2.00E-01	4.59E-01	0.00
SU-6	SU6-017(160-10386-14)	2/4/2015	CARBON-14	-1.35E-01	1.90E-01	4.45E-01	0.00
SU-6	SU6-018(160-10386-15)	2/4/2015	CARBON-14	5.47E-02	1.90E-01	4.31E-01	0.00
SU-6	SU6-022(160-10386-16)	2/4/2015	CARBON-14	3.53E-02	1.90E-01	4.30E-01	0.00
SU-6	SU6-023(160-10386-17)	2/4/2015	CARBON-14	-1.97E-01	1.90E-01	4.63E-01	0.00
SU-6	SU6-023-DUP(160-10386-18)	2/4/2015	CARBON-14	2.51E-02	2.00E-01	4.54E-01	0.00
SU-6	SU6-024(160-10386-19)	2/4/2015	CARBON-14	4.54E-02	2.00E-01	4.55E-01	0.00
SU-6	SU6-025(160-10386-20)	2/4/2015	CARBON-14	-8.56E-02	1.80E-01	4.14E-01	0.00
SU-6	SU6-14(160-10413-26)	2/7/2015	CARBON-14	1.25E-01	2.00E-01	4.35E-01	0.01
SU-6	SU6-14(160-10413-26)	2/7/2015	NICKEL-63	2.69E+00	2.50E+00	5.55E+00	0.00
SU-6	SU6-20(160-10413-27)	2/7/2015	CARBON-14	6.91E-02	2.00E-01	4.38E-01	0.01
SU-6	SU6-20(160-10413-27)	2/7/2015	NICKEL-63	2.24E+00	2.50E+00	5.67E+00	0.00
SU-6	SU6-21(160-10413-28)	2/7/2015	CARBON-14	1.53E-01	2.00E-01	4.34E-01	0.01
SU-6	SU6-21(160-10413-28)	2/7/2015	NICKEL-63	1.74E+00	2.70E+00	6.24E+00	0.00
SU-6	SU6-26(160-10413-29)	2/7/2015	CARBON-14	2.90E-01	2.10E-01	4.32E-01	0.02
SU-6	SU6-26(160-10413-29)	2/7/2015	NICKEL-63	2.23E+00	2.40E+00	5.56E+00	0.00
SU-6	SU6-27(160-10413-30)	2/7/2015	CARBON-14	2.14E-01	2.10E-01	4.35E-01	0.02
SU-6	SU6-27(160-10413-30)	2/7/2015	NICKEL-63	9.32E-01	2.60E+00	6.20E+00	0.00
SU-6	SU6-28(160-10413-31)	2/7/2015	CARBON-14	2.41E-01	2.10E-01	4.46E-01	0.02
SU-6	SU6-28(160-10413-31)	2/7/2015	NICKEL-63	1.29E+00	2.40E+00	5.69E+00	0.00
SU-6	SU6-29(160-10413-32)	2/7/2015	CARBON-14	2.87E-01	2.20E-01	4.47E-01	0.02
SU-6	SU6-29(160-10413-32)	2/7/2015	NICKEL-63	2.11E+00	2.50E+00	5.67E+00	0.00
SU-7	2015 9 15 S7-01	9/15/2015	AMERICIUM-241	0	0.145	0.373	0.00
SU-7	2015 9 15 S7-01	9/15/2015	CARBON-14	0.4	0.257	0.322	0.03
SU-7	2015 9 15 S7-01	9/15/2015	CESIUM-137	0	0.04	0.222	0.00
SU-7	2015 9 15 S7-01	9/15/2015	COBALT-60	0.063	0.192	0.205	0.02
SU-7	2015 9 15 S7-01	9/15/2015	EUROPIUM-152	0.182	0.293	0.362	0.03
SU-7	2015 9 15 S7-01	9/15/2015	EUROPIUM-154	0.259	0.162	0.232	0.03
SU-7	2015 9 15 S7-01	9/15/2015	NICKEL-63	1.211	1.225	3.271	0.00
SU-7	2015 9 15 S7-01	9/15/2015	PLUTONIUM-238	0.009	0.027	0.051	0.00
SU-7	2015 9 15 S7-01	9/15/2015	PU-239/240	-0.007	0.01	0.025	0.00

Appendix F1 - Laboratory Results Table

Survey Area	Sample ID	Sample Date	Analyte	Result (pCi/g)	Uncertainty (pCi/g)	MDC (pCi/g)	DCGL Fraction
SU-7	2015 9 15 S7-01	9/15/2015	SILVER-108M	0	0.023	0.227	0.00
SU-7	2015 9 15 S7-01	9/15/2015	STRONTIUM-90	0.16	0.226	0.501	0.09
SU-7	2015 9 15 S7-01	9/15/2015	TRITIUM	-0.451	0.288	0.544	0.00
SU-7	2015 9 15 S7-02	9/15/2015	AMERICIUM-241	0	0.219	0.753	0.00
SU-7	2015 9 15 S7-02	9/15/2015	CARBON-14	-0.028	0.138	0.32	0.00
SU-7	2015 9 15 S7-02	9/15/2015	CESIUM-137	0.05	0.095	0.101	0.00
SU-7	2015 9 15 S7-02	9/15/2015	COBALT-60	0	0.017	0.121	0.00
SU-7	2015 9 15 S7-02	9/15/2015	EUROPIUM-152	0.209	0.207	0.268	0.03
SU-7	2015 9 15 S7-02	9/15/2015	EUROPIUM-154	0.094	0.079	0.211	0.01
SU-7	2015 9 15 S7-02	9/15/2015	NICKEL-63	-0.473	1.104	3.132	0.00
SU-7	2015 9 15 S7-02	9/15/2015	PLUTONIUM-238	-0.015	0.019	0.048	0.00
SU-7	2015 9 15 S7-02	9/15/2015	PU-239/240	-0.008	0.013	0.036	0.00
SU-7	2015 9 15 S7-02	9/15/2015	SILVER-108M	0.071	0.094	0.123	0.01
SU-7	2015 9 15 S7-02	9/15/2015	STRONTIUM-90	0.034	0.154	0.365	0.02
SU-7	2015 9 15 S7-02	9/15/2015	TRITIUM	-0.071	0.281	0.502	0.00
SU-7	2015 9 15 S7-03	9/15/2015	AMERICIUM-241	0	0.137	0.427	0.00
SU-7	2015 9 15 S7-03	9/15/2015	CARBON-14	0.456	0.26	0.306	0.04
SU-7	2015 9 15 S7-03	9/15/2015	CESIUM-137	0.084	0.142	0.165	0.01
SU-7	2015 9 15 S7-03	9/15/2015	COBALT-60	0	0.024	0.217	0.00
SU-7	2015 9 15 S7-03	9/15/2015	EUROPIUM-152	0.174	0.332	0.37	0.03
SU-7	2015 9 15 S7-03	9/15/2015	EUROPIUM-154	0	0.099	0.256	0.00
SU-7	2015 9 15 S7-03	9/15/2015	NICKEL-63	-0.403	1.109	3.138	0.00
SU-7	2015 9 15 S7-03	9/15/2015	PLUTONIUM-238	-0.003	0.021	0.045	0.00
SU-7	2015 9 15 S7-03	9/15/2015	PU-239/240	-0.002	0.011	0.028	0.00
SU-7	2015 9 15 S7-03	9/15/2015	SILVER-108M	0.113	0.125	0.105	0.01
SU-7	2015 9 15 S7-03	9/15/2015	STRONTIUM-90	-0.035	0.117	0.3	0.00
SU-7	2015 9 15 S7-03	9/15/2015	TRITIUM	-0.132	0.289	0.52	0.00
SU-7	2015 9 15 S7-04	9/15/2015	AMERICIUM-241	0.127	0.598	0.752	0.06
SU-7	2015 9 15 S7-04	9/15/2015	CARBON-14	0.287	0.227	0.316	0.02
SU-7	2015 9 15 S7-04	9/15/2015	CESIUM-137	0	0.068	0.137	0.00
SU-7	2015 9 15 S7-04	9/15/2015	COBALT-60	0.046	0.051	0.137	0.01
SU-7	2015 9 15 S7-04	9/15/2015	EUROPIUM-152	0.003	0.238	0.294	0.00
SU-7	2015 9 15 S7-04	9/15/2015	EUROPIUM-154	0.077	0.129	0.244	0.01
SU-7	2015 9 15 S7-04	9/15/2015	NICKEL-63	-0.345	1.134	3.258	0.00
SU-7	2015 9 15 S7-04	9/15/2015	PLUTONIUM-238	0.002	0.026	0.053	0.00
SU-7	2015 9 15 S7-04	9/15/2015	PU-239/240	-0.001	0.011	0.025	0.00
SU-7	2015 9 15 S7-04	9/15/2015	SILVER-108M	0.007	0.151	0.159	0.00
SU-7	2015 9 15 S7-04	9/15/2015	STRONTIUM-90	0.06	0.117	0.267	0.04
SU-7	2015 9 15 S7-04	9/15/2015	TRITIUM	0.829	0.361	0.529	0.01

Appendix F1 - Laboratory Results Table

Survey Area	Sample ID	Sample Date	Analyte	Result (pCi/g)	Uncertainty (pCi/g)	MDC (pCi/g)	DCGL Fraction
SU-7	2015 9 15 S7-05	9/15/2015	AMERICIUM-241	0	0.127	0.296	0.00
SU-7	2015 9 15 S7-05	9/15/2015	CARBON-14	0.613	0.302	0.322	0.05
SU-7	2015 9 15 S7-05	9/15/2015	CESIUM-137	0.018	0.075	0.1	0.00
SU-7	2015 9 15 S7-05	9/15/2015	COBALT-60	0.106	0.051	0.081	0.03
SU-7	2015 9 15 S7-05	9/15/2015	EUROPIUM-152	0.147	0.129	0.269	0.02
SU-7	2015 9 15 S7-05	9/15/2015	EUROPIUM-154	0.138	0.223	0.172	0.02
SU-7	2015 9 15 S7-05	9/15/2015	NICKEL-63	-0.671	1.122	3.288	0.00
SU-7	2015 9 15 S7-05	9/15/2015	PLUTONIUM-238	-0.012	0.024	0.052	0.00
SU-7	2015 9 15 S7-05	9/15/2015	PU-239/240	-0.02	0.017	0.044	0.00
SU-7	2015 9 15 S7-05	9/15/2015	SILVER-108M	0.012	0.127	0.149	0.00
SU-7	2015 9 15 S7-05	9/15/2015	STRONTIUM-90	-0.092	0.111	0.314	0.00
SU-7	2015 9 15 S7-05	9/15/2015	TRITIUM	-0.232	0.254	0.468	0.00
SU-7	2015 9 15 S7-06	9/15/2015	AMERICIUM-241	0.072	0.491	0.622	0.03
SU-7	2015 9 15 S7-06	9/15/2015	CARBON-14	-0.079	0.117	0.317	0.00
SU-7	2015 9 15 S7-06	9/15/2015	CESIUM-137	0.048	0.069	0.074	0.00
SU-7	2015 9 15 S7-06	9/15/2015	COBALT-60	0	0.011	0.118	0.00
SU-7	2015 9 15 S7-06	9/15/2015	EUROPIUM-152	-0.07	0.251	0.301	0.00
SU-7	2015 9 15 S7-06	9/15/2015	EUROPIUM-154	0.073	0.14	0.167	0.01
SU-7	2015 9 15 S7-06	9/15/2015	NICKEL-63	0.681	1.227	3.466	0.00
SU-7	2015 9 15 S7-06	9/15/2015	PLUTONIUM-238	0.002	0.023	0.045	0.00
SU-7	2015 9 15 S7-06	9/15/2015	PU-239/240	-0.003	0.01	0.026	0.00
SU-7	2015 9 15 S7-06	9/15/2015	SILVER-108M	0	0.009	0.145	0.00
SU-7	2015 9 15 S7-06	9/15/2015	STRONTIUM-90	-0.085	0.104	0.288	0.00
SU-7	2015 9 15 S7-06	9/15/2015	TRITIUM	-0.376	0.288	0.539	0.00
SU-7	2015 9 15 S7-07	9/15/2015	AMERICIUM-241	0.176	0.292	0.374	0.08
SU-7	2015 9 15 S7-07	9/15/2015	CARBON-14	-0.08	0.119	0.323	0.00
SU-7	2015 9 15 S7-07	9/15/2015	CESIUM-137	0.061	0.088	0.106	0.01
SU-7	2015 9 15 S7-07	9/15/2015	COBALT-60	0.057	0.055	0.086	0.02
SU-7	2015 9 15 S7-07	9/15/2015	EUROPIUM-152	0.1	0.237	0.295	0.01
SU-7	2015 9 15 S7-07	9/15/2015	EUROPIUM-154	0.143	0.231	0.215	0.02
SU-7	2015 9 15 S7-07	9/15/2015	NICKEL-63	0.454	1.162	3.163	0.00
SU-7	2015 9 15 S7-07	9/15/2015	PLUTONIUM-238	0.034	0.038	0.069	0.01
SU-7	2015 9 15 S7-07	9/15/2015	PU-239/240	0.003	0.015	0.035	0.00
SU-7	2015 9 15 S7-07	9/15/2015	SILVER-108M	0	0.053	0.216	0.00
SU-7	2015 9 15 S7-07	9/15/2015	STRONTIUM-90	-0.111	0.119	0.329	0.00
SU-7	2015 9 15 S7-07	9/15/2015	TRITIUM	-0.231	0.283	0.519	0.00
SU-7	2015 9 15 S7-08	9/15/2015	AMERICIUM-241	-0.099	0.563	0.709	0.00
SU-7	2015 9 15 S7-08	9/15/2015	CARBON-14	0.295	0.234	0.325	0.02
SU-7	2015 9 15 S7-08	9/15/2015	CESIUM-137	0.007	0.104	0.115	0.00

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Survey Area	Sample ID	Sample Date	Analyte	Result (pCi/g)	Uncertainty (pCi/g)	MDC (pCi/g)	DCGL Fraction
SU-7	2015 9 15 S7-08	9/15/2015	COBALT-60	0.021	0.088	0.098	0.01
SU-7	2015 9 15 S7-08	9/15/2015	EUROPIUM-152	0.212	0.324	0.322	0.03
SU-7	2015 9 15 S7-08	9/15/2015	EUROPIUM-154	-0.027	0.19	0.23	0.00
SU-7	2015 9 15 S7-08	9/15/2015	NICKEL-63	-1.779	1.054	3.225	0.00
SU-7	2015 9 15 S7-08	9/15/2015	PLUTONIUM-238	-0.008	0.022	0.048	0.00
SU-7	2015 9 15 S7-08	9/15/2015	PU-239/240	-0.008	0.011	0.031	0.00
SU-7	2015 9 15 S7-08	9/15/2015	SILVER-108M	-0.017	0.129	0.136	0.00
SU-7	2015 9 15 S7-08	9/15/2015	STRONTIUM-90	0.025	0.117	0.28	0.01
SU-7	2015 9 15 S7-08	9/15/2015	TRITIUM	-0.363	0.274	0.513	0.00
SU-7	2015 9 15 S7-09	9/15/2015	AMERICIUM-241	0	0.055	0.337	0.00
SU-7	2015 9 15 S7-09	9/15/2015	CARBON-14	0.078	0.169	0.312	0.01
SU-7	2015 9 15 S7-09	9/15/2015	CESIUM-137	0	0.016	0.127	0.00
SU-7	2015 9 15 S7-09	9/15/2015	COBALT-60	0.052	0.035	0.195	0.01
SU-7	2015 9 15 S7-09	9/15/2015	EUROPIUM-152	0	0.135	0.299	0.00
SU-7	2015 9 15 S7-09	9/15/2015	EUROPIUM-154	0.178	0.115	0.196	0.02
SU-7	2015 9 15 S7-09	9/15/2015	NICKEL-63	-1.157	1.054	3.062	0.00
SU-7	2015 9 15 S7-09	9/15/2015	PLUTONIUM-238	0.006	0.025	0.048	0.00
SU-7	2015 9 15 S7-09	9/15/2015	PU-239/240	-0.006	0.012	0.032	0.00
SU-7	2015 9 15 S7-09	9/15/2015	SILVER-108M	0.038	0.08	0.095	0.00
SU-7	2015 9 15 S7-09	9/15/2015	STRONTIUM-90	0.036	0.112	0.265	0.02
SU-7	2015 9 15 S7-09	9/15/2015	TRITIUM	-0.412	0.293	0.55	0.00
SU-7	2015 9 15 S7-10	9/15/2015	AMERICIUM-241	0.075	0.636	0.806	0.04
SU-7	2015 9 15 S7-10	9/15/2015	CARBON-14	0.402	0.258	0.324	0.03
SU-7	2015 9 15 S7-10	9/15/2015	CESIUM-137	0.028	0.114	0.126	0.00
SU-7	2015 9 15 S7-10	9/15/2015	COBALT-60	0.002	0.141	0.15	0.00
SU-7	2015 9 15 S7-10	9/15/2015	EUROPIUM-152	0.545	0.655	0.646	0.08
SU-7	2015 9 15 S7-10	9/15/2015	EUROPIUM-154	0.056	0.116	0.197	0.01
SU-7	2015 9 15 S7-10	9/15/2015	NICKEL-63	-0.45	1.138	3.31	0.00
SU-7	2015 9 15 S7-10	9/15/2015	PLUTONIUM-238	0.003	0.021	0.042	0.00
SU-7	2015 9 15 S7-10	9/15/2015	PU-239/240	-0.013	0.012	0.035	0.00
SU-7	2015 9 15 S7-10	9/15/2015	SILVER-108M	-0.005	0.143	0.153	0.00
SU-7	2015 9 15 S7-10	9/15/2015	STRONTIUM-90	-0.051	0.102	0.233	0.00
SU-7	2015 9 15 S7-10	9/15/2015	TRITIUM	-0.284	0.293	0.54	0.00
SU-7	2015 9 15 S7-11	9/15/2015	AMERICIUM-241	0.095	0.235	0.307	0.05
SU-7	2015 9 15 S7-11	9/15/2015	CARBON-14	0.613	0.295	0.308	0.05
SU-7	2015 9 15 S7-11	9/15/2015	CESIUM-137	0	0.058	0.147	0.00
SU-7	2015 9 15 S7-11	9/15/2015	COBALT-60	0	0.022	0.146	0.00
SU-7	2015 9 15 S7-11	9/15/2015	EUROPIUM-152	0.089	0.237	0.296	0.01
SU-7	2015 9 15 S7-11	9/15/2015	EUROPIUM-154	0.107	0.082	0.228	0.01

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Survey Area	Sample ID	Sample Date	Analyte	Result (pCi/g)	Uncertainty (pCi/g)	MDC (pCi/g)	DCGL Fraction
SU-7	2015 9 15 S7-11	9/15/2015	NICKEL-63	-0.347	1.062	2.867	0.00
SU-7	2015 9 15 S7-11	9/15/2015	PLUTONIUM-238	0.002	0.02	0.041	0.00
SU-7	2015 9 15 S7-11	9/15/2015	PU-239/240	-0.007	0.01	0.027	0.00
SU-7	2015 9 15 S7-11	9/15/2015	SILVER-108M	0.06	0.084	0.094	0.01
SU-7	2015 9 15 S7-11	9/15/2015	STRONTIUM-90	-0.065	0.105	0.242	0.00
SU-7	2015 9 15 S7-11	9/15/2015	TRITIUM	-0.365	0.28	0.522	0.00
SU-7	2015 9 15 S7-12	9/15/2015	AMERICIUM-241	-0.022	0.594	0.756	0.00
SU-7	2015 9 15 S7-12	9/15/2015	CARBON-14	0.406	0.345	0.495	0.03
SU-7	2015 9 15 S7-12	9/15/2015	CESIUM-137	0.013	0.115	0.127	0.00
SU-7	2015 9 15 S7-12	9/15/2015	COBALT-60	0	0.013	0.18	0.00
SU-7	2015 9 15 S7-12	9/15/2015	EUROPIUM-152	0.276	0.257	0.343	0.04
SU-7	2015 9 15 S7-12	9/15/2015	EUROPIUM-154	0.142	0.137	0.273	0.02
SU-7	2015 9 15 S7-12	9/15/2015	NICKEL-63	0.275	1.129	3.033	0.00
SU-7	2015 9 15 S7-12	9/15/2015	PLUTONIUM-238	-0.016	0.019	0.046	0.00
SU-7	2015 9 15 S7-12	9/15/2015	PU-239/240	-0.001	0.012	0.028	0.00
SU-7	2015 9 15 S7-12	9/15/2015	SILVER-108M	0.105	0.146	0.129	0.01
SU-7	2015 9 15 S7-12	9/15/2015	STRONTIUM-90	-0.0983	0.0978	0.23	0.00
SU-7	2015 9 15 S7-12	9/15/2015	TRITIUM	-0.455	0.28	0.529	0.00
SU-7	2015 9 15 S7-13	9/15/2015	AMERICIUM-241	0	0.159	0.311	0.00
SU-7	2015 9 15 S7-13	9/15/2015	CARBON-14	0.499	0.277	0.319	0.04
SU-7	2015 9 15 S7-13	9/15/2015	CESIUM-137	0.028	0.12	0.146	0.00
SU-7	2015 9 15 S7-13	9/15/2015	COBALT-60	0	0.03	0.192	0.00
SU-7	2015 9 15 S7-13	9/15/2015	EUROPIUM-152	0.234	0.157	0.307	0.03
SU-7	2015 9 15 S7-13	9/15/2015	EUROPIUM-154	0.013	0.135	0.175	0.00
SU-7	2015 9 15 S7-13	9/15/2015	NICKEL-63	-0.424	1.138	3.301	0.00
SU-7	2015 9 15 S7-13	9/15/2015	PLUTONIUM-238	-0.005	0.017	0.039	0.00
SU-7	2015 9 15 S7-13	9/15/2015	PU-239/240	-0.009	0.015	0.038	0.00
SU-7	2015 9 15 S7-13	9/15/2015	SILVER-108M	0	0.015	0.166	0.00
SU-7	2015 9 15 S7-13	9/15/2015	STRONTIUM-90	-0.0538	0.0936	0.217	0.00
SU-7	2015 9 15 S7-13	9/15/2015	TRITIUM	-0.354	0.289	0.538	0.00
SU-7	2015 9 15 S7-14	9/15/2015	AMERICIUM-241	0.144	0.671	0.844	0.07
SU-7	2015 9 15 S7-14	9/15/2015	CARBON-14	0.104	0.182	0.323	0.01
SU-7	2015 9 15 S7-14	9/15/2015	CESIUM-137	0.048	0.102	0.111	0.00
SU-7	2015 9 15 S7-14	9/15/2015	COBALT-60	0	0.021	0.119	0.00
SU-7	2015 9 15 S7-14	9/15/2015	EUROPIUM-152	-0.207	0.37	0.434	0.00
SU-7	2015 9 15 S7-14	9/15/2015	EUROPIUM-154	0.03	0.042	0.303	0.00
SU-7	2015 9 15 S7-14	9/15/2015	NICKEL-63	-0.463	1.092	3.064	0.00
SU-7	2015 9 15 S7-14	9/15/2015	PLUTONIUM-238	-0.002	0.026	0.053	0.00
SU-7	2015 9 15 S7-14	9/15/2015	PU-239/240	-0.018	0.016	0.044	0.00

Appendix F1 - Laboratory Results Table

Survey Area	Sample ID	Sample Date	Analyte	Result (pCi/g)	Uncertainty (pCi/g)	MDC (pCi/g)	DCGL Fraction
SU-7	2015 9 15 S7-14	9/15/2015	SILVER-108M	0.049	0.135	0.141	0.01
SU-7	2015 9 15 S7-14	9/15/2015	STRONTIUM-90	-0.02	0.117	0.299	0.00
SU-7	2015 9 15 S7-14	9/15/2015	TRITIUM	-0.449	0.28	0.528	0.00

Appendix F2 - Average Concentration by Area

Area / Radionuclide	Average Concentration (pCi/g)	Maximum Concentration (pCi/g)	Number of Results
STOCK-1	0.20	5.26	164
AMERICIUM-241	0.03	0.24	17
CARBON-14	0.40	1.61	9
CESIUM-137	0.04	0.20	17
COBALT-60	0.02	0.10	17
EUROPIUM-152	0.02	0.12	17
EUROPIUM-154	0.03	0.15	17
NICKEL-63	0.56	2.54	9
PLUTONIUM-238	0.01	0.02	9
PU-239/240	0.00	0.01	9
SILVER-108M	0.20	1.07	17
STRONTIUM-90	0.06	0.25	9
TRITIUM	1.08	5.26	17
STOCK-2	0.09	3.62	554
AMERICIUM-241	0.01	0.23	47
CARBON-14	0.24	1.42	45
CESIUM-137	0.01	0.07	47
COBALT-60	0.00	0.08	47
EUROPIUM-152	0.01	0.14	47
EUROPIUM-154	0.01	0.10	47
NICKEL-63	0.44	2.95	45
PLUTONIUM-238	0.01	0.03	45
PU-239/240	0.00	0.02	45
SILVER-108M	0.00	0.18	47
STRONTIUM-90	0.04	0.50	45
TRITIUM	0.36	3.62	47
STOCK-3	0.09	0.99	36
AMERICIUM-241	-0.05	0.00	3
CARBON-14	-0.14	0.00	3
CESIUM-137	0.08	0.12	3
COBALT-60	0.03	0.04	3
EUROPIUM-152	0.01	0.06	3
EUROPIUM-154	-0.02	-0.01	3
NICKEL-63	0.61	0.99	3
PLUTONIUM-238	0.00	0.01	3
PU-239/240	0.00	0.01	3
SILVER-108M	-0.03	0.00	3
STRONTIUM-90	0.17	0.34	3
TRITIUM	0.41	0.77	3
SU-1	1.03	7.94	31
AMERICIUM-241	0.00	0.00	1
CARBON-14	-0.06	0.10	10
CESIUM-137	0.02	0.02	1
COBALT-60	0.01	0.01	1
EUROPIUM-152	0.05	0.05	1
EUROPIUM-154	0.03	0.03	1
NICKEL-63	2.44	4.83	10

Appendix F2 - Average Concentration by Area

Area / Radionuclide	Average Concentration (pCi/g)	Maximum Concentration (pCi/g)	Number of Results
PLUTONIUM-238	0.01	0.01	1
PLUTONIUM-239/240	0.00	0.00	1
PU-242 (T)	7.94	7.94	1
SILVER-108M	0.02	0.02	1
TOTAL BETA STRONTIUM	0.02	0.02	1
TRITIUM	0.15	0.15	1
SU-2	1.22	5.00	18
CARBON-14	0.09	0.34	9
NICKEL-63	2.35	5.00	9
SU-3	0.75	12.66	121
AMERICIUM-241	0.01	0.09	7
CARBON-14	0.04	0.38	20
CESIUM-137	-0.01	0.00	7
COBALT-60	0.00	0.03	7
EUROPIUM-152	0.05	0.08	7
EUROPIUM-154	0.05	0.11	7
NICKEL-63	1.20	4.26	22
PLUTONIUM-238	0.01	0.04	7
PLUTONIUM-239/240	0.01	0.09	7
PU-242 (T)	7.00	7.75	7
SILVER-108M	0.01	0.04	7
TOTAL BETA STRONTIUM	0.12	0.21	7
TRITIUM	1.40	12.66	9
SU-4	0.98	7.99	59
AMERICIUM-241	0.00	0.07	4
CARBON-14	-0.13	-0.03	8
CESIUM-137	0.00	0.02	4
COBALT-60	0.01	0.03	4
EUROPIUM-152	0.01	0.05	4
EUROPIUM-154	-0.01	0.06	4
NICKEL-63	3.22	5.36	8
PLUTONIUM-238	0.01	0.03	4
PLUTONIUM-239/240	0.00	0.01	4
PU-242 (T)	7.81	7.99	4
SILVER-108M	0.01	0.05	4
TOTAL BETA STRONTIUM	0.09	0.19	4
TRITIUM	0.35	0.42	3
SU-5	1.29	11.34	63
AMERICIUM-241	-0.04	-0.04	1
CARBON-14	0.16	0.40	25
CESIUM-137	0.00	0.00	1
COBALT-60	0.02	0.02	1
EUROPIUM-152	0.05	0.05	1
EUROPIUM-154	0.30	0.30	1
NICKEL-63	2.22	5.33	26
PLUTONIUM-238	0.02	0.02	1
PLUTONIUM-239/240	0.00	0.00	1

Appendix F2 - Average Concentration by Area

Area / Radionuclide	Average Concentration (pCi/g)	Maximum Concentration (pCi/g)	Number of Results
PU-242 (T)	7.54	7.54	1
SILVER-108M	0.18	0.18	1
TOTAL BETA STRONTIUM	-0.03	-0.03	1
TRITIUM	5.64	11.34	2
SU-6	0.47	7.50	63
AMERICIUM-241	0.02	0.07	2
CARBON-14	0.02	0.29	32
CESIUM-137	0.01	0.02	2
COBALT-60	0.01	0.01	2
EUROPIUM-152	0.03	0.06	2
EUROPIUM-154	0.02	0.03	2
NICKEL-63	1.67	2.69	9
PLUTONIUM-238	0.00	0.02	2
PLUTONIUM-239/240	0.00	0.00	2
PU-242 (T)	7.14	7.50	2
SILVER-108M	0.01	0.01	2
TOTAL BETA STRONTIUM	0.02	0.03	2
TRITIUM	-0.24	-0.12	2
SU-7	0.01	1.21	168
AMERICIUM-241	0.04	0.18	14
CARBON-14	0.28	0.61	14
CESIUM-137	0.03	0.08	14
COBALT-60	0.02	0.11	14
EUROPIUM-152	0.14	0.55	14
EUROPIUM-154	0.09	0.26	14
NICKEL-63	-0.28	1.21	14
PLUTONIUM-238	0.00	0.03	14
PU-239/240	-0.01	0.00	14
SILVER-108M	0.03	0.11	14
STRONTIUM-90	-0.02	0.16	14
TRITIUM	-0.24	0.83	14

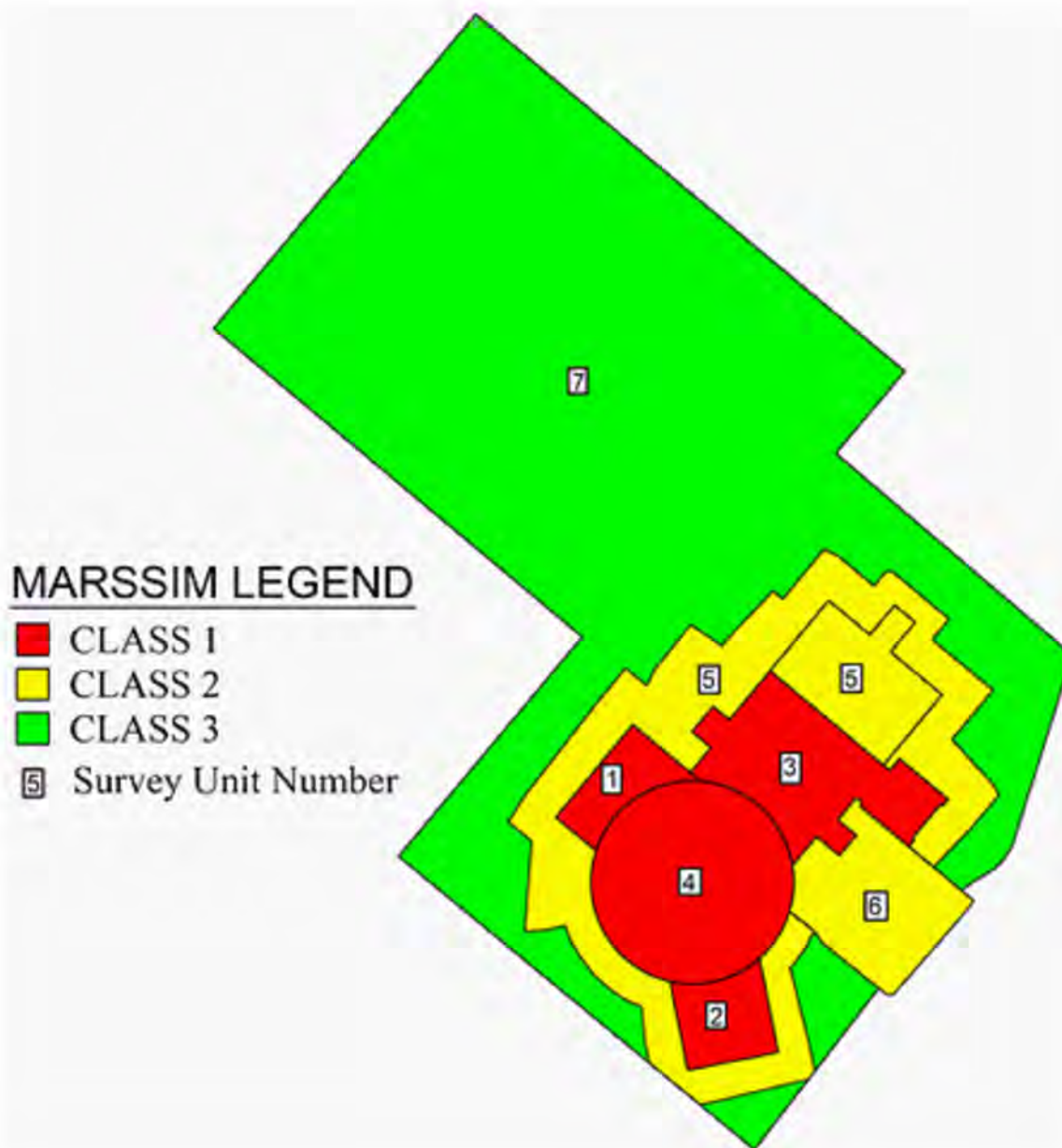
Appendix F3 - Sum of the Fractions by Area

Survey Area	Average SOF	Maximum SOF
STOCK-1	0.012	0.147
STOCK-2	0.008	0.296
STOCK-3	0.010	0.202
SU-1	0.002	0.009
SU-2	0.005	0.028
SU-3	0.005	0.115
SU-4	0.002	0.032
SU-5	0.010	0.103
SU-6	0.004	0.036
SU-7	0.009	0.094

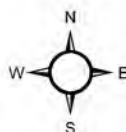
Appendix F4 - Calculated Annual TEDE by Survey Unit

Final Status Survey Unit	Annual Dose (mR)
SU-1	0.048
SU-2	0.126
SU-3	0.130
SU-4	0.059
SU-5	0.238
SU-6	0.106
SU-7	0.231

**APPENDIX G –
SURFACE SCAN RESULTS**



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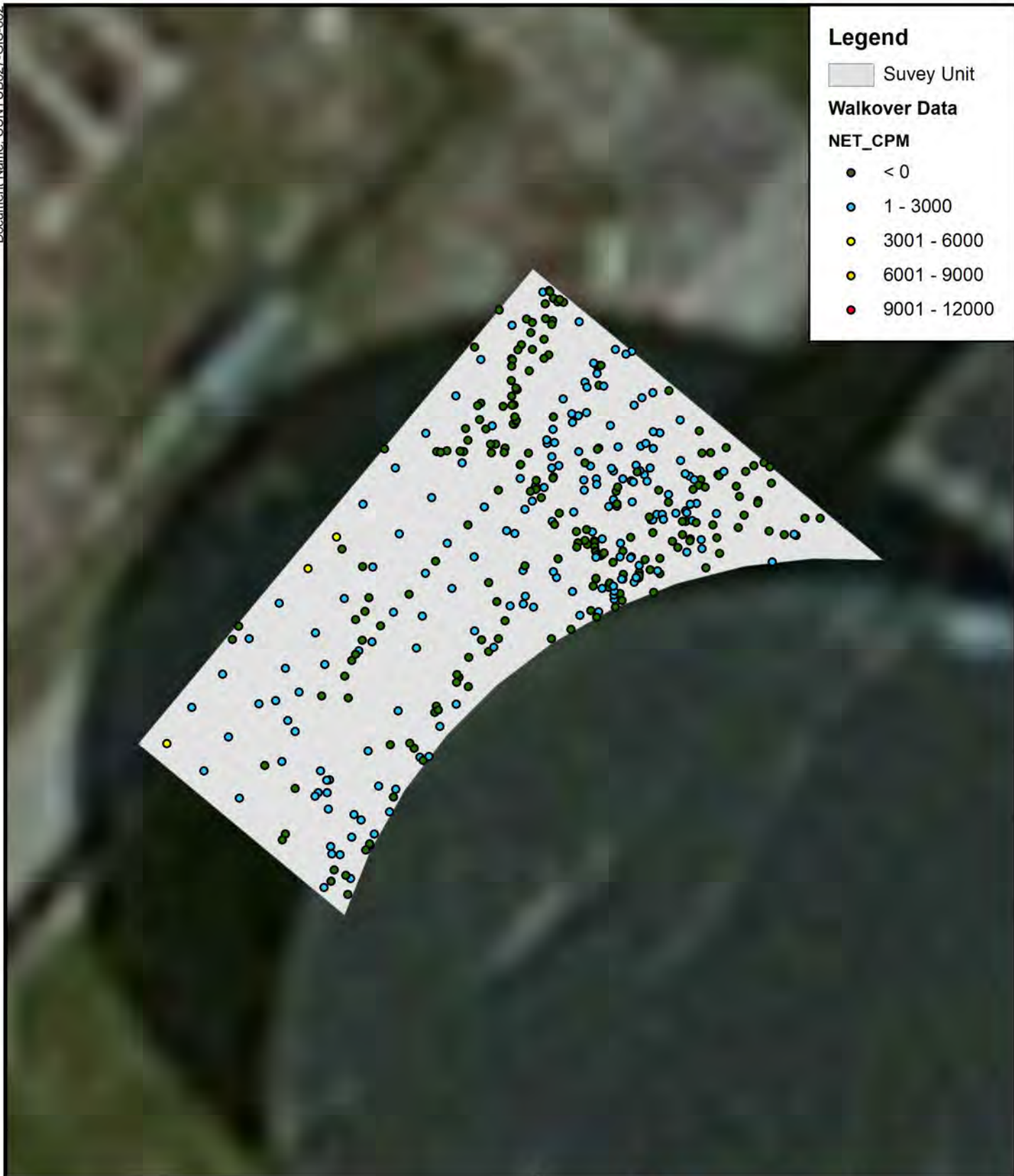


Survey Units by Classification


Source: ESRI World Imagery Service

Prepared by: M. Searle Date: January 3, 2017










Legend

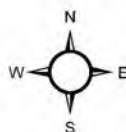
 Survey Unit

Walkover Data

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-  6001 - 9000
-  9001 - 12000

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1:120

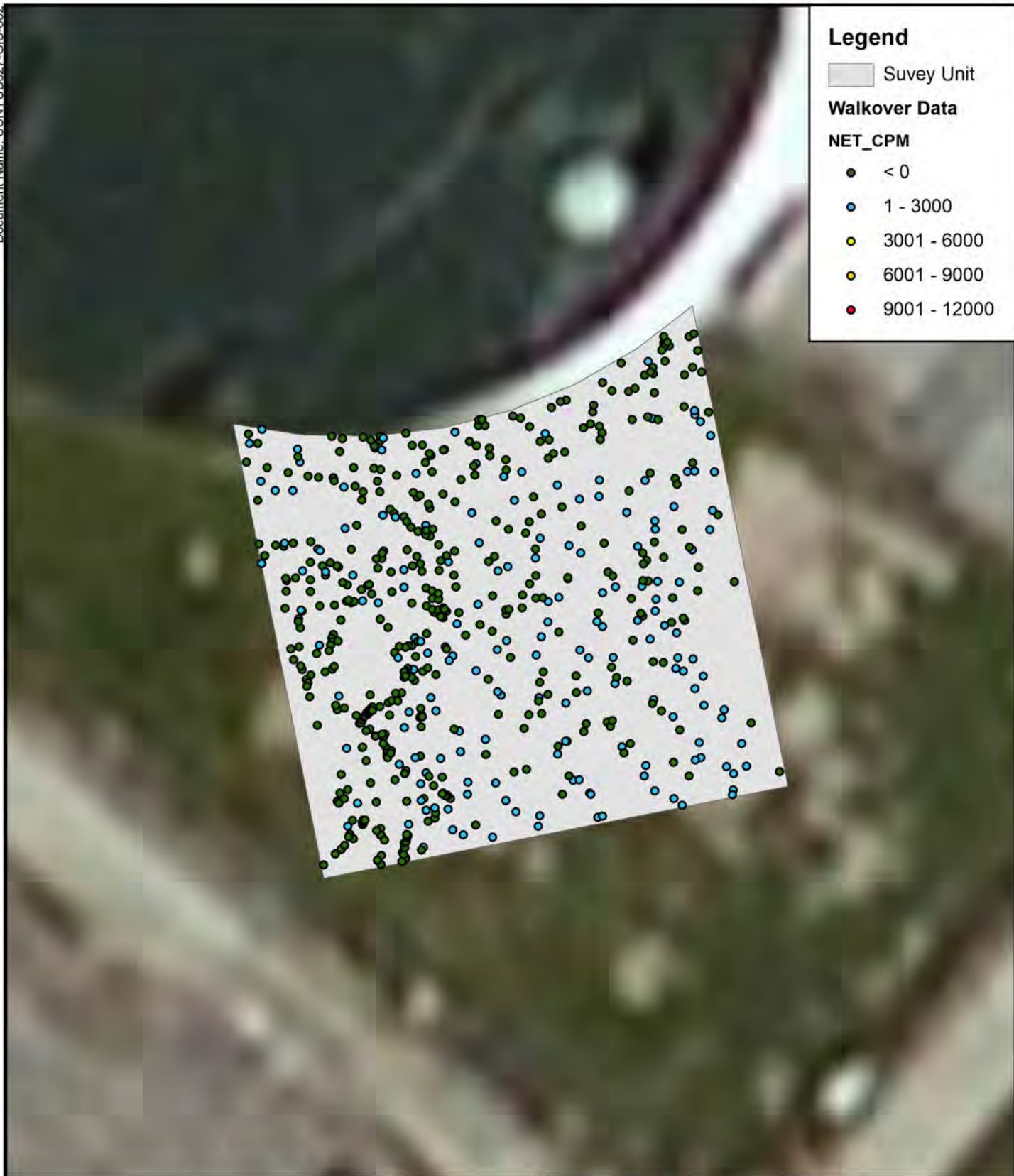


SU-1 Surface Scan Results

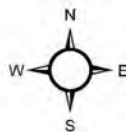
Source: ESRI World Imagery Service

Prepared by: M. Searle Date: January 27, 2016





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1:120

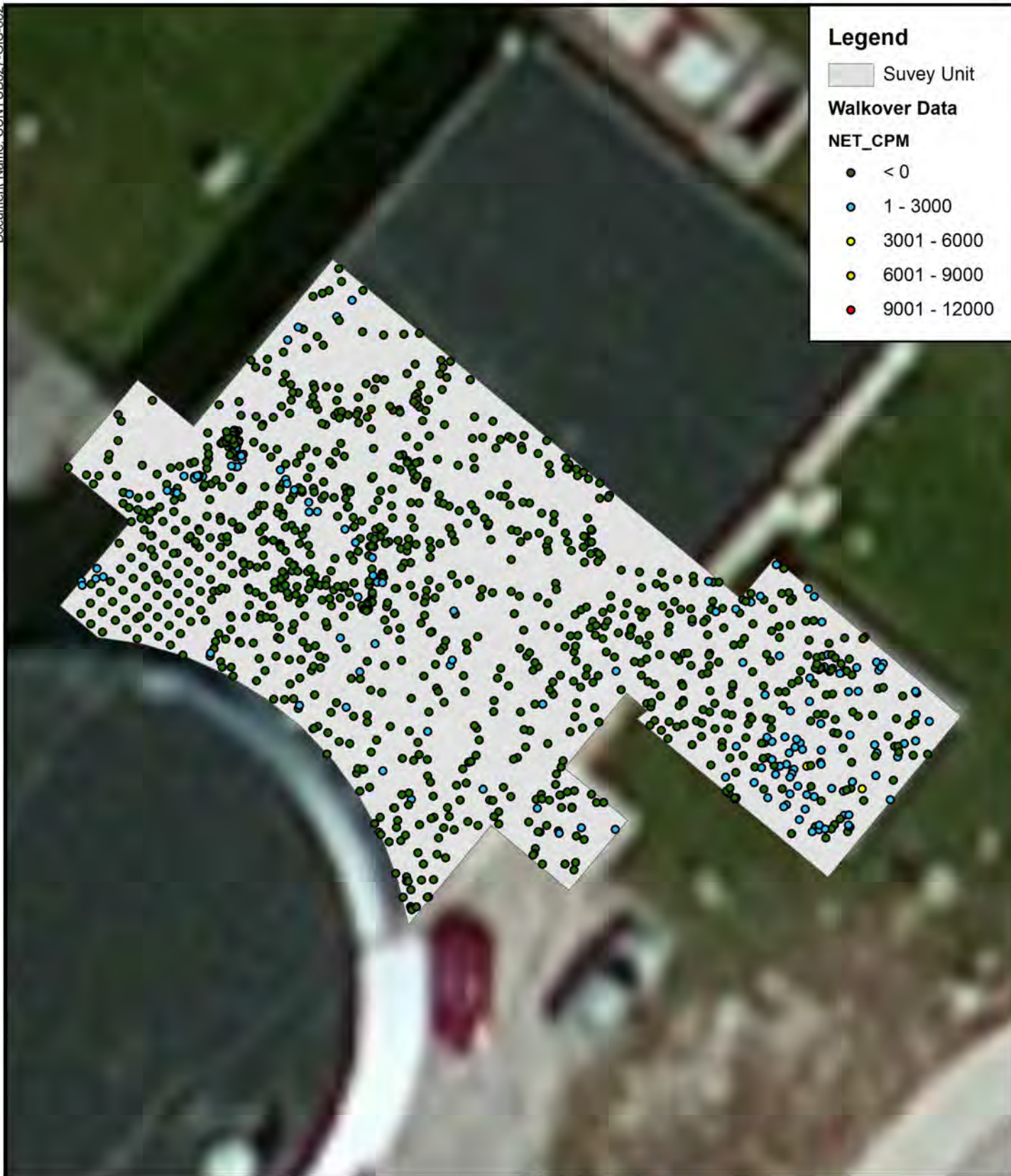


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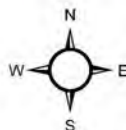
Source: ESRI World Imagery Service

Prepared by: M. Searle Date: January 27, 2016





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SU-3 Surface Scan Results

Source: ESRI World Imagery Service

Prepared by: M. Searle Date: January 27, 2016






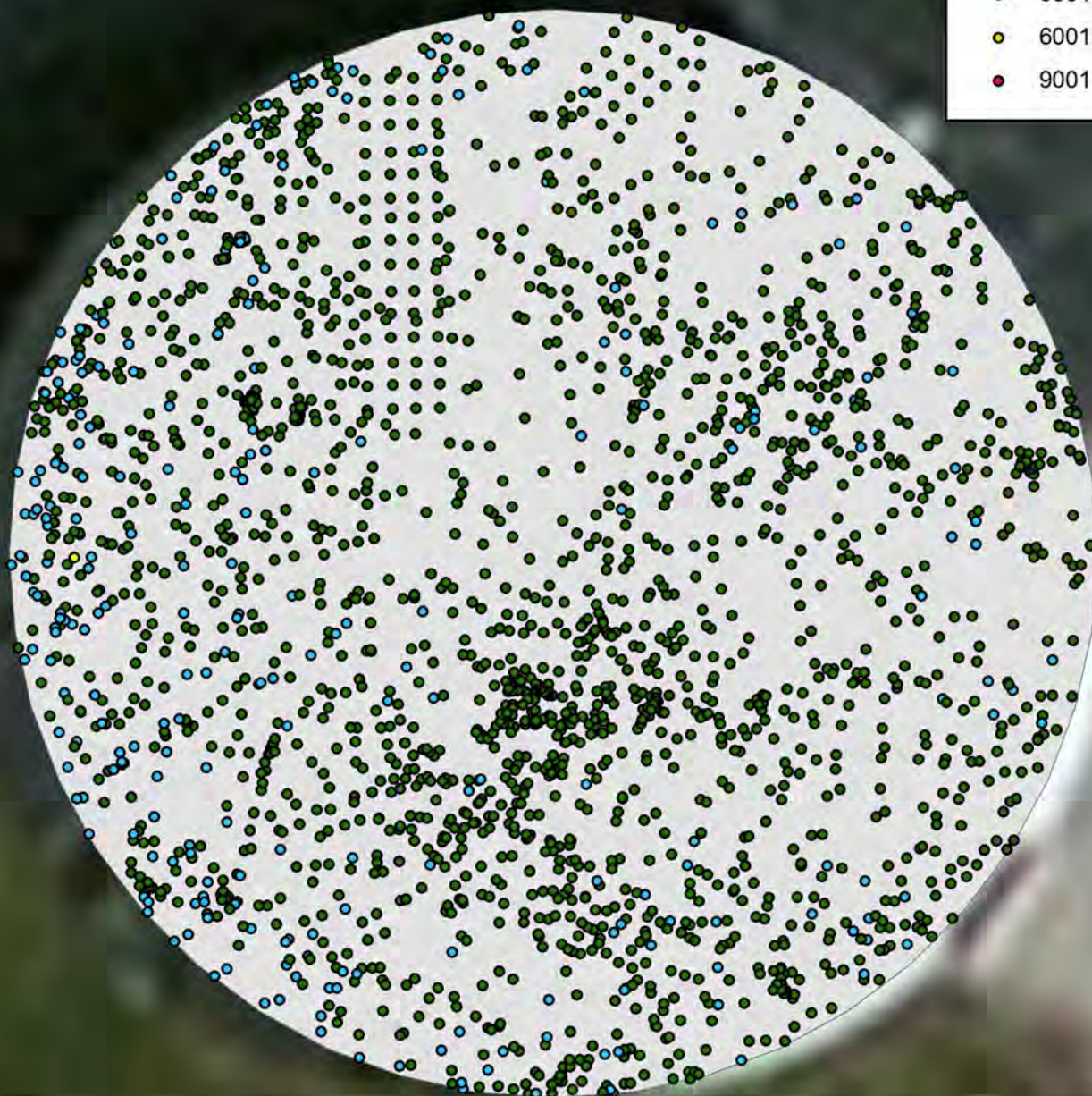
Legend

 Suvey Unit

Walkover Data

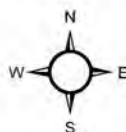
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-  6001 - 9000
-  9001 - 12000



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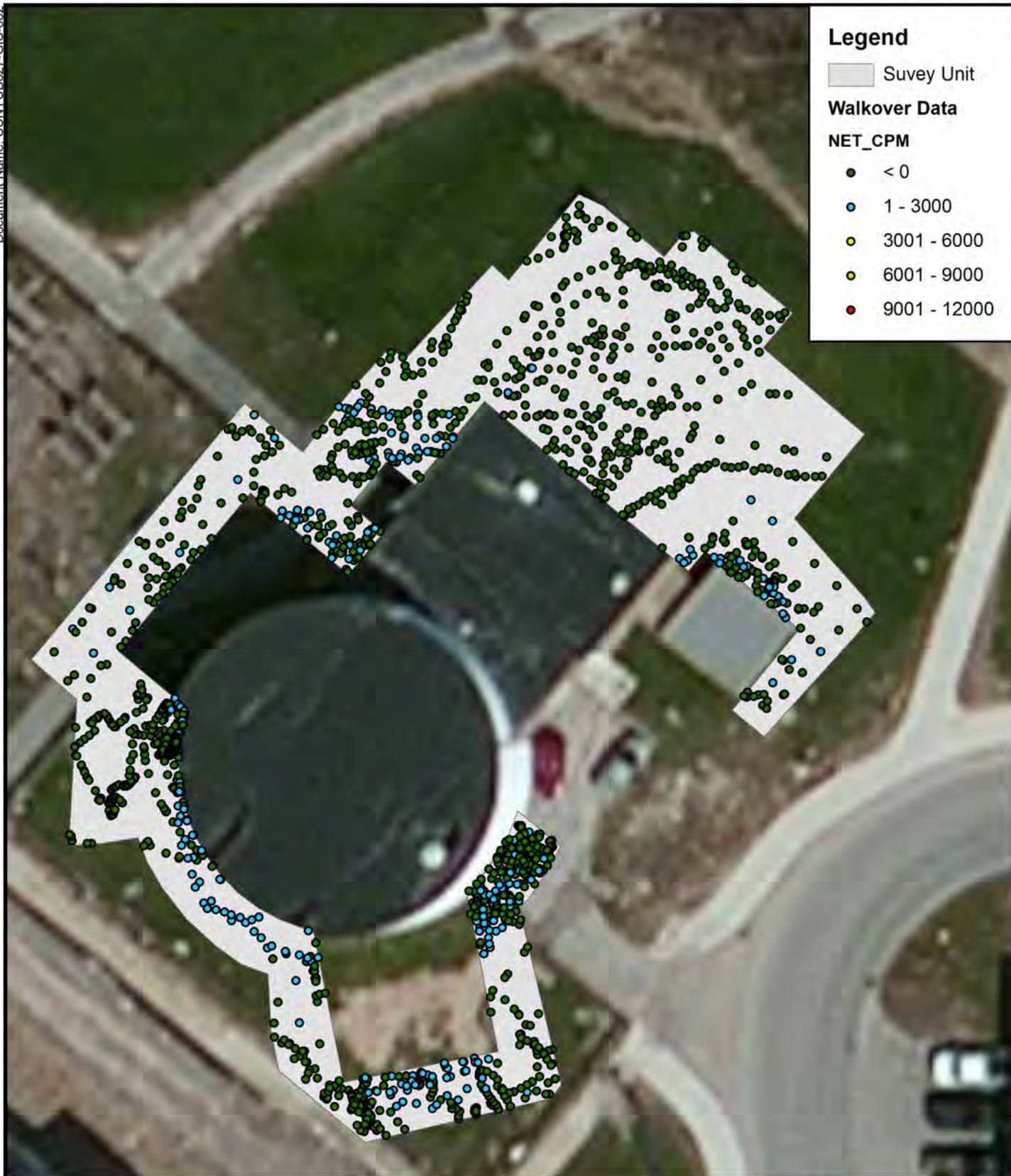


SU-4 Surface Scan Results


Source: ESRI World Imagery Service

Prepared by: M. Searle Date: January 27, 2016







Legend

 Suvey Unit

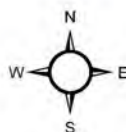
Walkover Data

NET_CPM

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-  3001 - 6000
-  6001 - 9000
-  9001 - 12000

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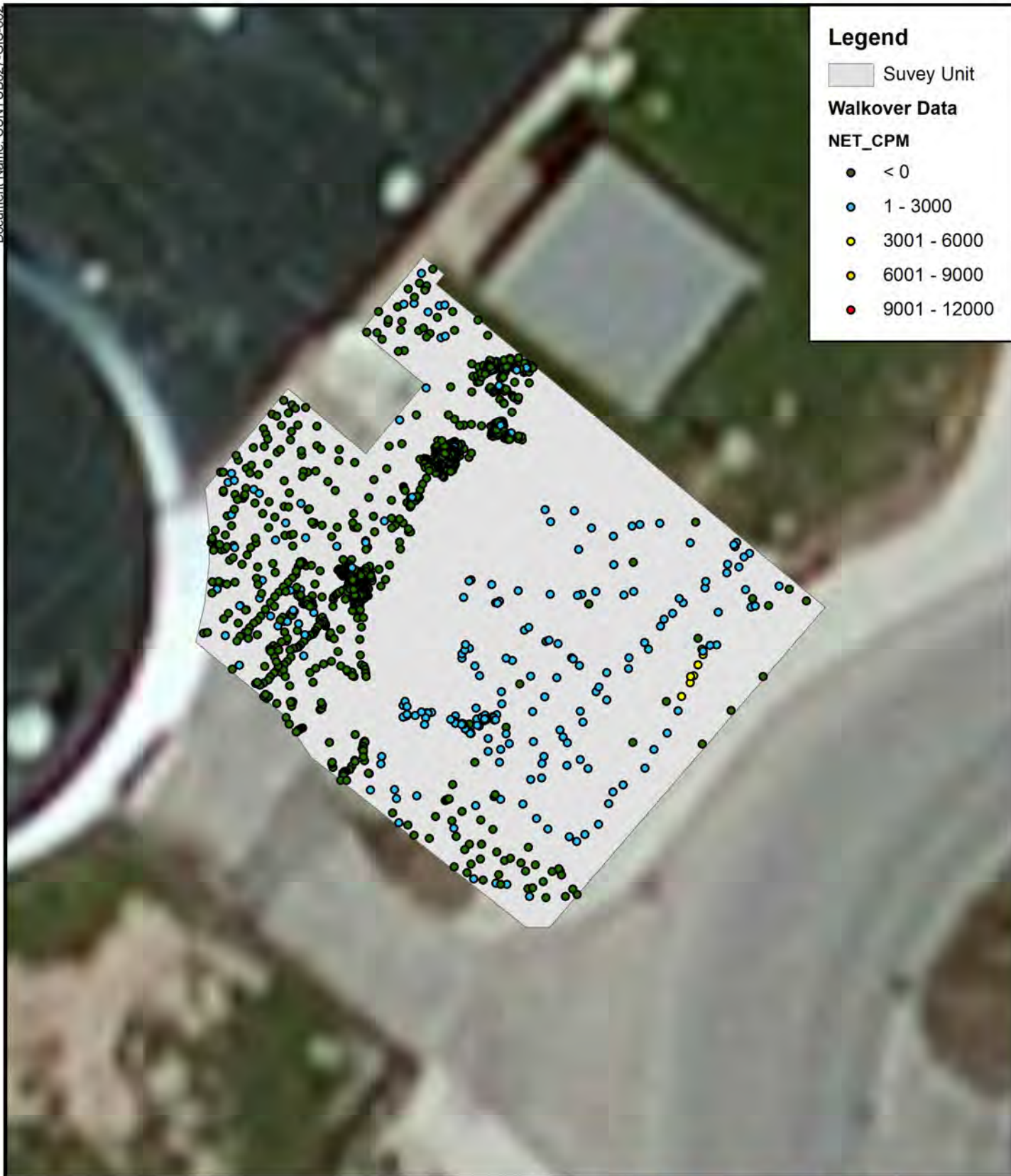


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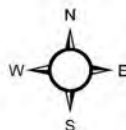
Source: ESRI World Imagery Service

Prepared by: M. Searle Date: January 27, 2016





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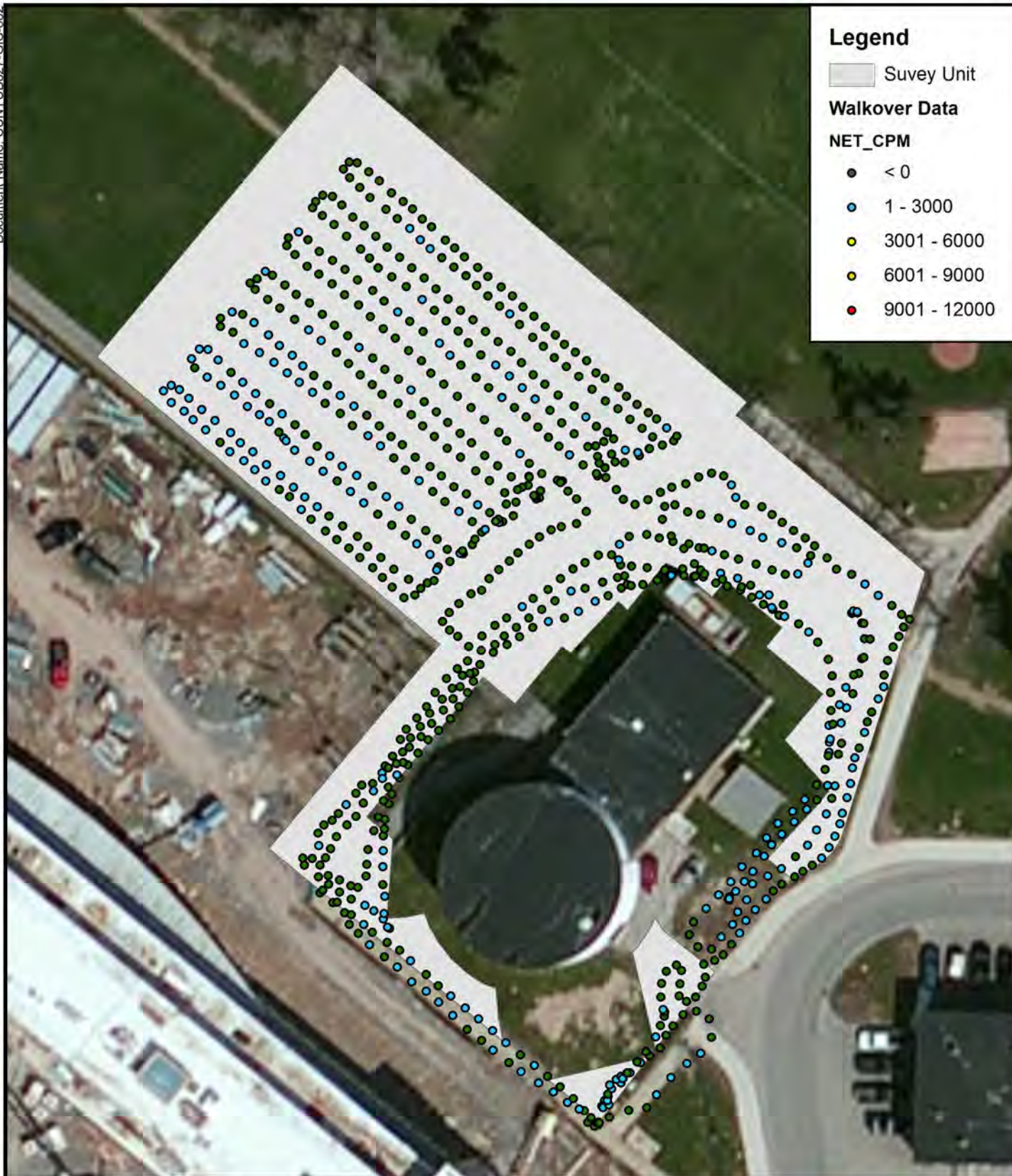


SU-6 Surface Scan Results

Source: ESRI World Imagery Service

Prepared by: M. Searle Date: January 27, 2016





Legend

Survey Unit

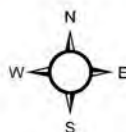
Walkover Data

NET_CPM

- < 0
- 1 - 3000
- 3001 - 6000
- 6001 - 9000
- 9001 - 12000

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SU-7 Surface Scan Results

Source: ESRI World Imagery Service

Prepared by: M. Searle Date: January 27, 2016



APPENDIX H – SOIL STOCKPILE ANALYSIS

Appendix H1 - Class 1 Stockpile Soil Analyses

Client Project	Sample ID	Parameter	Results	Sigma	MDC	Units	DCGL	Fraction	SOF
BMRC Final Status Survey	2014 11 12 S1-01	Americium-241	-0.008 ±	0.395	0.639	pCi/g	2.1	-0.0038	-0.0084
BMRC Final Status Survey	2014 11 12 S1-01	Carbon-14	-0.122 ±	0.706	1.57	pCi/g	12	-0.0102	
BMRC Final Status Survey	2014 11 12 S1-01	Cesium-137	0.015 ±	0.062	0.11	pCi/g	11	0.0014	
BMRC Final Status Survey	2014 11 12 S1-01	Cobalt-60	-0.031 ±	0.142	0.132	pCi/g	3.8	-0.0082	
BMRC Final Status Survey	2014 11 12 S1-01	Europium-152	0.119 ±	0.156	0.257	pCi/g	6.9	0.0172	
BMRC Final Status Survey	2014 11 12 S1-01	Europium-154	0.134 ±	0.127	0.169	pCi/g	8	0.0168	
BMRC Final Status Survey	2014 11 12 S1-01	Nickel-63	-0.269 ±	0.575	1.493	pCi/g	2100	-0.0001	
BMRC Final Status Survey	2014 11 12 S1-01	Plutonium-238	-0.012 ±	0.032	0.053	pCi/g	2.5	-0.0048	
BMRC Final Status Survey	2014 11 12 S1-01	Pu-239/240	0.005 ±	0.01	0.017	pCi/g	2.3	0.0022	
BMRC Final Status Survey	2014 11 12 S1-01	Silver-108M	0.025 ±	0.071	0.124	pCi/g	8.2	0.0030	
BMRC Final Status Survey	2014 11 12 S1-01	Strontium-90	-0.0539 ±	0.063	0.175	pCi/g	1.7	-0.0317	
BMRC Final Status Survey	2014 11 12 S1-01	Tritium	1.08 ±	1.74	2.97	pCi/g	110	0.0098	
BMRC Final Status Survey	2014 11 12 S1-02	Americium-241	0.049 ±	0.24	0.41	pCi/g	2.1	0.0233	0.1871
BMRC Final Status Survey	2014 11 12 S1-02	Carbon-14	0.636 ±	0.973	1.68	pCi/g	12	0.0530	
BMRC Final Status Survey	2014 11 12 S1-02	Cesium-137	0.03 ±	0.037	0.061	pCi/g	11	0.0027	
BMRC Final Status Survey	2014 11 12 S1-02	Cobalt-60	0.079 ±	0.038	0.079	pCi/g	3.8	0.0208	
BMRC Final Status Survey	2014 11 12 S1-02	Europium-152	0.021 ±	0.105	0.179	pCi/g	6.9	0.0030	
BMRC Final Status Survey	2014 11 12 S1-02	Europium-154	0.038 ±	0.072	0.12	pCi/g	8	0.0048	
BMRC Final Status Survey	2014 11 12 S1-02	Nickel-63	0.349 ±	0.548	1.24	pCi/g	2100	0.0002	
BMRC Final Status Survey	2014 11 12 S1-02	Plutonium-238	0.012 ±	0.019	0.03	pCi/g	2.5	0.0048	
BMRC Final Status Survey	2014 11 12 S1-02	Pu-239/240	0.009 ±	0.01	0.015	pCi/g	2.3	0.0039	
BMRC Final Status Survey	2014 11 12 S1-02	Silver-108M	0.325 ±	0.057	0.056	pCi/g	8.2	0.0396	
BMRC Final Status Survey	2014 11 12 S1-02	Strontium-90	0.021 ±	0.077	0.183	pCi/g	1.7	0.0124	
BMRC Final Status Survey	2014 11 12 S1-02	Tritium	2.05 ±	1.77	2.83	pCi/g	110	0.0186	
BMRC Final Status Survey	2014 11 12 S1-03	Americium-241	0.015 ±	0.255	0.458	pCi/g	2.1	0.0071	0.2197
BMRC Final Status Survey	2014 11 12 S1-03	Carbon-14	0.522 ±	0.962	1.72	pCi/g	12	0.0435	
BMRC Final Status Survey	2014 11 12 S1-03	Cesium-137	0.203 ±	0.073	0.049	pCi/g	11	0.0185	
BMRC Final Status Survey	2014 11 12 S1-03	Cobalt-60	0.066 ±	0.059	0.13	pCi/g	3.8	0.0174	
BMRC Final Status Survey	2014 11 12 S1-03	Europium-152	0.031 ±	0.145	0.253	pCi/g	6.9	0.0045	
BMRC Final Status Survey	2014 11 12 S1-03	Europium-154	-0.032 ±	0.109	0.187	pCi/g	8	-0.0040	
BMRC Final Status Survey	2014 11 12 S1-03	Nickel-63	1.85 ±	0.778	2.191	pCi/g	2100	0.0009	
BMRC Final Status Survey	2014 11 12 S1-03	Plutonium-238	0.003 ±	0.019	0.032	pCi/g	2.5	0.0012	
BMRC Final Status Survey	2014 11 12 S1-03	Pu-239/240	-0.007 ±	0.013	0.024	pCi/g	2.3	-0.0030	
BMRC Final Status Survey	2014 11 12 S1-03	Silver-108M	1.07 ±	0.164	0.083	pCi/g	8.2	0.1305	
BMRC Final Status Survey	2014 11 12 S1-03	Strontium-90	0.0123 ±	0.073	0.177	pCi/g	1.7	0.0072	
BMRC Final Status Survey	2014 11 12 S1-03	Tritium	-0.438 ±	1.99	3.72	pCi/g	110	-0.0040	
BMRC Final Status Survey	2014 11 12 S1-04	Americium-241	0.063 ±	0.17	0.292	pCi/g	2.1	0.0300	0.1978
BMRC Final Status Survey	2014 11 12 S1-04	Carbon-14	0.131 ±	0.858	1.73	pCi/g	12	0.0109	
BMRC Final Status Survey	2014 11 12 S1-04	Cesium-137	0.014 ±	0.086	0.157	pCi/g	11	0.0013	
BMRC Final Status Survey	2014 11 12 S1-04	Cobalt-60	0.016 ±	0.085	0.169	pCi/g	3.8	0.0042	
BMRC Final Status Survey	2014 11 12 S1-04	Europium-152	0 ±	0.103	0.191	pCi/g	6.9	0.0000	
BMRC Final Status Survey	2014 11 12 S1-04	Europium-154	-0.005 ±	0.092	0.166	pCi/g	8	-0.0006	
BMRC Final Status Survey	2014 11 12 S1-04	Nickel-63	-0.198 ±	0.75	2.493	pCi/g	2100	-0.0001	
BMRC Final Status Survey	2014 11 12 S1-04	Plutonium-238	0.02 ±	0.024	0.035	pCi/g	2.5	0.0080	
BMRC Final Status Survey	2014 11 12 S1-04	Pu-239/240	-0.005 ±	0.017	0.03	pCi/g	2.3	-0.0022	
BMRC Final Status Survey	2014 11 12 S1-04	Silver-108M	0.053 ±	0.053	0.162	pCi/g	8.2	0.0065	
BMRC Final Status Survey	2014 11 12 S1-04	Strontium-90	0.218 ±	0.131	0.254	pCi/g	1.7	0.1282	
BMRC Final Status Survey	2014 11 12 S1-04	Tritium	1.28 ±	1.89	3.2	pCi/g	110	0.0116	
BMRC Final Status Survey	2014 11 12 S1-05	Americium-241	-0.084 ±	0.368	0.633	pCi/g	2.1	-0.0400	0.1111
BMRC Final Status Survey	2014 11 12 S1-05	Carbon-14	0.658 ±	1.01	1.73	pCi/g	12	0.0548	
BMRC Final Status Survey	2014 11 12 S1-05	Cesium-137	0.002 ±	0.068	0.123	pCi/g	11	0.0002	
BMRC Final Status Survey	2014 11 12 S1-05	Cobalt-60	-0.006 ±	0.202	0.123	pCi/g	3.8	-0.0016	
BMRC Final Status Survey	2014 11 12 S1-05	Europium-152	-0.005 ±	1.039	0.249	pCi/g	6.9	-0.0007	
BMRC Final Status Survey	2014 11 12 S1-05	Europium-154	0.12 ±	0.15	0.163	pCi/g	8	0.0150	
BMRC Final Status Survey	2014 11 12 S1-05	Nickel-63	0.254 ±	0.594	1.489	pCi/g	2100	0.0001	
BMRC Final Status Survey	2014 11 12 S1-05	Plutonium-238	-0.014 ±	0.029	0.049	pCi/g	2.5	-0.0056	

The Fraction is the Result/DCGL. SOF = Sum of the Fractions

Appendix H1 - Class 1 Stockpile Soil Analyses

Client Project	Sample ID	Parameter	Results	Sigma	MDC	Units	DCGL	Fraction	SOF
BMRC Final Status Survey	2014 11 12 S1-05	Pu-239/240	0.008 ±	0.012	0.018	pCi/g	2.3	0.0035	
BMRC Final Status Survey	2014 11 12 S1-05	Silver-108M	0.066 ±	0.077	0.125	pCi/g	8.2	0.0080	
BMRC Final Status Survey	2014 11 12 S1-05	Strontium-90	0.103 ±	0.071	0.136	pCi/g	1.7	0.0606	
BMRC Final Status Survey	2014 11 12 S1-05	Tritium	1.84 ±	1.6	2.55	pCi/g	110	0.0167	
BMRC Final Status Survey	2014 11 12 S1-06	Americium-241	-0.018 ±	0.189	0.332	pCi/g	2.1	-0.0086	0.2053
BMRC Final Status Survey	2014 11 12 S1-06	Carbon-14	1.61 ±	1.25	1.76	pCi/g	12	0.1342	
BMRC Final Status Survey	2014 11 12 S1-06	Cesium-137	0.05 ±	0.09	0.153	pCi/g	11	0.0045	
BMRC Final Status Survey	2014 11 12 S1-06	Cobalt-60	0.001 ±	0.085	0.177	pCi/g	3.8	0.0003	
BMRC Final Status Survey	2014 11 12 S1-06	Europium-152	0 ±	0.004	0.307	pCi/g	6.9	0.0000	
BMRC Final Status Survey	2014 11 12 S1-06	Europium-154	-0.014 ±	0.109	0.193	pCi/g	8	-0.0018	
BMRC Final Status Survey	2014 11 12 S1-06	Nickel-63	0.363 ±	0.592	1.459	pCi/g	2100	0.0002	
BMRC Final Status Survey	2014 11 12 S1-06	Plutonium-238	-0.002 ±	0.022	0.037	pCi/g	2.5	-0.0008	
BMRC Final Status Survey	2014 11 12 S1-06	Pu-239/240	0.006 ±	0.012	0.02	pCi/g	2.3	0.0026	
BMRC Final Status Survey	2014 11 12 S1-06	Silver-108M	0.091 ±	0.056	0.147	pCi/g	8.2	0.0111	
BMRC Final Status Survey	2014 11 12 S1-06	Strontium-90	0.0267 ±	0.08	0.189	pCi/g	1.7	0.0157	
BMRC Final Status Survey	2014 11 12 S1-06	Tritium	5.26 ±	2.23	3	pCi/g	110	0.0478	
BMRC Final Status Survey	2014 11 12 S1-07	Americium-241	0.039 ±	0.181	0.315	pCi/g	2.1	0.0186	0.1126
BMRC Final Status Survey	2014 11 12 S1-07	Carbon-14	0.131 ±	0.861	1.74	pCi/g	12	0.0109	
BMRC Final Status Survey	2014 11 12 S1-07	Cesium-137	0.013 ±	0.059	0.112	pCi/g	11	0.0012	
BMRC Final Status Survey	2014 11 12 S1-07	Cobalt-60	0.076 ±	0.08	0.132	pCi/g	3.8	0.0200	
BMRC Final Status Survey	2014 11 12 S1-07	Europium-152	-0.05 ±	0.133	0.229	pCi/g	6.9	-0.0072	
BMRC Final Status Survey	2014 11 12 S1-07	Europium-154	0.147 ±	0.156	0.15	pCi/g	8	0.0184	
BMRC Final Status Survey	2014 11 12 S1-07	Nickel-63	0.093 ±	0.547	1.288	pCi/g	2100	0.0000	
BMRC Final Status Survey	2014 11 12 S1-07	Plutonium-238	0.02 ±	0.027	0.041	pCi/g	2.5	0.0080	
BMRC Final Status Survey	2014 11 12 S1-07	Pu-239/240	0.004 ±	0.012	0.02	pCi/g	2.3	0.0017	
BMRC Final Status Survey	2014 11 12 S1-07	Silver-108M	0.204 ±	0.075	0.147	pCi/g	8.2	0.0249	
BMRC Final Status Survey	2014 11 12 S1-07	Strontium-90	-0.0257 ±	0.072	0.189	pCi/g	1.7	-0.0151	
BMRC Final Status Survey	2014 11 12 S1-07	Tritium	3.44 ±	2.21	3.34	pCi/g	110	0.0313	
BMRC Final Status Survey	2014 11 12 S1-08	Americium-241	0.058 ±	0.356	0.623	pCi/g	2.1	0.0276	0.0545
BMRC Final Status Survey	2014 11 12 S1-08	Carbon-14	0 ±	0.787	1.67	pCi/g	12	0.0000	
BMRC Final Status Survey	2014 11 12 S1-08	Cesium-137	0 ±	0.064	0.118	pCi/g	11	0.0000	
BMRC Final Status Survey	2014 11 12 S1-08	Cobalt-60	-0.019 ±	0.235	0.124	pCi/g	3.8	-0.0050	
BMRC Final Status Survey	2014 11 12 S1-08	Europium-152	0.065 ±	0.141	0.241	pCi/g	6.9	0.0094	
BMRC Final Status Survey	2014 11 12 S1-08	Europium-154	0.028 ±	0.1	0.174	pCi/g	8	0.0035	
BMRC Final Status Survey	2014 11 12 S1-08	Nickel-63	0.072 ±	0.711	2.194	pCi/g	2100	0.0000	
BMRC Final Status Survey	2014 11 12 S1-08	Plutonium-238	0.012 ±	0.029	0.046	pCi/g	2.5	0.0048	
BMRC Final Status Survey	2014 11 12 S1-08	Pu-239/240	0 ±	0.016	0.028	pCi/g	2.3	0.0000	
BMRC Final Status Survey	2014 11 12 S1-08	Silver-108M	0.046 ±	0.042	0.118	pCi/g	8.2	0.0056	
BMRC Final Status Survey	2014 11 12 S1-08	Strontium-90	0.0157 ±	0.075	0.181	pCi/g	1.7	0.0092	
BMRC Final Status Survey	2014 11 12 S1-08	Tritium	-0.0779 ±	1.56	2.87	pCi/g	110	-0.0007	
BMRC Final Status Survey	2014 11 17 S1-01	Americium-241	0.239 ±	0.365	0.607	pCi/g	2.1	0.1138	0.4312
BMRC Final Status Survey	2014 11 17 S1-01	Carbon-14	0 ±	0.302	0.543	pCi/g	12	0.0000	
BMRC Final Status Survey	2014 11 17 S1-01	Cesium-137	0.146 ±	0.085	0.081	pCi/g	11	0.0133	
BMRC Final Status Survey	2014 11 17 S1-01	Cobalt-60	0.1 ±	0.067	0.13	pCi/g	3.8	0.0263	
BMRC Final Status Survey	2014 11 17 S1-01	Europium-152	-0.011 ±	0.533	0.274	pCi/g	6.9	-0.0016	
BMRC Final Status Survey	2014 11 17 S1-01	Europium-154	0.105 ±	0.111	0.178	pCi/g	8	0.0131	
BMRC Final Status Survey	2014 11 17 S1-01	Nickel-63	2.54 ±	1.404	3.336	pCi/g	2100	0.0012	
BMRC Final Status Survey	2014 11 17 S1-01	Plutonium-238	0.011 ±	0.031	0.059	pCi/g	2.5	0.0044	
BMRC Final Status Survey	2014 11 17 S1-01	Pu-239/240	-0.011 ±	0.015	0.041	pCi/g	2.3	-0.0048	
BMRC Final Status Survey	2014 11 17 S1-01	Silver-108M	0.913 ±	0.147	0.099	pCi/g	8.2	0.1113	
BMRC Final Status Survey	2014 11 17 S1-01	Strontium-90	0.25 ±	0.132	0.238	pCi/g	1.7	0.1471	
BMRC Final Status Survey	2014 11 17 S1-01	Tritium	0.778 ±	1.46	2.52	pCi/g	110	0.0071	
BMRC Final Status Survey	2014 12 12 S1-01	Americium-241	-0.066 ±	0.327	0.568	pCi/g	2.1	-0.0314	0.0142
BMRC Final Status Survey	2014 12 12 S1-01	Carbon-14	-0.103 ±	0.373	0.699	pCi/g	12	-0.0086	
BMRC Final Status Survey	2014 12 12 S1-01	Cesium-137	0.016 ±	0.05	0.089	pCi/g	11	0.0015	
BMRC Final Status Survey	2014 12 12 S1-01	Cobalt-60	-0.016 ±	3.81	0.122	pCi/g	3.8	-0.0042	

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Appendix H1 - Class 1 Stockpile Soil Analyses

Client Project	Sample ID	Parameter	Results	Sigma	MDC	Units	DCGL	Fraction	SOF
BMRC Final Status Survey	2014 12 12 S1-01	Europium-152	0.103 ±	0.157	0.261	pCi/g	6.9	0.0149	
BMRC Final Status Survey	2014 12 12 S1-01	Europium-154	0 ±	0.018	0.183	pCi/g	8	0.0000	
BMRC Final Status Survey	2014 12 12 S1-01	Nickel-63	-0.147 ±	1.29	4.136	pCi/g	2100	-0.0001	
BMRC Final Status Survey	2014 12 12 S1-01	Plutonium-238	0.04 ±	0.025	0.034	pCi/g	2.5	0.0160	
BMRC Final Status Survey	2014 12 12 S1-01	Pu-239/240	0.002 ±	0.009	0.019	pCi/g	2.3	0.0009	
BMRC Final Status Survey	2014 12 12 S1-01	Silver-108M	0.084 ±	0.044	0.096	pCi/g	8.2	0.0102	
BMRC Final Status Survey	2014 12 12 S1-01	Strontium-90	0.0169 ±	0.053	0.1	pCi/g	1.7	0.0099	
BMRC Final Status Survey	2014 12 12 S1-01	Tritium	0.557 ±	1.56	2.73	pCi/g	110	0.0051	
BMRC Final Status Survey	2014 12 12 S1-02	Americium-241	0.115 ±	0.32	0.552	pCi/g	2.1	0.0548	0.0557
BMRC Final Status Survey	2014 12 12 S1-02	Carbon-14	0.146 ±	0.404	0.709	pCi/g	12	0.0122	
BMRC Final Status Survey	2014 12 12 S1-02	Cesium-137	0.003 ±	0.06	0.111	pCi/g	11	0.0003	
BMRC Final Status Survey	2014 12 12 S1-02	Cobalt-60	-0.018 ±	5.666	0.098	pCi/g	3.8	-0.0047	
BMRC Final Status Survey	2014 12 12 S1-02	Europium-152	-0.009 ±	0.153	0.241	pCi/g	6.9	-0.0013	
BMRC Final Status Survey	2014 12 12 S1-02	Europium-154	-0.013 ±	0.102	0.168	pCi/g	8	-0.0016	
BMRC Final Status Survey	2014 12 12 S1-02	Nickel-63	-0.607 ±	1.314	4.501	pCi/g	2100	-0.0003	
BMRC Final Status Survey	2014 12 12 S1-02	Plutonium-238	0.018 ±	0.02	0.033	pCi/g	2.5	0.0072	
BMRC Final Status Survey	2014 12 12 S1-02	Pu-239/240	0.01 ±	0.012	0.018	pCi/g	2.3	0.0043	
BMRC Final Status Survey	2014 12 12 S1-02	Silver-108M	0.029 ±	0.025	0.102	pCi/g	8.2	0.0035	
BMRC Final Status Survey	2014 12 12 S1-02	Strontium-90	-0.0275 ±	0.056	0.11	pCi/g	1.7	-0.0162	
BMRC Final Status Survey	2014 12 12 S1-02	Tritium	-0.268 ±	1.3	2.42	pCi/g	110	-0.0024	
BMRC Final Status Survey	2014 12 13 S1-01	Americium-241	-0.012 ±	0.19	0.312	pCi/g	2.1	-0.0057	0.0626
BMRC Final Status Survey	2014 12 13 S1-01	Carbon-14	0.447 ±	0.425	0.688	pCi/g	12	0.0373	
BMRC Final Status Survey	2014 12 13 S1-01	Cesium-137	0.02 ±	0.092	0.167	pCi/g	11	0.0018	
BMRC Final Status Survey	2014 12 13 S1-01	Cobalt-60	0.034 ±	0.084	0.163	pCi/g	3.8	0.0089	
BMRC Final Status Survey	2014 12 13 S1-01	Europium-152	0.076 ±	0.125	0.21	pCi/g	6.9	0.0110	
BMRC Final Status Survey	2014 12 13 S1-01	Europium-154	0 ±	0.009	0.158	pCi/g	8	0.0000	
BMRC Final Status Survey	2014 12 13 S1-01	Nickel-63	1.278 ±	1.363	3.915	pCi/g	2100	0.0006	
BMRC Final Status Survey	2014 12 13 S1-01	Plutonium-238	0.014 ±	0.025	0.044	pCi/g	2.5	0.0056	
BMRC Final Status Survey	2014 12 13 S1-01	Pu-239/240	-0.002 ±	0.01	0.024	pCi/g	2.3	-0.0009	
BMRC Final Status Survey	2014 12 13 S1-01	Silver-108M	0.001 ±	0.081	0.153	pCi/g	8.2	0.0001	
BMRC Final Status Survey	2014 12 13 S1-01	Strontium-90	-0.0066 ±	0.052	0.101	pCi/g	1.7	-0.0039	
BMRC Final Status Survey	2014 12 13 S1-01	Tritium	0.851 ±	1.46	2.5	pCi/g	110	0.0077	
BMRC Final Status Survey	2014 12 13 S1-02	Americium-241	0.001 ±	0.364	0.647	pCi/g	2.1	0.0005	0.0549
BMRC Final Status Survey	2014 12 13 S1-02	Carbon-14	0.227 ±	0.407	0.698	pCi/g	12	0.0189	
BMRC Final Status Survey	2014 12 13 S1-02	Cesium-137	0.027 ±	0.065	0.113	pCi/g	11	0.0025	
BMRC Final Status Survey	2014 12 13 S1-02	Cobalt-60	0.006 ±	0.066	0.129	pCi/g	3.8	0.0016	
BMRC Final Status Survey	2014 12 13 S1-02	Europium-152	0.07 ±	0.16	0.273	pCi/g	6.9	0.0101	
BMRC Final Status Survey	2014 12 13 S1-02	Europium-154	-0.001 ±	0.021	0.237	pCi/g	8	-0.0001	
BMRC Final Status Survey	2014 12 13 S1-02	Nickel-63	0.651 ±	1.326	3.987	pCi/g	2100	0.0003	
BMRC Final Status Survey	2014 12 13 S1-02	Plutonium-238	-0.019 ±	0.036	0.068	pCi/g	2.5	-0.0076	
BMRC Final Status Survey	2014 12 13 S1-02	Pu-239/240	0.005 ±	0.011	0.02	pCi/g	2.3	0.0022	
BMRC Final Status Survey	2014 12 13 S1-02	Silver-108M	0.059 ±	0.046	0.124	pCi/g	8.2	0.0072	
BMRC Final Status Survey	2014 12 13 S1-02	Strontium-90	0.0272 ±	0.062	0.116	pCi/g	1.7	0.0160	
BMRC Final Status Survey	2014 12 13 S1-02	Tritium	0.374 ±	1.76	3.14	pCi/g	110	0.0034	
BMRC Final Status Survey	2014 12 13 S1-03	Americium-241	-0.054 ±	0.196	0.332	pCi/g	2.1	-0.0257	-0.0071
BMRC Final Status Survey	2014 12 13 S1-03	Carbon-14	0.429 ±	0.425	0.693	pCi/g	12	0.0358	
BMRC Final Status Survey	2014 12 13 S1-03	Cesium-137	-0.001 ±	0.071	0.136	pCi/g	11	-0.0001	
BMRC Final Status Survey	2014 12 13 S1-03	Cobalt-60	0.013 ±	0.083	0.168	pCi/g	3.8	0.0034	
BMRC Final Status Survey	2014 12 13 S1-03	Europium-152	0.03 ±	0.14	0.246	pCi/g	6.9	0.0043	
BMRC Final Status Survey	2014 12 13 S1-03	Europium-154	-0.029 ±	0.112	0.191	pCi/g	8	-0.0036	
BMRC Final Status Survey	2014 12 13 S1-03	Nickel-63	0.186 ±	1.053	2.622	pCi/g	2100	0.0001	
BMRC Final Status Survey	2014 12 13 S1-03	Plutonium-238	0.028 ±	0.031	0.051	pCi/g	2.5	0.0112	
BMRC Final Status Survey	2014 12 13 S1-03	Pu-239/240	-0.002 ±	0.016	0.034	pCi/g	2.3	-0.0009	
BMRC Final Status Survey	2014 12 13 S1-03	Silver-108M	0.041 ±	0.033	0.059	pCi/g	8.2	0.0050	
BMRC Final Status Survey	2014 12 13 S1-03	Strontium-90	-0.0698 ±	0.058	0.114	pCi/g	1.7	-0.0411	
BMRC Final Status Survey	2014 12 13 S1-03	Tritium	0.49 ±	1.37	2.4	pCi/g	110	0.0045	

Appendix H1 - Class 1 Stockpile Soil Analyses

Client Project	Sample ID	Parameter	Results	Sigma	MDC	Units	DCGL	Fraction	SOF
BMRC Final Status Survey	2014 12 13 S1-04	Americium-241	0.003 ±	0.156	0.277	pCi/g	2.1	0.0014	0.0713
BMRC Final Status Survey	2014 12 13 S1-04	Carbon-14	0.33 ±	0.418	0.699	pCi/g	12	0.0275	
BMRC Final Status Survey	2014 12 13 S1-04	Cesium-137	0 ±	0.014	0.052	pCi/g	11	0.0000	
BMRC Final Status Survey	2014 12 13 S1-04	Cobalt-60	0.014 ±	0.019	0.102	pCi/g	3.8	0.0037	
BMRC Final Status Survey	2014 12 13 S1-04	Europium-152	-0.052 ±	0.178	0.278	pCi/g	6.9	-0.0075	
BMRC Final Status Survey	2014 12 13 S1-04	Europium-154	0.059 ±	0.104	0.151	pCi/g	8	0.0074	
BMRC Final Status Survey	2014 12 13 S1-04	Nickel-63	0.536 ±	1.255	3.594	pCi/g	2100	0.0003	
BMRC Final Status Survey	2014 12 13 S1-04	Plutonium-238	0.03 ±	0.027	0.043	pCi/g	2.5	0.0120	
BMRC Final Status Survey	2014 12 13 S1-04	Pu-239/240	0.003 ±	0.013	0.026	pCi/g	2.3	0.0013	
BMRC Final Status Survey	2014 12 13 S1-04	Silver-108M	0.134 ±	0.064	0.052	pCi/g	8.2	0.0163	
BMRC Final Status Survey	2014 12 13 S1-04	Strontium-90	0.0176 ±	0.05	0.0941	pCi/g	1.7	0.0104	
BMRC Final Status Survey	2014 12 13 S1-04	Tritium	-0.16 ±	1.7	3.13	pCi/g	110	-0.0015	
BMRC Final Status Survey	2014 12 13 S1-05	Americium-241	0.081 ±	0.169	0.287	pCi/g	2.1	0.0386	0.0816
BMRC Final Status Survey	2014 12 13 S1-05	Carbon-14	0.301 ±	0.432	0.73	pCi/g	12	0.0251	
BMRC Final Status Survey	2014 12 13 S1-05	Cesium-137	0.054 ±	0.082	0.138	pCi/g	11	0.0049	
BMRC Final Status Survey	2014 12 13 S1-05	Cobalt-60	0.007 ±	0.012	0.222	pCi/g	3.8	0.0018	
BMRC Final Status Survey	2014 12 13 S1-05	Europium-152	-0.032 ±	0.165	0.246	pCi/g	6.9	-0.0046	
BMRC Final Status Survey	2014 12 13 S1-05	Europium-154	0.029 ±	0.09	0.157	pCi/g	8	0.0036	
BMRC Final Status Survey	2014 12 13 S1-05	Nickel-63	-0.213 ±	1.15	3.334	pCi/g	2100	-0.0001	
BMRC Final Status Survey	2014 12 13 S1-05	Plutonium-238	0.037 ±	0.03	0.046	pCi/g	2.5	0.0148	
BMRC Final Status Survey	2014 12 13 S1-05	Pu-239/240	0.009 ±	0.011	0.017	pCi/g	2.3	0.0039	
BMRC Final Status Survey	2014 12 13 S1-05	Silver-108M	0.039 ±	0.058	0.153	pCi/g	8.2	0.0048	
BMRC Final Status Survey	2014 12 13 S1-05	Strontium-90	-0.0256 ±	0.052	0.101	pCi/g	1.7	-0.0151	
BMRC Final Status Survey	2014 12 13 S1-05	Tritium	0.429 ±	1.67	2.96	pCi/g	110	0.0039	
BMRC Final Status Survey	2014 12 13 S1-06	Americium-241	0.133 ±	0.163	0.266	pCi/g	2.1	0.0633	0.1399
BMRC Final Status Survey	2014 12 13 S1-06	Carbon-14	0.214 ±	0.42	0.724	pCi/g	12	0.0178	
BMRC Final Status Survey	2014 12 13 S1-06	Cesium-137	0.026 ±	0.066	0.119	pCi/g	11	0.0024	
BMRC Final Status Survey	2014 12 13 S1-06	Cobalt-60	0.005 ±	0.07	0.154	pCi/g	3.8	0.0013	
BMRC Final Status Survey	2014 12 13 S1-06	Europium-152	-0.035 ±	0.171	0.257	pCi/g	6.9	-0.0051	
BMRC Final Status Survey	2014 12 13 S1-06	Europium-154	-0.009 ±	0.089	0.152	pCi/g	8	-0.0011	
BMRC Final Status Survey	2014 12 13 S1-06	Nickel-63	1.203 ±	1.104	2.388	pCi/g	2100	0.0006	
BMRC Final Status Survey	2014 12 13 S1-06	Plutonium-238	0 ±	0.025	0.046	pCi/g	2.5	0.0000	
BMRC Final Status Survey	2014 12 13 S1-06	Pu-239/240	0.003 ±	0.013	0.025	pCi/g	2.3	0.0013	
BMRC Final Status Survey	2014 12 13 S1-06	Silver-108M	0.193 ±	0.063	0.136	pCi/g	8.2	0.0235	
BMRC Final Status Survey	2014 12 13 S1-06	Strontium-90	0.0485 ±	0.057	0.104	pCi/g	1.7	0.0285	
BMRC Final Status Survey	2014 12 13 S1-06	Tritium	0.808 ±	1.62	2.79	pCi/g	110	0.0073	
BMRC Final Status Survey	2014 12 22 S1-01	Americium-241	-0.127 ±	0.4	0.68	pCi/g	2.1	-0.0605	0.4891
BMRC Final Status Survey	2014 12 22 S1-01	Carbon-14	0.173 ±	0.356	0.612	pCi/g	12	0.0144	
BMRC Final Status Survey	2014 12 22 S1-01	Cesium-137	0.073 ±	0.067	0.105	pCi/g	11	0.0066	
BMRC Final Status Survey	2014 12 22 S1-01	Cobalt-60	0.264 ±	0.08	0.092	pCi/g	3.8	0.0695	
BMRC Final Status Survey	2014 12 22 S1-01	Europium-152	0.05 ±	0.194	0.332	pCi/g	6.9	0.0072	
BMRC Final Status Survey	2014 12 22 S1-01	Europium-154	0.04 ±	0.135	0.23	pCi/g	8	0.0050	
BMRC Final Status Survey	2014 12 22 S1-01	Nickel-63	0.129 ±	1.387	4.069	pCi/g	2100	0.0001	
BMRC Final Status Survey	2014 12 22 S1-01	Plutonium-238	0.007 ±	0.028	0.051	pCi/g	2.5	0.0028	
BMRC Final Status Survey	2014 12 22 S1-01	Pu-239/240	0.018 ±	0.017	0.025	pCi/g	2.3	0.0078	
BMRC Final Status Survey	2014 12 22 S1-01	Silver-108M	1.396 ±	0.211	0.109	pCi/g	8.2	0.1702	
BMRC Final Status Survey	2014 12 22 S1-01	Strontium-90	0.452 ±	0.151	0.198	pCi/g	1.7	0.2659	
BMRC Final Status Survey	2014 12 22 S1-01	Tritium	0 ±	1.84	3.32	pCi/g	110	0.0000	
BMRC Final Status Survey	2014 12 22 S1-01-DUF	Americium-241	0.006 ±	0.178	0.315	pCi/g	2.1	0.0029	0.3321
BMRC Final Status Survey	2014 12 22 S1-01-DUF	Carbon-14	0.479 ±	0.365	0.579	pCi/g	12	0.0399	
BMRC Final Status Survey	2014 12 22 S1-01-DUF	Cesium-137	0.062 ±	0.096	0.16	pCi/g	11	0.0056	
BMRC Final Status Survey	2014 12 22 S1-01-DUF	Cobalt-60	0.148 ±	0.098	0.215	pCi/g	3.8	0.0389	
BMRC Final Status Survey	2014 12 22 S1-01-DUF	Europium-152	0.006 ±	0.148	0.263	pCi/g	6.9	0.0009	
BMRC Final Status Survey	2014 12 22 S1-01-DUF	Europium-154	0.009 ±	0.095	0.17	pCi/g	8	0.0011	
BMRC Final Status Survey	2014 12 22 S1-01-DUF	Nickel-63	1.706 ±	1.462	3.832	pCi/g	2100	0.0008	
BMRC Final Status Survey	2014 12 22 S1-01-DUF	Plutonium-238	0.002 ±	0.038	0.069	pCi/g	2.5	0.0008	

Appendix H1 - Class 1 Stockpile Soil Analyses

Client Project	Sample ID	Parameter	Results	Sigma	MDC	Units	DCGL	Fraction	SOF
BMRC Final Status Survey	2014 12 22 S1-01-DUF	Pu-239/240	-0.01 ±	0.016	0.036	pCi/g	2.3	-0.0043	
BMRC Final Status Survey	2014 12 22 S1-01-DUF	Silver-108M	1.171 ±	0.192	0.13	pCi/g	8.2	0.1428	
BMRC Final Status Survey	2014 12 22 S1-01-DUF	Strontium-90	0.192 ±	0.119	0.223	pCi/g	1.7	0.1129	
BMRC Final Status Survey	2014 12 22 S1-01-DUF	Tritium	-1.13 ±	1.4	2.71	pCi/g	110	-0.0103	
BMRC Final Status Survey	2014 12 22 S1-02	Americium-241	0.01 ±	0.33	0.584	pCi/g	2.1	0.0048	0.5126
BMRC Final Status Survey	2014 12 22 S1-02	Carbon-14	0.331 ±	0.355	0.585	pCi/g	12	0.0276	
BMRC Final Status Survey	2014 12 22 S1-02	Cesium-137	0.064 ±	0.062	0.097	pCi/g	11	0.0058	
BMRC Final Status Survey	2014 12 22 S1-02	Cobalt-60	0.202 ±	0.077	0.157	pCi/g	3.8	0.0532	
BMRC Final Status Survey	2014 12 22 S1-02	Europium-152	0.146 ±	0.173	0.281	pCi/g	6.9	0.0212	
BMRC Final Status Survey	2014 12 22 S1-02	Europium-154	0.23 ±	0.134	0.144	pCi/g	8	0.0288	
BMRC Final Status Survey	2014 12 22 S1-02	Nickel-63	1.595 ±	1.497	4.111	pCi/g	2100	0.0008	
BMRC Final Status Survey	2014 12 22 S1-02	Plutonium-238	0.008 ±	0.029	0.052	pCi/g	2.5	0.0032	
BMRC Final Status Survey	2014 12 22 S1-02	Pu-239/240	0.01 ±	0.017	0.031	pCi/g	2.3	0.0043	
BMRC Final Status Survey	2014 12 22 S1-02	Silver-108M	1.241 ±	0.188	0.102	pCi/g	8.2	0.1513	
BMRC Final Status Survey	2014 12 22 S1-02	Strontium-90	0.361 ±	0.133	0.189	pCi/g	1.7	0.2124	
BMRC Final Status Survey	2014 12 22 S1-02	Tritium	-0.071 ±	1.66	3.01	pCi/g	110	-0.0006	
BMRC Final Status Survey	2014 12 22 S1-03	Americium-241	-0.008 ±	0.204	0.357	pCi/g	2.1	-0.0038	0.4112
BMRC Final Status Survey	2014 12 22 S1-03	Carbon-14	0.4 ±	0.35	0.565	pCi/g	12	0.0333	
BMRC Final Status Survey	2014 12 22 S1-03	Cesium-137	0.054 ±	0.081	0.136	pCi/g	11	0.0049	
BMRC Final Status Survey	2014 12 22 S1-03	Cobalt-60	0.209 ±	0.124	0.168	pCi/g	3.8	0.0550	
BMRC Final Status Survey	2014 12 22 S1-03	Europium-152	0.011 ±	0.208	0.361	pCi/g	6.9	0.0016	
BMRC Final Status Survey	2014 12 22 S1-03	Europium-154	-0.062 ±	0.144	0.241	pCi/g	8	-0.0078	
BMRC Final Status Survey	2014 12 22 S1-03	Nickel-63	1.034 ±	1.375	3.612	pCi/g	2100	0.0005	
BMRC Final Status Survey	2014 12 22 S1-03	Plutonium-238	0.044 ±	0.027	0.038	pCi/g	2.5	0.0176	
BMRC Final Status Survey	2014 12 22 S1-03	Pu-239/240	0.007 ±	0.015	0.027	pCi/g	2.3	0.0030	
BMRC Final Status Survey	2014 12 22 S1-03	Silver-108M	1.163 ±	0.229	0.052	pCi/g	8.2	0.1418	
BMRC Final Status Survey	2014 12 22 S1-03	Strontium-90	0.265 ±	0.115	0.181	pCi/g	1.7	0.1559	
BMRC Final Status Survey	2014 12 22 S1-03	Tritium	0.999 ±	1.69	2.88	pCi/g	110	0.0091	
BMRC Final Status Survey	2014 12 22 S1-04	Americium-241	0.137 ±	0.266	0.452	pCi/g	2.1	0.0652	0.4687
BMRC Final Status Survey	2014 12 22 S1-04	Carbon-14	0.302 ±	0.348	0.577	pCi/g	12	0.0252	
BMRC Final Status Survey	2014 12 22 S1-04	Cesium-137	0.027 ±	0.069	0.119	pCi/g	11	0.0025	
BMRC Final Status Survey	2014 12 22 S1-04	Cobalt-60	0.218 ±	0.075	0.045	pCi/g	3.8	0.0574	
BMRC Final Status Survey	2014 12 22 S1-04	Europium-152	0.039 ±	0.173	0.297	pCi/g	6.9	0.0057	
BMRC Final Status Survey	2014 12 22 S1-04	Europium-154	0.048 ±	0.083	0.195	pCi/g	8	0.0060	
BMRC Final Status Survey	2014 12 22 S1-04	Nickel-63	2.736 ±	1.757	5.378	pCi/g	2100	0.0013	
BMRC Final Status Survey	2014 12 22 S1-04	Plutonium-238	0.019 ±	0.027	0.046	pCi/g	2.5	0.0076	
BMRC Final Status Survey	2014 12 22 S1-04	Pu-239/240	-0.015 ±	0.018	0.04	pCi/g	2.3	-0.0065	
BMRC Final Status Survey	2014 12 22 S1-04	Silver-108M	1.011 ±	0.19	0.099	pCi/g	8.2	0.1233	
BMRC Final Status Survey	2014 12 22 S1-04	Strontium-90	0.271 ±	0.151	0.285	pCi/g	1.7	0.1594	
BMRC Final Status Survey	2014 12 22 S1-04	Tritium	2.39 ±	1.96	3.13	pCi/g	110	0.0217	
BMRC Final Status Survey	2014 12 22 S1-05	Americium-241	-0.044 ±	0.182	0.313	pCi/g	2.1	-0.0210	0.0961
BMRC Final Status Survey	2014 12 22 S1-05	Carbon-14	0.373 ±	0.359	0.586	pCi/g	12	0.0311	
BMRC Final Status Survey	2014 12 22 S1-05	Cesium-137	0.034 ±	0.071	0.123	pCi/g	11	0.0031	
BMRC Final Status Survey	2014 12 22 S1-05	Cobalt-60	0.048 ±	0.062	0.176	pCi/g	3.8	0.0126	
BMRC Final Status Survey	2014 12 22 S1-05	Europium-152	-0.057 ±	0.168	0.288	pCi/g	6.9	-0.0083	
BMRC Final Status Survey	2014 12 22 S1-05	Europium-154	-0.001 ±	0.331	0.174	pCi/g	8	-0.0001	
BMRC Final Status Survey	2014 12 22 S1-05	Nickel-63	0.514 ±	1.568	5.057	pCi/g	2100	0.0002	
BMRC Final Status Survey	2014 12 22 S1-05	Plutonium-238	0.044 ±	0.029	0.044	pCi/g	2.5	0.0176	
BMRC Final Status Survey	2014 12 22 S1-05	Pu-239/240	-0.008 ±	0.015	0.032	pCi/g	2.3	-0.0035	
BMRC Final Status Survey	2014 12 22 S1-05	Silver-108M	0.518 ±	0.105	0.05	pCi/g	8.2	0.0632	
BMRC Final Status Survey	2014 12 22 S1-05	Strontium-90	-0.0231 ±	0.069	0.181	pCi/g	1.7	-0.0136	
BMRC Final Status Survey	2014 12 22 S1-05	Tritium	1.61 ±	1.68	2.76	pCi/g	110	0.0146	
BMRC Final Status Survey	2014 12 22 S1-06	Americium-241	0 ±	0.012	0.754	pCi/g	2.1	0.0000	0.1657
BMRC Final Status Survey	2014 12 22 S1-06	Carbon-14	0.349 ±	0.358	0.587	pCi/g	12	0.0291	
BMRC Final Status Survey	2014 12 22 S1-06	Cesium-137	0.039 ±	0.056	0.094	pCi/g	11	0.0035	
BMRC Final Status Survey	2014 12 22 S1-06	Cobalt-60	0.052 ±	0.056	0.129	pCi/g	3.8	0.0137	

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Appendix H1 - Class 1 Stockpile Soil Analyses

Client Project	Sample ID	Parameter	Results	Sigma	MDC	Units	DCGL	Fraction	SOF
BMRC Final Status Survey	2014 12 22 S1-06	Europium-152	0.03 ±	0.147	0.257	pCi/g	6.9	0.0043	
BMRC Final Status Survey	2014 12 22 S1-06	Europium-154	0.004 ±	0.09	0.162	pCi/g	8	0.0005	
BMRC Final Status Survey	2014 12 22 S1-06	Nickel-63	1.269 ±	1.166	2.85	pCi/g	2100	0.0006	
BMRC Final Status Survey	2014 12 22 S1-06	Plutonium-238	0.013 ±	0.024	0.042	pCi/g	2.5	0.0052	
BMRC Final Status Survey	2014 12 22 S1-06	Pu-239/240	-0.023 ±	0.023	0.053	pCi/g	2.3	-0.0100	
BMRC Final Status Survey	2014 12 22 S1-06	Silver-108M	0.549 ±	0.098	0.072	pCi/g	8.2	0.0670	
BMRC Final Status Survey	2014 12 22 S1-06	Strontium-90	0.0858 ±	0.074	0.151	pCi/g	1.7	0.0505	
BMRC Final Status Survey	2014 12 22 S1-06	Tritium	0.146 ±	1.35	2.42	pCi/g	110	0.0013	
BMRC Final Status Survey	2014 12 22 S1-07	Americium-241	-0.018 ±	0.17	0.299	pCi/g	2.1	-0.0086	0.0896
BMRC Final Status Survey	2014 12 22 S1-07	Carbon-14	0.488 ±	0.372	0.589	pCi/g	12	0.0407	
BMRC Final Status Survey	2014 12 22 S1-07	Cesium-137	0 ±	0.007	0.118	pCi/g	11	0.0000	
BMRC Final Status Survey	2014 12 22 S1-07	Cobalt-60	-0.023 ±	0.936	0.097	pCi/g	3.8	-0.0061	
BMRC Final Status Survey	2014 12 22 S1-07	Europium-152	-0.018 ±	0.129	0.229	pCi/g	6.9	-0.0026	
BMRC Final Status Survey	2014 12 22 S1-07	Europium-154	0.004 ±	0.084	0.152	pCi/g	8	0.0005	
BMRC Final Status Survey	2014 12 22 S1-07	Nickel-63	1.525 ±	1.159	2.67	pCi/g	2100	0.0007	
BMRC Final Status Survey	2014 12 22 S1-07	Plutonium-238	0.006 ±	0.021	0.039	pCi/g	2.5	0.0024	
BMRC Final Status Survey	2014 12 22 S1-07	Pu-239/240	-0.004 ±	0.018	0.037	pCi/g	2.3	-0.0017	
BMRC Final Status Survey	2014 12 22 S1-07	Silver-108M	0.306 ±	0.104	0.051	pCi/g	8.2	0.0373	
BMRC Final Status Survey	2014 12 22 S1-07	Strontium-90	0.028 ±	0.197	0.476	pCi/g	1.7	0.0165	
BMRC Final Status Survey	2014 12 22 S1-07	Tritium	1.15 ±	1.28	2.12	pCi/g	110	0.0105	
BMRC Final Status Survey	2014 12 22 S1-08	Americium-241	0.282 ±	0.39	0.643	pCi/g	2.1	0.1343	0.2839
BMRC Final Status Survey	2014 12 22 S1-08	Carbon-14	-0.146 ±	0.309	0.575	pCi/g	12	-0.0122	
BMRC Final Status Survey	2014 12 22 S1-08	Cesium-137	0.021 ±	0.066	0.117	pCi/g	11	0.0019	
BMRC Final Status Survey	2014 12 22 S1-08	Cobalt-60	0.05 ±	0.056	0.147	pCi/g	3.8	0.0132	
BMRC Final Status Survey	2014 12 22 S1-08	Europium-152	-0.006 ±	0.169	0.299	pCi/g	6.9	-0.0009	
BMRC Final Status Survey	2014 12 22 S1-08	Europium-154	0.04 ±	0.113	0.195	pCi/g	8	0.0050	
BMRC Final Status Survey	2014 12 22 S1-08	Nickel-63	0.335 ±	1.111	3.014	pCi/g	2100	0.0002	
BMRC Final Status Survey	2014 12 22 S1-08	Plutonium-238	0.01 ±	0.015	0.025	pCi/g	2.5	0.0040	
BMRC Final Status Survey	2014 12 22 S1-08	Pu-239/240	0.006 ±	0.013	0.025	pCi/g	2.3	0.0026	
BMRC Final Status Survey	2014 12 22 S1-08	Silver-108M	0.454 ±	0.087	0.062	pCi/g	8.2	0.0554	
BMRC Final Status Survey	2014 12 22 S1-08	Strontium-90	0.118 ±	0.085	0.162	pCi/g	1.7	0.0694	
BMRC Final Status Survey	2014 12 22 S1-08	Tritium	1.21 ±	1.58	2.65	pCi/g	110	0.0110	
BMRC Final Status Survey	2014 12 22 S1-09	Americium-241	0.012 ±	0.146	0.261	pCi/g	2.1	0.0057	0.1156
BMRC Final Status Survey	2014 12 22 S1-09	Carbon-14	0.478 ±	0.364	0.578	pCi/g	12	0.0398	
BMRC Final Status Survey	2014 12 22 S1-09	Cesium-137	-0.023 ±	0.092	0.164	pCi/g	11	-0.0021	
BMRC Final Status Survey	2014 12 22 S1-09	Cobalt-60	0.007 ±	0.011	0.213	pCi/g	3.8	0.0018	
BMRC Final Status Survey	2014 12 22 S1-09	Europium-152	-0.009 ±	0.135	0.241	pCi/g	6.9	-0.0013	
BMRC Final Status Survey	2014 12 22 S1-09	Europium-154	-0.001 ±	0.175	0.151	pCi/g	8	-0.0001	
BMRC Final Status Survey	2014 12 22 S1-09	Nickel-63	0.146 ±	0.36	0.262	pCi/g	2100	0.0001	
BMRC Final Status Survey	2014 12 22 S1-09	Plutonium-238	0.017 ±	0.014	0.02	pCi/g	2.5	0.0068	
BMRC Final Status Survey	2014 12 22 S1-09	Pu-239/240	-0.002 ±	0.01	0.023	pCi/g	2.3	-0.0009	
BMRC Final Status Survey	2014 12 22 S1-09	Silver-108M	0.289 ±	0.067	0.054	pCi/g	8.2	0.0352	
BMRC Final Status Survey	2014 12 22 S1-09	Strontium-90	0.0436 ±	0.068	0.152	pCi/g	1.7	0.0256	
BMRC Final Status Survey	2014 12 22 S1-09	Tritium	0.529 ±	1.08	1.87	pCi/g	110	0.0048	
BMRC Final Status Survey	2014 12 22 S1-10	Americium-241	0 ±	0.011	0.727	pCi/g	2.1	0.0000	0.1239
BMRC Final Status Survey	2014 12 22 S1-10	Carbon-14	0.298 ±	0.343	0.569	pCi/g	12	0.0248	
BMRC Final Status Survey	2014 12 22 S1-10	Cesium-137	0.014 ±	0.045	0.082	pCi/g	11	0.0013	
BMRC Final Status Survey	2014 12 22 S1-10	Cobalt-60	0.024 ±	0.045	0.126	pCi/g	3.8	0.0063	
BMRC Final Status Survey	2014 12 22 S1-10	Europium-152	0.002 ±	0.136	0.243	pCi/g	6.9	0.0003	
BMRC Final Status Survey	2014 12 22 S1-10	Europium-154	0.026 ±	0.105	0.182	pCi/g	8	0.0033	
BMRC Final Status Survey	2014 12 22 S1-10	Nickel-63	0.658 ±	1.054	2.534	pCi/g	2100	0.0003	
BMRC Final Status Survey	2014 12 22 S1-10	Plutonium-238	0.015 ±	0.021	0.035	pCi/g	2.5	0.0060	
BMRC Final Status Survey	2014 12 22 S1-10	Pu-239/240	-0.005 ±	0.021	0.043	pCi/g	2.3	-0.0022	
BMRC Final Status Survey	2014 12 22 S1-10	Silver-108M	0.394 ±	0.078	0.069	pCi/g	8.2	0.0480	
BMRC Final Status Survey	2014 12 22 S1-10	Strontium-90	0.0346 ±	0.096	0.227	pCi/g	1.7	0.0204	
BMRC Final Status Survey	2014 12 22 S1-10	Tritium	1.69 ±	1.89	3.12	pCi/g	110	0.0154	

The Fraction is the Result/DCGL. SOF = Sum of the Fractions

Appendix H1 - Class 1 Stockpile Soil Analyses

Client Project	Sample ID	Parameter	Results	Sigma	MDC	Units	DCGL	Fraction	SOF
BMRC Final Status Survey	2014 12 22 S1-11	Americium-241	0.145 ±	0.301	0.511	pCi/g	2.1	0.0690	0.1378
BMRC Final Status Survey	2014 12 22 S1-11	Carbon-14	0.401 ±	0.361	0.584	pCi/g	12	0.0334	
BMRC Final Status Survey	2014 12 22 S1-11	Cesium-137	0.009 ±	0.06	0.109	pCi/g	11	0.0008	
BMRC Final Status Survey	2014 12 22 S1-11	Cobalt-60	0.013 ±	0.06	0.112	pCi/g	3.8	0.0034	
BMRC Final Status Survey	2014 12 22 S1-11	Europium-152	-0.058 ±	0.179	0.307	pCi/g	6.9	-0.0084	
BMRC Final Status Survey	2014 12 22 S1-11	Europium-154	0.011 ±	0.107	0.187	pCi/g	8	0.0014	
BMRC Final Status Survey	2014 12 22 S1-11	Nickel-63	-0.227 ±	1.069	3.062	pCi/g	2100	-0.0001	
BMRC Final Status Survey	2014 12 22 S1-11	Plutonium-238	0.016 ±	0.018	0.029	pCi/g	2.5	0.0064	
BMRC Final Status Survey	2014 12 22 S1-11	Pu-239/240	0.002 ±	0.014	0.027	pCi/g	2.3	0.0009	
BMRC Final Status Survey	2014 12 22 S1-11	Silver-108M	0.047 ±	0.048	0.115	pCi/g	8.2	0.0057	
BMRC Final Status Survey	2014 12 22 S1-11	Strontium-90	0.0419 ±	0.063	0.141	pCi/g	1.7	0.0246	
BMRC Final Status Survey	2014 12 22 S1-11	Tritium	0.0631 ±	1.35	2.45	pCi/g	110	0.0006	
BMRC Final Status Survey	2014 12 22 S1-11-dup	Americium-241	-0.001 ±	0.176	0.313	pCi/g	2.1	-0.0005	0.0617
BMRC Final Status Survey	2014 12 22 S1-11-dup	Carbon-14	0.491 ±	0.374	0.593	pCi/g	12	0.0409	
BMRC Final Status Survey	2014 12 22 S1-11-dup	Cesium-137	0 ±	0.007	0.16	pCi/g	11	0.0000	
BMRC Final Status Survey	2014 12 22 S1-11-dup	Cobalt-60	0.015 ±	0.078	0.162	pCi/g	3.8	0.0039	
BMRC Final Status Survey	2014 12 22 S1-11-dup	Europium-152	0.017 ±	0.135	0.24	pCi/g	6.9	0.0025	
BMRC Final Status Survey	2014 12 22 S1-11-dup	Europium-154	-0.066 ±	0.134	0.224	pCi/g	8	-0.0083	
BMRC Final Status Survey	2014 12 22 S1-11-dup	Nickel-63	0.854 ±	1.201	3.288	pCi/g	2100	0.0004	
BMRC Final Status Survey	2014 12 22 S1-11-dup	Plutonium-238	0.002 ±	0.019	0.036	pCi/g	2.5	0.0008	
BMRC Final Status Survey	2014 12 22 S1-11-dup	Pu-239/240	-0.007 ±	0.011	0.026	pCi/g	2.3	-0.0030	
BMRC Final Status Survey	2014 12 22 S1-11-dup	Silver-108M	0.077 ±	0.047	0.146	pCi/g	8.2	0.0094	
BMRC Final Status Survey	2014 12 22 S1-11-dup	Strontium-90	0.0113 ±	0.086	0.211	pCi/g	1.7	0.0066	
BMRC Final Status Survey	2014 12 22 S1-11-dup	Tritium	0.974 ±	1.78	3.06	pCi/g	110	0.0089	
BMRC Final Status Survey	2014 12 22 S1-12	Americium-241	0.002 ±	0.372	0.657	pCi/g	2.1	0.0010	0.0571
BMRC Final Status Survey	2014 12 22 S1-12	Carbon-14	0.151 ±	0.334	0.576	pCi/g	12	0.0126	
BMRC Final Status Survey	2014 12 22 S1-12	Cesium-137	-0.003 ±	0.106	0.11	pCi/g	11	-0.0003	
BMRC Final Status Survey	2014 12 22 S1-12	Cobalt-60	-0.009 ±	0.346	0.172	pCi/g	3.8	-0.0024	
BMRC Final Status Survey	2014 12 22 S1-12	Europium-152	-0.017 ±	0.165	0.29	pCi/g	6.9	-0.0025	
BMRC Final Status Survey	2014 12 22 S1-12	Europium-154	0.002 ±	0.087	0.157	pCi/g	8	0.0003	
BMRC Final Status Survey	2014 12 22 S1-12	Nickel-63	0 ±	1.289	4.29	pCi/g	2100	0.0000	
BMRC Final Status Survey	2014 12 22 S1-12	Plutonium-238	0.036 ±	0.034	0.053	pCi/g	2.5	0.0144	
BMRC Final Status Survey	2014 12 22 S1-12	Pu-239/240	-0.002 ±	0.021	0.042	pCi/g	2.3	-0.0009	
BMRC Final Status Survey	2014 12 22 S1-12	Silver-108M	0.111 ±	0.051	0.131	pCi/g	8.2	0.0135	
BMRC Final Status Survey	2014 12 22 S1-12	Strontium-90	0.0341 ±	0.054	0.121	pCi/g	1.7	0.0201	
BMRC Final Status Survey	2014 12 22 S1-12	Tritium	0.142 ±	1.32	2.37	pCi/g	110	0.0013	
BMRC Final Status Survey	2014 12 22 S1-13	Americium-241	0.089 ±	0.157	0.263	pCi/g	2.1	0.0424	0.1805
BMRC Final Status Survey	2014 12 22 S1-13	Carbon-14	0.308 ±	0.355	0.588	pCi/g	12	0.0257	
BMRC Final Status Survey	2014 12 22 S1-13	Cesium-137	0.034 ±	0.067	0.117	pCi/g	11	0.0031	
BMRC Final Status Survey	2014 12 22 S1-13	Cobalt-60	0.011 ±	0.089	0.178	pCi/g	3.8	0.0029	
BMRC Final Status Survey	2014 12 22 S1-13	Europium-152	-0.033 ±	0.147	0.256	pCi/g	6.9	-0.0048	
BMRC Final Status Survey	2014 12 22 S1-13	Europium-154	0.034 ±	0.089	0.155	pCi/g	8	0.0043	
BMRC Final Status Survey	2014 12 22 S1-13	Nickel-63	1.665 ±	1.265	3.254	pCi/g	2100	0.0008	
BMRC Final Status Survey	2014 12 22 S1-13	Plutonium-238	0 ±	0.019	0.038	pCi/g	2.5	0.0000	
BMRC Final Status Survey	2014 12 22 S1-13	Pu-239/240	-0.002 ±	0.019	0.039	pCi/g	2.3	-0.0009	
BMRC Final Status Survey	2014 12 22 S1-13	Silver-108M	0.242 ±	0.056	0.067	pCi/g	8.2	0.0295	
BMRC Final Status Survey	2014 12 22 S1-13	Strontium-90	-0.0552 ±	0.061	0.17	pCi/g	1.7	-0.0325	
BMRC Final Status Survey	2014 12 22 S1-13	Tritium	12.1 ±	2.5	1.96	pCi/g	110	0.1100	
BMRC Final Status Survey	2014 12 22 S1-14	Americium-241	-0.001 ±	0.307	0.347	pCi/g	2.1	-0.0005	0.0033
BMRC Final Status Survey	2014 12 22 S1-14	Carbon-14	0.206 ±	0.342	0.582	pCi/g	12	0.0172	
BMRC Final Status Survey	2014 12 22 S1-14	Cesium-137	0.026 ±	0.055	0.096	pCi/g	11	0.0024	
BMRC Final Status Survey	2014 12 22 S1-14	Cobalt-60	0.02 ±	0.062	0.113	pCi/g	3.8	0.0053	
BMRC Final Status Survey	2014 12 22 S1-14	Europium-152	-0.086 ±	0.187	0.316	pCi/g	6.9	-0.0125	
BMRC Final Status Survey	2014 12 22 S1-14	Europium-154	0.048 ±	0.094	0.197	pCi/g	8	0.0060	
BMRC Final Status Survey	2014 12 22 S1-14	Nickel-63	0.246 ±	1.155	3.317	pCi/g	2100	0.0001	
BMRC Final Status Survey	2014 12 22 S1-14	Plutonium-238	0.005 ±	0.023	0.043	pCi/g	2.5	0.0020	

Appendix H1 - Class 1 Stockpile Soil Analyses

Client Project	Sample ID	Parameter	Results	Sigma	MDC	Units	DCGL	Fraction	SOF
BMRC Final Status Survey	2014 12 22 S1-14	Pu-239/240	-0.016 ±	0.02	0.046	pCi/g	2.3	-0.0070	
BMRC Final Status Survey	2014 12 22 S1-14	Silver-108M	0.043 ±	0.037	0.1	pCi/g	8.2	0.0052	
BMRC Final Status Survey	2014 12 22 S1-14	Strontium-90	-0.0255 ±	0.064	0.169	pCi/g	1.7	-0.0150	
BMRC Final Status Survey	2014 12 22 S1-14	Tritium	0 ±	0.873	1.59	pCi/g	110	0.0000	
BMRC Final Status Survey	2014 12 22 S1-15	Americium-241	-0.131 ±	0.209	0.347	pCi/g	2.1	-0.0624	0.2083
BMRC Final Status Survey	2014 12 22 S1-15	Carbon-14	-0.025 ±	0.321	0.579	pCi/g	12	-0.0021	
BMRC Final Status Survey	2014 12 22 S1-15	Cesium-137	0.105 ±	0.089	0.133	pCi/g	11	0.0095	
BMRC Final Status Survey	2014 12 22 S1-15	Cobalt-60	0.118 ±	0.077	0.142	pCi/g	3.8	0.0311	
BMRC Final Status Survey	2014 12 22 S1-15	Europium-152	0.07 ±	0.092	0.289	pCi/g	6.9	0.0101	
BMRC Final Status Survey	2014 12 22 S1-15	Europium-154	0.066 ±	0.08	0.129	pCi/g	8	0.0083	
BMRC Final Status Survey	2014 12 22 S1-15	Nickel-63	0.909 ±	1.101	2.664	pCi/g	2100	0.0004	
BMRC Final Status Survey	2014 12 22 S1-15	Plutonium-238	0.007 ±	0.017	0.031	pCi/g	2.5	0.0028	
BMRC Final Status Survey	2014 12 22 S1-15	Pu-239/240	0.002 ±	0.01	0.021	pCi/g	2.3	0.0009	
BMRC Final Status Survey	2014 12 22 S1-15	Silver-108M	0.835 ±	0.171	0.097	pCi/g	8.2	0.1018	
BMRC Final Status Survey	2014 12 22 S1-15	Strontium-90	0.148 ±	0.096	0.179	pCi/g	1.7	0.0871	
BMRC Final Status Survey	2014 12 22 S1-15	Tritium	2.29 ±	1.57	2.42	pCi/g	110	0.0208	
BMRC Final Status Survey	2014 12 23 S1-01	Americium-241	-0.034 ±	0.167	0.292	pCi/g	2.1	-0.0162	0.3576
BMRC Final Status Survey	2014 12 23 S1-01	Carbon-14	0 ±	0.317	0.568	pCi/g	12	0.0000	
BMRC Final Status Survey	2014 12 23 S1-01	Cesium-137	0.018 ±	0.099	0.179	pCi/g	11	0.0016	
BMRC Final Status Survey	2014 12 23 S1-01	Cobalt-60	0.022 ±	0.039	0.284	pCi/g	3.8	0.0058	
BMRC Final Status Survey	2014 12 23 S1-01	Europium-152	-0.064 ±	0.178	0.304	pCi/g	6.9	-0.0093	
BMRC Final Status Survey	2014 12 23 S1-01	Europium-154	0.014 ±	0.113	0.198	pCi/g	8	0.0018	
BMRC Final Status Survey	2014 12 23 S1-01	Nickel-63	1.214 ±	1.365	3.471	pCi/g	2100	0.0006	
BMRC Final Status Survey	2014 12 23 S1-01	Plutonium-238	0.014 ±	0.014	0.018	pCi/g	2.5	0.0056	
BMRC Final Status Survey	2014 12 23 S1-01	Pu-239/240	0 ±	0.015	0.032	pCi/g	2.3	0.0000	
BMRC Final Status Survey	2014 12 23 S1-01	Silver-108M	0.979 ±	0.208	0.052	pCi/g	8.2	0.1194	
BMRC Final Status Survey	2014 12 23 S1-01	Strontium-90	0.266 ±	0.088	0.11	pCi/g	1.7	0.1565	
BMRC Final Status Survey	2014 12 23 S1-01	Tritium	10.1 ±	2.59	2.72	pCi/g	110	0.0918	
BMRC Final Status Survey	2014 12 23 S1-02	Americium-241	-0.165 ±	0.397	0.671	pCi/g	2.1	-0.0786	0.1044
BMRC Final Status Survey	2014 12 23 S1-02	Carbon-14	0.127 ±	0.343	0.597	pCi/g	12	0.0106	
BMRC Final Status Survey	2014 12 23 S1-02	Cesium-137	0.016 ±	0.054	0.096	pCi/g	11	0.0015	
BMRC Final Status Survey	2014 12 23 S1-02	Cobalt-60	0.076 ±	0.051	0.114	pCi/g	3.8	0.0200	
BMRC Final Status Survey	2014 12 23 S1-02	Europium-152	0.116 ±	0.151	0.251	pCi/g	6.9	0.0168	
BMRC Final Status Survey	2014 12 23 S1-02	Europium-154	-0.013 ±	0.103	0.181	pCi/g	8	-0.0016	
BMRC Final Status Survey	2014 12 23 S1-02	Nickel-63	0.508 ±	1.285	3.327	pCi/g	2100	0.0002	
BMRC Final Status Survey	2014 12 23 S1-02	Plutonium-238	0.008 ±	0.028	0.05	pCi/g	2.5	0.0032	
BMRC Final Status Survey	2014 12 23 S1-02	Pu-239/240	0.002 ±	0.012	0.025	pCi/g	2.3	0.0009	
BMRC Final Status Survey	2014 12 23 S1-02	Silver-108M	0.57 ±	0.101	0.076	pCi/g	8.2	0.0695	
BMRC Final Status Survey	2014 12 23 S1-02	Strontium-90	0.104 ±	0.099	0.207	pCi/g	1.7	0.0612	
BMRC Final Status Survey	2014 12 23 S1-02	Tritium	0.0778 ±	1.37	2.47	pCi/g	110	0.0007	
BMRC Final Status Survey	2014 12 23 S1-03	Americium-241	-0.001 ±	0.199	0.349	pCi/g	2.1	-0.0005	0.1263
BMRC Final Status Survey	2014 12 23 S1-03	Carbon-14	0.33 ±	0.366	0.606	pCi/g	12	0.0275	
BMRC Final Status Survey	2014 12 23 S1-03	Cesium-137	0 ±	0.007	0.177	pCi/g	11	0.0000	
BMRC Final Status Survey	2014 12 23 S1-03	Cobalt-60	0.061 ±	0.114	0.204	pCi/g	3.8	0.0161	
BMRC Final Status Survey	2014 12 23 S1-03	Europium-152	0.048 ±	0.124	0.215	pCi/g	6.9	0.0070	
BMRC Final Status Survey	2014 12 23 S1-03	Europium-154	-0.021 ±	0.111	0.187	pCi/g	8	-0.0026	
BMRC Final Status Survey	2014 12 23 S1-03	Nickel-63	-1.459 ±	1.221	3.761	pCi/g	2100	-0.0007	
BMRC Final Status Survey	2014 12 23 S1-03	Plutonium-238	0.016 ±	0.026	0.044	pCi/g	2.5	0.0064	
BMRC Final Status Survey	2014 12 23 S1-03	Pu-239/240	-0.015 ±	0.013	0.032	pCi/g	2.3	-0.0065	
BMRC Final Status Survey	2014 12 23 S1-03	Silver-108M	0.474 ±	0.127	0.125	pCi/g	8.2	0.0578	
BMRC Final Status Survey	2014 12 23 S1-03	Strontium-90	-0.0446 ±	0.082	0.218	pCi/g	1.7	-0.0262	
BMRC Final Status Survey	2014 12 23 S1-03	Tritium	5.29 ±	2.11	2.83	pCi/g	110	0.0481	
BMRC Final Status Survey	2014 12 23 S1-04	Americium-241	-0.082 ±	0.401	0.688	pCi/g	2.1	-0.0390	0.0917
BMRC Final Status Survey	2014 12 23 S1-04	Carbon-14	0.168 ±	0.345	0.594	pCi/g	12	0.0140	
BMRC Final Status Survey	2014 12 23 S1-04	Cesium-137	0.002 ±	0.066	0.121	pCi/g	11	0.0002	
BMRC Final Status Survey	2014 12 23 S1-04	Cobalt-60	0.017 ±	0.076	0.138	pCi/g	3.8	0.0045	

The Fraction is the Result/DCGL. SOF = Sum of the Fractions

Appendix H1 - Class 1 Stockpile Soil Analyses

Client Project	Sample ID	Parameter	Results	Sigma	MDC	Units	DCGL	Fraction	SOF
BMRC Final Status Survey	2014 12 23 S1-04	Europium-152	-0.096 ±	0.181	0.304	pCi/g	6.9	-0.0139	
BMRC Final Status Survey	2014 12 23 S1-04	Europium-154	0.031 ±	0.104	0.18	pCi/g	8	0.0039	
BMRC Final Status Survey	2014 12 23 S1-04	Nickel-63	-0.5 ±	1.148	3.025	pCi/g	2100	-0.0002	
BMRC Final Status Survey	2014 12 23 S1-04	Plutonium-238	0.029 ±	0.037	0.061	pCi/g	2.5	0.0116	
BMRC Final Status Survey	2014 12 23 S1-04	Pu-239/240	0.006 ±	0.018	0.033	pCi/g	2.3	0.0026	
BMRC Final Status Survey	2014 12 23 S1-04	Silver-108M	0.455 ±	0.087	0.09	pCi/g	8.2	0.0555	
BMRC Final Status Survey	2014 12 23 S1-04	Strontium-90	0.0855 ±	0.076	0.157	pCi/g	1.7	0.0503	
BMRC Final Status Survey	2014 12 23 S1-04	Tritium	0.261 ±	1.86	3.32	pCi/g	110	0.0024	
BMRC Final Status Survey	2014 12 23 S1-05	Americium-241	0.061 ±	0.162	0.277	pCi/g	2.1	0.0290	0.3591
BMRC Final Status Survey	2014 12 23 S1-05	Carbon-14	0.323 ±	0.359	0.593	pCi/g	12	0.0269	
BMRC Final Status Survey	2014 12 23 S1-05	Cesium-137	0.029 ±	0.084	0.148	pCi/g	11	0.0026	
BMRC Final Status Survey	2014 12 23 S1-05	Cobalt-60	0.054 ±	0.088	0.205	pCi/g	3.8	0.0142	
BMRC Final Status Survey	2014 12 23 S1-05	Europium-152	-0.026 ±	0.183	0.318	pCi/g	6.9	-0.0038	
BMRC Final Status Survey	2014 12 23 S1-05	Europium-154	0.035 ±	0.134	0.23	pCi/g	8	0.0044	
BMRC Final Status Survey	2014 12 23 S1-05	Nickel-63	-0.331 ±	1.465	4.731	pCi/g	2100	-0.0002	
BMRC Final Status Survey	2014 12 23 S1-05	Plutonium-238	0.013 ±	0.029	0.051	pCi/g	2.5	0.0052	
BMRC Final Status Survey	2014 12 23 S1-05	Pu-239/240	-0.013 ±	0.017	0.038	pCi/g	2.3	-0.0057	
BMRC Final Status Survey	2014 12 23 S1-05	Silver-108M	0.677 ±	0.12	0.052	pCi/g	8.2	0.0826	
BMRC Final Status Survey	2014 12 23 S1-05	Strontium-90	0.34 ±	0.128	0.186	pCi/g	1.7	0.2000	
BMRC Final Status Survey	2014 12 23 S1-05	Tritium	0.408 ±	1.47	2.59	pCi/g	110	0.0037	

Appendix H2 - Class 2 Stockpile Soil Analyses

Client Project	Sample ID	Parameter	Results	Sigma	MDA	Units	DCGL	Fraction	SOF
BMRC Final Status Survey	2014 10 29 S2-01	Americium-241	-0.008 ±	0.173	0.308	pCi/g	2.1	-0.0038	-0.0377
BMRC Final Status Survey	2014 10 29 S2-01	Carbon-14	-0.063 ±	0.434	0.794	pCi/g	12	-0.0053	
BMRC Final Status Survey	2014 10 29 S2-01	Cesium-137	-0.024 ±	0.103	0.161	pCi/g	11	-0.0022	
BMRC Final Status Survey	2014 10 29 S2-01	Cobalt-60	-0.016 ±	0.626	0.092	pCi/g	3.8	-0.0042	
BMRC Final Status Survey	2014 10 29 S2-01	Europium-152	0.011 ±	0.142	0.256	pCi/g	6.9	0.0016	
BMRC Final Status Survey	2014 10 29 S2-01	Europium-154	-0.022 ±	0.11	0.193	pCi/g	8	-0.0028	
BMRC Final Status Survey	2014 10 29 S2-01	Nickel-63	1.575 ±	1.514	4.418	pCi/g	2100	0.0008	
BMRC Final Status Survey	2014 10 29 S2-01	Plutonium-238	-0.008 ±	0.021	0.045	pCi/g	2.5	-0.0032	
BMRC Final Status Survey	2014 10 29 S2-01	Pu-239/240	0.005 ±	0.012	0.024	pCi/g	2.3	0.0022	
BMRC Final Status Survey	2014 10 29 S2-01	Silver-108M	0 ±	0.086	0.162	pCi/g	8.2	0.0000	
BMRC Final Status Survey	2014 10 29 S2-01	Strontium-90	-0.0399 ±	0.092	0.242	pCi/g	1.7	-0.0235	
BMRC Final Status Survey	2014 10 29 S2-01	Tritium	0.293 ±	0.648	1.11	pCi/g	110	0.0027	
BMRC Final Status Survey	2014 10 29 S2-02	Americium-241	-0.004 ±	1.394	0.582	pCi/g	2.1	-0.0019	0.0409
BMRC Final Status Survey	2014 10 29 S2-02	Carbon-14	0.371 ±	0.467	0.78	pCi/g	12	0.0309	
BMRC Final Status Survey	2014 10 29 S2-02	Cesium-137	0 ±	0.051	0.096	pCi/g	11	0.0000	
BMRC Final Status Survey	2014 10 29 S2-02	Cobalt-60	0.013 ±	0.06	0.115	pCi/g	3.8	0.0034	
BMRC Final Status Survey	2014 10 29 S2-02	Europium-152	-0.072 ±	0.168	0.284	pCi/g	6.9	-0.0104	
BMRC Final Status Survey	2014 10 29 S2-02	Europium-154	0.021 ±	0.026	0.212	pCi/g	8	0.0026	
BMRC Final Status Survey	2014 10 29 S2-02	Nickel-63	0.826 ±	1.423	4.171	pCi/g	2100	0.0004	
BMRC Final Status Survey	2014 10 29 S2-02	Plutonium-238	0.01 ±	0.02	0.038	pCi/g	2.5	0.0040	
BMRC Final Status Survey	2014 10 29 S2-02	Pu-239/240	0.007 ±	0.011	0.021	pCi/g	2.3	0.0030	
BMRC Final Status Survey	2014 10 29 S2-02	Silver-108M	0.012 ±	0.024	0.171	pCi/g	8.2	0.0015	
BMRC Final Status Survey	2014 10 29 S2-02	Strontium-90	0.011 ±	0.102	0.241	pCi/g	1.7	0.0065	
BMRC Final Status Survey	2014 10 29 S2-02	Tritium	0.101 ±	0.954	1.68	pCi/g	110	0.0009	
BMRC Final Status Survey	2014 10 30 S2-01	Americium-241	0.012 ±	0.151	0.267	pCi/g	2.1	0.0057	0.0120
BMRC Final Status Survey	2014 10 30 S2-01	Carbon-14	-0.08 ±	0.411	0.756	pCi/g	12	-0.0067	
BMRC Final Status Survey	2014 10 30 S2-01	Cesium-137	-0.002 ±	0.067	0.102	pCi/g	11	-0.0002	
BMRC Final Status Survey	2014 10 30 S2-01	Cobalt-60	-0.014 ±	0.547	0.08	pCi/g	3.8	-0.0037	
BMRC Final Status Survey	2014 10 30 S2-01	Europium-152	-0.079 ±	0.192	0.292	pCi/g	6.9	-0.0114	
BMRC Final Status Survey	2014 10 30 S2-01	Europium-154	0.051 ±	0.094	0.159	pCi/g	8	0.0064	
BMRC Final Status Survey	2014 10 30 S2-01	Nickel-63	0 ±	1.203	3.244	pCi/g	2100	0.0000	
BMRC Final Status Survey	2014 10 30 S2-01	Plutonium-238	0.001 ±	0.016	0.035	pCi/g	2.5	0.0004	
BMRC Final Status Survey	2014 10 30 S2-01	Pu-239/240	0.006 ±	0.01	0.02	pCi/g	2.3	0.0026	
BMRC Final Status Survey	2014 10 30 S2-01	Silver-108M	0.002 ±	0.072	0.137	pCi/g	8.2	0.0002	
BMRC Final Status Survey	2014 10 30 S2-01	Strontium-90	0.034 ±	0.104	0.244	pCi/g	1.7	0.0200	
BMRC Final Status Survey	2014 10 30 S2-01	Tritium	-0.151 ±	0.876	1.57	pCi/g	110	-0.0014	
BMRC Final Status Survey	2014 10 30 S2-02	Americium-241	-0.002 ±	0.1	0.671	pCi/g	2.1	-0.0010	0.0002
BMRC Final Status Survey	2014 10 30 S2-02	Carbon-14	-0.302 ±	0.425	0.816	pCi/g	12	-0.0252	
BMRC Final Status Survey	2014 10 30 S2-02	Cesium-137	0.024 ±	0.06	0.104	pCi/g	11	0.0022	
BMRC Final Status Survey	2014 10 30 S2-02	Cobalt-60	0.006 ±	0.063	0.123	pCi/g	3.8	0.0016	
BMRC Final Status Survey	2014 10 30 S2-02	Europium-152	0 ±	0.005	0.328	pCi/g	6.9	0.0000	
BMRC Final Status Survey	2014 10 30 S2-02	Europium-154	0.004 ±	0.102	0.181	pCi/g	8	0.0005	
BMRC Final Status Survey	2014 10 30 S2-02	Nickel-63	0.549 ±	1.262	3.325	pCi/g	2100	0.0003	
BMRC Final Status Survey	2014 10 30 S2-02	Plutonium-238	-0.004 ±	0.02	0.043	pCi/g	2.5	-0.0016	
BMRC Final Status Survey	2014 10 30 S2-02	Pu-239/240	0 ±	0.01	0.024	pCi/g	2.3	0.0000	
BMRC Final Status Survey	2014 10 30 S2-02	Silver-108M	-0.03 ±	0.081	0.14	pCi/g	8.2	-0.0037	
BMRC Final Status Survey	2014 10 30 S2-02	Strontium-90	0.0426 ±	0.099	0.23	pCi/g	1.7	0.0251	
BMRC Final Status Survey	2014 10 30 S2-02	Tritium	0.225 ±	0.545	0.938	pCi/g	110	0.0020	
BMRC Final Status Survey	2014 11 01 S2-01	Americium-241	0.01 ±	0.171	0.301	pCi/g	2.1	0.0048	-0.0113
BMRC Final Status Survey	2014 11 01 S2-01	Carbon-14	-0.104 ±	0.426	0.787	pCi/g	12	-0.0087	
BMRC Final Status Survey	2014 11 01 S2-01	Cesium-137	-0.002 ±	0.068	0.187	pCi/g	11	-0.0002	
BMRC Final Status Survey	2014 11 01 S2-01	Cobalt-60	-0.001 ±	0.084	0.15	pCi/g	3.8	-0.0003	
BMRC Final Status Survey	2014 11 01 S2-01	Europium-152	-0.021 ±	0.233	0.265	pCi/g	6.9	-0.0030	
BMRC Final Status Survey	2014 11 01 S2-01	Europium-154	0.012 ±	0.09	0.159	pCi/g	8	0.0015	
BMRC Final Status Survey	2014 11 01 S2-01	Nickel-63	-0.927 ±	1.181	3.512	pCi/g	2100	-0.0004	
BMRC Final Status Survey	2014 11 01 S2-01	Plutonium-238	-0.03 ±	0.033	0.074	pCi/g	2.5	-0.0120	

Appendix H2 - Class 2 Stockpile Soil Analyses

Client Project	Sample ID	Parameter	Results	Sigma	MDA	Units	DCGL	Fraction	SOF
BMRC Final Status Survey	2014 11 01 S2-01	Pu-239/240	0.005 ±	0.011	0.022	pCi/g	2.3	0.0022	
BMRC Final Status Survey	2014 11 01 S2-01	Silver-108M	-0.007 ±	0.086	0.158	pCi/g	8.2	-0.0009	
BMRC Final Status Survey	2014 11 01 S2-01	Strontium-90	-0.0003 ±	0.1	0.245	pCi/g	1.7	-0.0002	
BMRC Final Status Survey	2014 11 01 S2-01	Tritium	0.646 ±	0.739	1.23	pCi/g	110	0.0059	
BMRC Final Status Survey	2014 11 01 S2-02	Americium-241	0.187 ±	0.375	0.634	pCi/g	2.1	0.0890	0.1016
BMRC Final Status Survey	2014 11 01 S2-02	Carbon-14	0.211 ±	0.462	0.8	pCi/g	12	0.0176	
BMRC Final Status Survey	2014 11 01 S2-02	Cesium-137	0.035 ±	0.063	0.107	pCi/g	11	0.0032	
BMRC Final Status Survey	2014 11 01 S2-02	Cobalt-60	-0.014 ±	0.556	0.059	pCi/g	3.8	-0.0037	
BMRC Final Status Survey	2014 11 01 S2-02	Europium-152	0.023 ±	0.144	0.254	pCi/g	6.9	0.0033	
BMRC Final Status Survey	2014 11 01 S2-02	Europium-154	-0.019 ±	0.109	0.19	pCi/g	8	-0.0024	
BMRC Final Status Survey	2014 11 01 S2-02	Nickel-63	-1.029 ±	1.15	3.389	pCi/g	2100	-0.0005	
BMRC Final Status Survey	2014 11 01 S2-02	Plutonium-238	0.014 ±	0.024	0.045	pCi/g	2.5	0.0056	
BMRC Final Status Survey	2014 11 01 S2-02	Pu-239/240	-0.002 ±	0.011	0.027	pCi/g	2.3	-0.0009	
BMRC Final Status Survey	2014 11 01 S2-02	Silver-108M	-0.013 ±	0.078	0.138	pCi/g	8.2	-0.0016	
BMRC Final Status Survey	2014 11 01 S2-02	Strontium-90	-0.0093 ±	0.095	0.239	pCi/g	1.7	-0.0055	
BMRC Final Status Survey	2014 11 01 S2-02	Tritium	-0.293 ±	0.746	1.36	pCi/g	110	-0.0027	
BMRC Final Status Survey	2014 11 01 S2-03	Americium-241	0.085 ±	0.157	0.264	pCi/g	2.1	0.0405	0.0945
BMRC Final Status Survey	2014 11 01 S2-03	Carbon-14	-0.209 ±	0.418	0.789	pCi/g	12	-0.0174	
BMRC Final Status Survey	2014 11 01 S2-03	Cesium-137	0.057 ±	0.081	0.136	pCi/g	11	0.0052	
BMRC Final Status Survey	2014 11 01 S2-03	Cobalt-60	-0.004 ±	0.133	0.15	pCi/g	3.8	-0.0011	
BMRC Final Status Survey	2014 11 01 S2-03	Europium-152	0.034 ±	0.143	0.25	pCi/g	6.9	0.0049	
BMRC Final Status Survey	2014 11 01 S2-03	Europium-154	-0.004 ±	0.095	0.169	pCi/g	8	-0.0005	
BMRC Final Status Survey	2014 11 01 S2-03	Nickel-63	0.561 ±	1.191	2.931	pCi/g	2100	0.0003	
BMRC Final Status Survey	2014 11 01 S2-03	Plutonium-238	0.027 ±	0.024	0.04	pCi/g	2.5	0.0108	
BMRC Final Status Survey	2014 11 01 S2-03	Pu-239/240	0.004 ±	0.008	0.015	pCi/g	2.3	0.0017	
BMRC Final Status Survey	2014 11 01 S2-03	Silver-108M	0 ±	0.141	0.251	pCi/g	8.2	0.0000	
BMRC Final Status Survey	2014 11 01 S2-03	Strontium-90	0.084 ±	0.104	0.227	pCi/g	1.7	0.0494	
BMRC Final Status Survey	2014 11 01 S2-03	Tritium	0.0703 ±	0.832	1.47	pCi/g	110	0.0006	
BMRC Final Status Survey	2014 11 01 S2-04	Americium-241	-0.073 ±	0.365	0.596	pCi/g	2.1	-0.0348	-0.0068
BMRC Final Status Survey	2014 11 01 S2-04	Carbon-14	-0.083 ±	0.427	0.786	pCi/g	12	-0.0069	
BMRC Final Status Survey	2014 11 01 S2-04	Cesium-137	0.012 ±	0.057	0.103	pCi/g	11	0.0011	
BMRC Final Status Survey	2014 11 01 S2-04	Cobalt-60	0.019 ±	0.048	0.09	pCi/g	3.8	0.0050	
BMRC Final Status Survey	2014 11 01 S2-04	Europium-152	0 ±	0.004	0.316	pCi/g	6.9	0.0000	
BMRC Final Status Survey	2014 11 01 S2-04	Europium-154	0.074 ±	0.067	0.104	pCi/g	8	0.0093	
BMRC Final Status Survey	2014 11 01 S2-04	Nickel-63	-0.19 ±	1.116	2.871	pCi/g	2100	-0.0001	
BMRC Final Status Survey	2014 11 01 S2-04	Plutonium-238	-0.009 ±	0.019	0.042	pCi/g	2.5	-0.0036	
BMRC Final Status Survey	2014 11 01 S2-04	Pu-239/240	-0.003 ±	0.009	0.023	pCi/g	2.3	-0.0013	
BMRC Final Status Survey	2014 11 01 S2-04	Silver-108M	-0.015 ±	0.059	0.104	pCi/g	8.2	-0.0018	
BMRC Final Status Survey	2014 11 01 S2-04	Strontium-90	-0.0112 ±	0.09	0.228	pCi/g	1.7	-0.0066	
BMRC Final Status Survey	2014 11 01 S2-04	Tritium	3.62 ±	0.942	1.08	pCi/g	110	0.0329	
BMRC Final Status Survey	2014 11 01 S2-05	Americium-241	0 ±	0.189	0.333	pCi/g	2.1	0.0000	0.0537
BMRC Final Status Survey	2014 11 01 S2-05	Carbon-14	0.759 ±	0.504	0.776	pCi/g	12	0.0633	
BMRC Final Status Survey	2014 11 01 S2-05	Cesium-137	0.003 ±	0.082	0.154	pCi/g	11	0.0003	
BMRC Final Status Survey	2014 11 01 S2-05	Cobalt-60	-0.014 ±	0.56	0.212	pCi/g	3.8	-0.0037	
BMRC Final Status Survey	2014 11 01 S2-05	Europium-152	-0.006 ±	1.337	0.275	pCi/g	6.9	-0.0009	
BMRC Final Status Survey	2014 11 01 S2-05	Europium-154	0.002 ±	0.11	0.194	pCi/g	8	0.0003	
BMRC Final Status Survey	2014 11 01 S2-05	Nickel-63	0 ±	1.262	3.569	pCi/g	2100	0.0000	
BMRC Final Status Survey	2014 11 01 S2-05	Plutonium-238	0.012 ±	0.022	0.042	pCi/g	2.5	0.0048	
BMRC Final Status Survey	2014 11 01 S2-05	Pu-239/240	0.011 ±	0.014	0.024	pCi/g	2.3	0.0048	
BMRC Final Status Survey	2014 11 01 S2-05	Silver-108M	0.001 ±	0.08	0.151	pCi/g	8.2	0.0001	
BMRC Final Status Survey	2014 11 01 S2-05	Strontium-90	-0.0299 ±	0.07	0.189	pCi/g	1.7	-0.0176	
BMRC Final Status Survey	2014 11 01 S2-05	Tritium	0.264 ±	0.75	1.3	pCi/g	110	0.0024	
BMRC Final Status Survey	2014 11 01 S2-06	Americium-241	-0.121 ±	0.37	0.612	pCi/g	2.1	-0.0576	-0.0745
BMRC Final Status Survey	2014 11 01 S2-06	Carbon-14	-0.063 ±	0.436	0.799	pCi/g	12	-0.0053	
BMRC Final Status Survey	2014 11 01 S2-06	Cesium-137	0.017 ±	0.058	0.105	pCi/g	11	0.0015	
BMRC Final Status Survey	2014 11 01 S2-06	Cobalt-60	-0.017 ±	1.565	0.147	pCi/g	3.8	-0.0045	

Appendix H2 - Class 2 Stockpile Soil Analyses

Client Project	Sample ID	Parameter	Results	Sigma	MDA	Units	DCGL	Fraction	SOF
BMRC Final Status Survey	2014 11 01 S2-06	Europium-152	-0.059 ±	0.168	0.288	pCi/g	6.9	-0.0086	
BMRC Final Status Survey	2014 11 01 S2-06	Europium-154	0.002 ±	0.095	0.171	pCi/g	8	0.0003	
BMRC Final Status Survey	2014 11 01 S2-06	Nickel-63	0.334 ±	1.296	3.617	pCi/g	2100	0.0002	
BMRC Final Status Survey	2014 11 01 S2-06	Plutonium-238	0.013 ±	0.022	0.041	pCi/g	2.5	0.0052	
BMRC Final Status Survey	2014 11 01 S2-06	Pu-239/240	-0.007 ±	0.01	0.029	pCi/g	2.3	-0.0030	
BMRC Final Status Survey	2014 11 01 S2-06	Silver-108M	-0.024 ±	0.086	0.151	pCi/g	8.2	-0.0029	
BMRC Final Status Survey	2014 11 01 S2-06	Strontium-90	-0.0059 ±	0.088	0.222	pCi/g	1.7	-0.0035	
BMRC Final Status Survey	2014 11 01 S2-06	Tritium	0.403 ±	1.03	1.77	pCi/g	110	0.0037	
BMRC Final Status Survey	2014 11 01 S2-07	Americium-241	0.048 ±	0.214	0.383	pCi/g	2.1	0.0229	0.0466
BMRC Final Status Survey	2014 11 01 S2-07	Carbon-14	-0.202 ±	0.405	0.765	pCi/g	12	-0.0168	
BMRC Final Status Survey	2014 11 01 S2-07	Cesium-137	0.045 ±	0.063	0.104	pCi/g	11	0.0041	
BMRC Final Status Survey	2014 11 01 S2-07	Cobalt-60	0.026 ±	0.079	0.144	pCi/g	3.8	0.0068	
BMRC Final Status Survey	2014 11 01 S2-07	Europium-152	-0.074 ±	0.16	0.271	pCi/g	6.9	-0.0107	
BMRC Final Status Survey	2014 11 01 S2-07	Europium-154	-0.03 ±	0.096	0.165	pCi/g	8	-0.0038	
BMRC Final Status Survey	2014 11 01 S2-07	Nickel-63	0.594 ±	1.226	3.105	pCi/g	2100	0.0003	
BMRC Final Status Survey	2014 11 01 S2-07	Plutonium-238	0.013 ±	0.021	0.038	pCi/g	2.5	0.0052	
BMRC Final Status Survey	2014 11 01 S2-07	Pu-239/240	0.01 ±	0.011	0.018	pCi/g	2.3	0.0043	
BMRC Final Status Survey	2014 11 01 S2-07	Silver-108M	-0.019 ±	0.074	0.13	pCi/g	8.2	-0.0023	
BMRC Final Status Survey	2014 11 01 S2-07	Strontium-90	0.064 ±	0.105	0.237	pCi/g	1.7	0.0376	
BMRC Final Status Survey	2014 11 01 S2-07	Tritium	-0.113 ±	0.878	1.57	pCi/g	110	-0.0010	
BMRC Final Status Survey	2014 11 01 S2-08	Americium-241	0.097 ±	0.145	0.241	pCi/g	2.1	0.0462	0.0807
BMRC Final Status Survey	2014 11 01 S2-08	Carbon-14	-0.038 ±	0.396	0.721	pCi/g	12	-0.0032	
BMRC Final Status Survey	2014 11 01 S2-08	Cesium-137	0.018 ±	0.063	0.117	pCi/g	11	0.0016	
BMRC Final Status Survey	2014 11 01 S2-08	Cobalt-60	0.049 ±	0.077	0.138	pCi/g	3.8	0.0129	
BMRC Final Status Survey	2014 11 01 S2-08	Europium-152	-0.012 ±	0.339	0.251	pCi/g	6.9	-0.0017	
BMRC Final Status Survey	2014 11 01 S2-08	Europium-154	0.003 ±	0.1	0.179	pCi/g	8	0.0004	
BMRC Final Status Survey	2014 11 01 S2-08	Nickel-63	-0.231 ±	1.232	3.498	pCi/g	2100	-0.0001	
BMRC Final Status Survey	2014 11 01 S2-08	Plutonium-238	-0.024 ±	0.027	0.064	pCi/g	2.5	-0.0096	
BMRC Final Status Survey	2014 11 01 S2-08	Pu-239/240	-0.013 ±	0.012	0.037	pCi/g	2.3	-0.0057	
BMRC Final Status Survey	2014 11 01 S2-08	Silver-108M	-0.064 ±	0.123	0.209	pCi/g	8.2	-0.0078	
BMRC Final Status Survey	2014 11 01 S2-08	Strontium-90	0.064 ±	0.105	0.236	pCi/g	1.7	0.0376	
BMRC Final Status Survey	2014 11 01 S2-08	Tritium	1.1 ±	0.856	1.37	pCi/g	110	0.0100	
BMRC Final Status Survey	2014 11 03 S2-01	Americium-241	-0.205 ±	0.394	0.648	pCi/g	2.1	-0.0976	-0.0064
BMRC Final Status Survey	2014 11 03 S2-01	Carbon-14	0.283 ±	0.45	0.765	pCi/g	12	0.0236	
BMRC Final Status Survey	2014 11 03 S2-01	Cesium-137	-0.001 ±	0.055	0.102	pCi/g	11	-0.0001	
BMRC Final Status Survey	2014 11 03 S2-01	Cobalt-60	-0.022 ±	0.238	0.124	pCi/g	3.8	-0.0058	
BMRC Final Status Survey	2014 11 03 S2-01	Europium-152	0.118 ±	0.155	0.254	pCi/g	6.9	0.0171	
BMRC Final Status Survey	2014 11 03 S2-01	Europium-154	-0.038 ±	0.128	0.219	pCi/g	8	-0.0048	
BMRC Final Status Survey	2014 11 03 S2-01	Nickel-63	1.689 ±	1.414	3.709	pCi/g	2100	0.0008	
BMRC Final Status Survey	2014 11 03 S2-01	Plutonium-238	0.006 ±	0.016	0.032	pCi/g	2.5	0.0024	
BMRC Final Status Survey	2014 11 03 S2-01	Pu-239/240	0.009 ±	0.013	0.024	pCi/g	2.3	0.0039	
BMRC Final Status Survey	2014 11 03 S2-01	Silver-108M	0 ±	0.068	0.123	pCi/g	8.2	0.0000	
BMRC Final Status Survey	2014 11 03 S2-01	Strontium-90	0.084 ±	0.107	0.233	pCi/g	1.7	0.0494	
BMRC Final Status Survey	2014 11 03 S2-01	Tritium	0.506 ±	1.12	1.92	pCi/g	110	0.0046	
BMRC Final Status Survey	2014 11 03 S2-02	Americium-241	-0.047 ±	0.189	0.325	pCi/g	2.1	-0.0224	-0.0118
BMRC Final Status Survey	2014 11 03 S2-02	Carbon-14	-0.208 ±	0.417	0.788	pCi/g	12	-0.0173	
BMRC Final Status Survey	2014 11 03 S2-02	Cesium-137	-0.021 ±	0.107	0.164	pCi/g	11	-0.0019	
BMRC Final Status Survey	2014 11 03 S2-02	Cobalt-60	0.028 ±	0.096	0.179	pCi/g	3.8	0.0074	
BMRC Final Status Survey	2014 11 03 S2-02	Europium-152	0.125 ±	0.139	0.225	pCi/g	6.9	0.0181	
BMRC Final Status Survey	2014 11 03 S2-02	Europium-154	-0.05 ±	0.123	0.209	pCi/g	8	-0.0063	
BMRC Final Status Survey	2014 11 03 S2-02	Nickel-63	1.406 ±	1.367	3.549	pCi/g	2100	0.0007	
BMRC Final Status Survey	2014 11 03 S2-02	Plutonium-238	0.01 ±	0.022	0.043	pCi/g	2.5	0.0040	
BMRC Final Status Survey	2014 11 03 S2-02	Pu-239/240	-0.001 ±	0.01	0.02	pCi/g	2.3	-0.0004	
BMRC Final Status Survey	2014 11 03 S2-02	Silver-108M	0 ±	0.059	0.116	pCi/g	8.2	0.0000	
BMRC Final Status Survey	2014 11 03 S2-02	Strontium-90	0.008 ±	0.101	0.248	pCi/g	1.7	0.0047	
BMRC Final Status Survey	2014 11 03 S2-02	Tritium	0.179 ±	0.95	1.66	pCi/g	110	0.0016	

Appendix H2 - Class 2 Stockpile Soil Analyses

Client Project	Sample ID	Parameter	Results	Sigma	MDA	Units	DCGL	Fraction	SOF
BMRC Final Status Survey	2014 11 03 S2-03	Americium-241	-0.139 ±	0.417	0.689	pCi/g	2.1	-0.0662	-0.0815
BMRC Final Status Survey	2014 11 03 S2-03	Carbon-14	-0.064 ±	0.44	0.805	pCi/g	12	-0.0053	
BMRC Final Status Survey	2014 11 03 S2-03	Cesium-137	-0.015 ±	0.059	0.105	pCi/g	11	-0.0014	
BMRC Final Status Survey	2014 11 03 S2-03	Cobalt-60	-0.01 ±	0.612	0.093	pCi/g	3.8	-0.0026	
BMRC Final Status Survey	2014 11 03 S2-03	Europium-152	-0.005 ±	0.14	0.238	pCi/g	6.9	-0.0007	
BMRC Final Status Survey	2014 11 03 S2-03	Europium-154	-0.017 ±	0.105	0.182	pCi/g	8	-0.0021	
BMRC Final Status Survey	2014 11 03 S2-03	Nickel-63	0.233 ±	1.274	3.534	pCi/g	2100	0.0001	
BMRC Final Status Survey	2014 11 03 S2-03	Plutonium-238	-0.003 ±	0.019	0.044	pCi/g	2.5	-0.0012	
BMRC Final Status Survey	2014 11 03 S2-03	Pu-239/240	0 ±	0.012	0.008	pCi/g	2.3	0.0000	
BMRC Final Status Survey	2014 11 03 S2-03	Silver-108M	0.008 ±	0.055	0.1	pCi/g	8.2	0.0010	
BMRC Final Status Survey	2014 11 03 S2-03	Strontium-90	-0.0004 ±	0.079	0.2	pCi/g	1.7	-0.0002	
BMRC Final Status Survey	2014 11 03 S2-03	Tritium	-0.308 ±	0.671	1.23	pCi/g	110	-0.0028	
BMRC Final Status Survey	2014 11 03 S2-04	Americium-241	-0.034 ±	0.193	0.336	pCi/g	2.1	-0.0162	0.0409
BMRC Final Status Survey	2014 11 03 S2-04	Carbon-14	0.517 ±	0.483	0.783	pCi/g	12	0.0431	
BMRC Final Status Survey	2014 11 03 S2-04	Cesium-137	0.066 ±	0.08	0.129	pCi/g	11	0.0060	
BMRC Final Status Survey	2014 11 03 S2-04	Cobalt-60	-0.014 ±	2.978	0.107	pCi/g	3.8	-0.0037	
BMRC Final Status Survey	2014 11 03 S2-04	Europium-152	-0.005 ±	0.198	0.309	pCi/g	6.9	-0.0007	
BMRC Final Status Survey	2014 11 03 S2-04	Europium-154	0.037 ±	0.073	0.126	pCi/g	8	0.0046	
BMRC Final Status Survey	2014 11 03 S2-04	Nickel-63	-0.256 ±	1.236	3.531	pCi/g	2100	-0.0001	
BMRC Final Status Survey	2014 11 03 S2-04	Plutonium-238	0.007 ±	0.023	0.045	pCi/g	2.5	0.0028	
BMRC Final Status Survey	2014 11 03 S2-04	Pu-239/240	0.004 ±	0.014	0.031	pCi/g	2.3	0.0017	
BMRC Final Status Survey	2014 11 03 S2-04	Silver-108M	-0.035 ±	0.097	0.171	pCi/g	8.2	-0.0043	
BMRC Final Status Survey	2014 11 03 S2-04	Strontium-90	0.0117 ±	0.081	0.198	pCi/g	1.7	0.0069	
BMRC Final Status Survey	2014 11 03 S2-04	Tritium	0.0863 ±	1.02	1.8	pCi/g	110	0.0008	
BMRC Final Status Survey	2014 11 04 S2-01	Americium-241	-0.122 ±	0.404	0.667	pCi/g	2.1	-0.0581	-0.0113
BMRC Final Status Survey	2014 11 04 S2-01	Carbon-14	0.262 ±	0.398	0.676	pCi/g	12	0.0218	
BMRC Final Status Survey	2014 11 04 S2-01	Cesium-137	0.042 ±	0.064	0.106	pCi/g	11	0.0038	
BMRC Final Status Survey	2014 11 04 S2-01	Cobalt-60	0.019 ±	0.058	0.108	pCi/g	3.8	0.0050	
BMRC Final Status Survey	2014 11 04 S2-01	Europium-152	0.106 ±	0.134	0.22	pCi/g	6.9	0.0154	
BMRC Final Status Survey	2014 11 04 S2-01	Europium-154	-0.005 ±	0.102	0.18	pCi/g	8	-0.0006	
BMRC Final Status Survey	2014 11 04 S2-01	Nickel-63	0.991 ±	1.24	3.002	pCi/g	2100	0.0005	
BMRC Final Status Survey	2014 11 04 S2-01	Plutonium-238	0.001 ±	0.017	0.036	pCi/g	2.5	0.0004	
BMRC Final Status Survey	2014 11 04 S2-01	Pu-239/240	-0.002 ±	0.01	0.026	pCi/g	2.3	-0.0009	
BMRC Final Status Survey	2014 11 04 S2-01	Silver-108M	0 ±	0.084	0.149	pCi/g	8.2	0.0000	
BMRC Final Status Survey	2014 11 04 S2-01	Strontium-90	0.0091 ±	0.074	0.183	pCi/g	1.7	0.0054	
BMRC Final Status Survey	2014 11 04 S2-01	Tritium	-0.439 ±	1.17	2.12	pCi/g	110	-0.0040	
BMRC Final Status Survey	2014 11 04 S2-02	Americium-241	0 ±	0.205	0.358	pCi/g	2.1	0.0000	0.1330
BMRC Final Status Survey	2014 11 04 S2-02	Carbon-14	1.15 ±	0.497	0.674	pCi/g	12	0.0958	
BMRC Final Status Survey	2014 11 04 S2-02	Cesium-137	-0.005 ±	0.137	0.136	pCi/g	11	-0.0005	
BMRC Final Status Survey	2014 11 04 S2-02	Cobalt-60	-0.016 ±	0.669	0.141	pCi/g	3.8	-0.0042	
BMRC Final Status Survey	2014 11 04 S2-02	Europium-152	-0.047 ±	0.184	0.264	pCi/g	6.9	-0.0068	
BMRC Final Status Survey	2014 11 04 S2-02	Europium-154	-0.001 ±	0.095	0.17	pCi/g	8	-0.0001	
BMRC Final Status Survey	2014 11 04 S2-02	Nickel-63	-0.281 ±	1.187	3.279	pCi/g	2100	-0.0001	
BMRC Final Status Survey	2014 11 04 S2-02	Plutonium-238	0 ±	0.014	0.033	pCi/g	2.5	0.0000	
BMRC Final Status Survey	2014 11 04 S2-02	Pu-239/240	-0.003 ±	0.017	0.041	pCi/g	2.3	-0.0013	
BMRC Final Status Survey	2014 11 04 S2-02	Silver-108M	-0.031 ±	0.085	0.151	pCi/g	8.2	-0.0038	
BMRC Final Status Survey	2014 11 04 S2-02	Strontium-90	0.092 ±	0.109	0.236	pCi/g	1.7	0.0541	
BMRC Final Status Survey	2014 11 04 S2-02	Tritium	-0.0196 ±	0.962	1.7	pCi/g	110	-0.0002	
BMRC Final Status Survey	2014 11 04 S2-03	Americium-241	0.079 ±	0.163	0.277	pCi/g	2.1	0.0376	0.0839
BMRC Final Status Survey	2014 11 04 S2-03	Carbon-14	0.288 ±	0.409	0.691	pCi/g	12	0.0240	
BMRC Final Status Survey	2014 11 04 S2-03	Cesium-137	0.002 ±	0.077	0.146	pCi/g	11	0.0002	
BMRC Final Status Survey	2014 11 04 S2-03	Cobalt-60	0.013 ±	0.077	0.154	pCi/g	3.8	0.0034	
BMRC Final Status Survey	2014 11 04 S2-03	Europium-152	-0.013 ±	0.283	0.246	pCi/g	6.9	-0.0019	
BMRC Final Status Survey	2014 11 04 S2-03	Europium-154	0.006 ±	0.09	0.161	pCi/g	8	0.0008	
BMRC Final Status Survey	2014 11 04 S2-03	Nickel-63	-1.012 ±	1.14	3.332	pCi/g	2100	-0.0005	
BMRC Final Status Survey	2014 11 04 S2-03	Plutonium-238	0.014 ±	0.018	0.031	pCi/g	2.5	0.0056	

Appendix H2 - Class 2 Stockpile Soil Analyses

Client Project	Sample ID	Parameter	Results	Sigma	MDA	Units	DCGL	Fraction	SOF
BMRC Final Status Survey	2014 11 04 S2-03	Pu-239/240	0.002 ±	0.011	0.025	pCi/g	2.3	0.0009	
BMRC Final Status Survey	2014 11 04 S2-03	Silver-108M	0.016 ±	0.082	0.15	pCi/g	8.2	0.0020	
BMRC Final Status Survey	2014 11 04 S2-03	Strontium-90	0.015 ±	0.102	0.244	pCi/g	1.7	0.0088	
BMRC Final Status Survey	2014 11 04 S2-03	Tritium	0.337 ±	1.2	2.09	pCi/g	110	0.0031	
BMRC Final Status Survey	2014 11 04 S2-04	Americium-241	-0.014 ±	0.333	0.438	pCi/g	2.1	-0.0067	0.1031
BMRC Final Status Survey	2014 11 04 S2-04	Carbon-14	0.165 ±	0.397	0.692	pCi/g	12	0.0138	
BMRC Final Status Survey	2014 11 04 S2-04	Cesium-137	0.03 ±	0.055	0.093	pCi/g	11	0.0027	
BMRC Final Status Survey	2014 11 04 S2-04	Cobalt-60	0.017 ±	0.054	0.101	pCi/g	3.8	0.0045	
BMRC Final Status Survey	2014 11 04 S2-04	Europium-152	0.086 ±	0.144	0.242	pCi/g	6.9	0.0125	
BMRC Final Status Survey	2014 11 04 S2-04	Europium-154	0.02 ±	0.107	0.186	pCi/g	8	0.0025	
BMRC Final Status Survey	2014 11 04 S2-04	Nickel-63	0 ±	1.233	3.406	pCi/g	2100	0.0000	
BMRC Final Status Survey	2014 11 04 S2-04	Plutonium-238	0.012 ±	0.012	0.015	pCi/g	2.5	0.0048	
BMRC Final Status Survey	2014 11 04 S2-04	Pu-239/240	-0.007 ±	0.011	0.03	pCi/g	2.3	-0.0030	
BMRC Final Status Survey	2014 11 04 S2-04	Silver-108M	-0.022 ±	0.067	0.116	pCi/g	8.2	-0.0027	
BMRC Final Status Survey	2014 11 04 S2-04	Strontium-90	0.126 ±	0.11	0.225	pCi/g	1.7	0.0741	
BMRC Final Status Survey	2014 11 04 S2-04	Tritium	0.0675 ±	0.833	1.47	pCi/g	110	0.0006	
BMRC Final Status Survey	2014 11 05 S2-01	Americium-241	-0.026 ±	0.157	0.279	pCi/g	2.1	-0.0124	0.0254
BMRC Final Status Survey	2014 11 05 S2-01	Carbon-14	0.38 ±	0.429	0.709	pCi/g	12	0.0317	
BMRC Final Status Survey	2014 11 05 S2-01	Cesium-137	0.042 ±	0.083	0.144	pCi/g	11	0.0038	
BMRC Final Status Survey	2014 11 05 S2-01	Cobalt-60	-0.016 ±	0.64	0.323	pCi/g	3.8	-0.0042	
BMRC Final Status Survey	2014 11 05 S2-01	Europium-152	-0.013 ±	0.322	0.251	pCi/g	6.9	-0.0019	
BMRC Final Status Survey	2014 11 05 S2-01	Europium-154	0.093 ±	0.148	0.154	pCi/g	8	0.0116	
BMRC Final Status Survey	2014 11 05 S2-01	Nickel-63	0.846 ±	1.377	4.014	pCi/g	2100	0.0004	
BMRC Final Status Survey	2014 11 05 S2-01	Plutonium-238	-0.013 ±	0.042	0.086	pCi/g	2.5	-0.0052	
BMRC Final Status Survey	2014 11 05 S2-01	Pu-239/240	-0.005 ±	0.019	0.045	pCi/g	2.3	-0.0022	
BMRC Final Status Survey	2014 11 05 S2-01	Silver-108M	-0.009 ±	0.103	0.19	pCi/g	8.2	-0.0011	
BMRC Final Status Survey	2014 11 05 S2-01	Strontium-90	0.009 ±	0.112	0.268	pCi/g	1.7	0.0053	
BMRC Final Status Survey	2014 11 05 S2-01	Tritium	-0.0521 ±	0.508	0.905	pCi/g	110	-0.0005	
BMRC Final Status Survey	2014 11 05 S2-02	Americium-241	-0.188 ±	0.373	0.614	pCi/g	2.1	-0.0895	0.0030
BMRC Final Status Survey	2014 11 05 S2-02	Carbon-14	0.306 ±	0.407	0.684	pCi/g	12	0.0255	
BMRC Final Status Survey	2014 11 05 S2-02	Cesium-137	0.042 ±	0.06	0.1	pCi/g	11	0.0038	
BMRC Final Status Survey	2014 11 05 S2-02	Cobalt-60	-0.01 ±	0.753	0.128	pCi/g	3.8	-0.0026	
BMRC Final Status Survey	2014 11 05 S2-02	Europium-152	0.05 ±	0.117	0.201	pCi/g	6.9	0.0072	
BMRC Final Status Survey	2014 11 05 S2-02	Europium-154	-0.03 ±	0.115	0.198	pCi/g	8	-0.0038	
BMRC Final Status Survey	2014 11 05 S2-02	Nickel-63	1.063 ±	1.308	3.477	pCi/g	2100	0.0005	
BMRC Final Status Survey	2014 11 05 S2-02	Plutonium-238	0.021 ±	0.027	0.046	pCi/g	2.5	0.0084	
BMRC Final Status Survey	2014 11 05 S2-02	Pu-239/240	0.02 ±	0.019	0.026	pCi/g	2.3	0.0087	
BMRC Final Status Survey	2014 11 05 S2-02	Silver-108M	0 ±	0.062	0.112	pCi/g	8.2	0.0000	
BMRC Final Status Survey	2014 11 05 S2-02	Strontium-90	0.068 ±	0.116	0.261	pCi/g	1.7	0.0400	
BMRC Final Status Survey	2014 11 05 S2-02	Tritium	0.522 ±	0.79	1.33	pCi/g	110	0.0047	
BMRC Final Status Survey	2014 11 05 S2-03	Americium-241	-0.004 ±	0.129	0.233	pCi/g	2.1	-0.0019	0.2653
BMRC Final Status Survey	2014 11 05 S2-03	Carbon-14	0.741 ±	0.47	0.71	pCi/g	12	0.0618	
BMRC Final Status Survey	2014 11 05 S2-03	Cesium-137	0.013 ±	0.08	0.147	pCi/g	11	0.0012	
BMRC Final Status Survey	2014 11 05 S2-03	Cobalt-60	0.018 ±	0.073	0.146	pCi/g	3.8	0.0047	
BMRC Final Status Survey	2014 11 05 S2-03	Europium-152	0.066 ±	0.135	0.231	pCi/g	6.9	0.0096	
BMRC Final Status Survey	2014 11 05 S2-03	Europium-154	0 ±	0.114	0.201	pCi/g	8	0.0000	
BMRC Final Status Survey	2014 11 05 S2-03	Nickel-63	0.025 ±	1.269	3.724	pCi/g	2100	0.0000	
BMRC Final Status Survey	2014 11 05 S2-03	Plutonium-238	0.02 ±	0.031	0.055	pCi/g	2.5	0.0080	
BMRC Final Status Survey	2014 11 05 S2-03	Pu-239/240	0.005 ±	0.015	0.031	pCi/g	2.3	0.0022	
BMRC Final Status Survey	2014 11 05 S2-03	Silver-108M	0 ±	0.146	0.261	pCi/g	8.2	0.0000	
BMRC Final Status Survey	2014 11 05 S2-03	Strontium-90	0.305 ±	0.145	0.249	pCi/g	1.7	0.1794	
BMRC Final Status Survey	2014 11 05 S2-03	Tritium	0.0382 ±	0.939	1.66	pCi/g	110	0.0003	
BMRC Final Status Survey	2014 11 05 S2-04	Americium-241	0.046 ±	0.391	0.687	pCi/g	2.1	0.0219	0.1031
BMRC Final Status Survey	2014 11 05 S2-04	Carbon-14	0.02 ±	0.378	0.687	pCi/g	12	0.0017	
BMRC Final Status Survey	2014 11 05 S2-04	Cesium-137	0.059 ±	0.062	0.098	pCi/g	11	0.0054	
BMRC Final Status Survey	2014 11 05 S2-04	Cobalt-60	-0.003 ±	0.101	0.134	pCi/g	3.8	-0.0008	

Appendix H2 - Class 2 Stockpile Soil Analyses

Client Project	Sample ID	Parameter	Results	Sigma	MDA	Units	DCGL	Fraction	SOF
BMRC Final Status Survey	2014 11 05 S2-04	Europium-152	-0.079 ±	0.192	0.326	pCi/g	6.9	-0.0114	
BMRC Final Status Survey	2014 11 05 S2-04	Europium-154	0.049 ±	0.082	0.171	pCi/g	8	0.0061	
BMRC Final Status Survey	2014 11 05 S2-04	Nickel-63	0.971 ±	1.316	3.571	pCi/g	2100	0.0005	
BMRC Final Status Survey	2014 11 05 S2-04	Plutonium-238	0.016 ±	0.029	0.052	pCi/g	2.5	0.0064	
BMRC Final Status Survey	2014 11 05 S2-04	Pu-239/240	0.003 ±	0.013	0.029	pCi/g	2.3	0.0013	
BMRC Final Status Survey	2014 11 05 S2-04	Silver-108M	0.008 ±	0.062	0.113	pCi/g	8.2	0.0010	
BMRC Final Status Survey	2014 11 05 S2-04	Strontium-90	0.119 ±	0.118	0.247	pCi/g	1.7	0.0700	
BMRC Final Status Survey	2014 11 05 S2-04	Tritium	0.121 ±	0.669	1.17	pCi/g	110	0.0011	
BMRC Final Status Survey	2014 11 06 S2-01	Americium-241	0.048 ±	0.155	0.268	pCi/g	2.1	0.0229	0.0806
BMRC Final Status Survey	2014 11 06 S2-01	Carbon-14	0.372 ±	0.42	0.693	pCi/g	12	0.0310	
BMRC Final Status Survey	2014 11 06 S2-01	Cesium-137	0.037 ±	0.081	0.141	pCi/g	11	0.0034	
BMRC Final Status Survey	2014 11 06 S2-01	Cobalt-60	0.009 ±	0.07	0.143	pCi/g	3.8	0.0024	
BMRC Final Status Survey	2014 11 06 S2-01	Europium-152	0.009 ±	0.12	0.216	pCi/g	6.9	0.0013	
BMRC Final Status Survey	2014 11 06 S2-01	Europium-154	0.007 ±	0.115	0.202	pCi/g	8	0.0009	
BMRC Final Status Survey	2014 11 06 S2-01	Nickel-63	1.862 ±	1.324	3.184	pCi/g	2100	0.0009	
BMRC Final Status Survey	2014 11 06 S2-01	Plutonium-238	-0.031 ±	0.04	0.083	pCi/g	2.5	-0.0124	
BMRC Final Status Survey	2014 11 06 S2-01	Pu-239/240	0 ±	0.012	0.025	pCi/g	2.3	0.0000	
BMRC Final Status Survey	2014 11 06 S2-01	Silver-108M	-0.035 ±	0.092	0.162	pCi/g	8.2	-0.0043	
BMRC Final Status Survey	2014 11 06 S2-01	Strontium-90	0.009 ±	0.107	0.256	pCi/g	1.7	0.0053	
BMRC Final Status Survey	2014 11 06 S2-01	Tritium	3.22 ±	1.29	1.82	pCi/g	110	0.0293	
BMRC Final Status Survey	2014 11 06 S2-02	Americium-241	0.123 ±	0.294	0.503	pCi/g	2.1	0.0586	0.2081
BMRC Final Status Survey	2014 11 06 S2-02	Carbon-14	0.29 ±	0.412	0.695	pCi/g	12	0.0242	
BMRC Final Status Survey	2014 11 06 S2-02	Cesium-137	0.022 ±	0.057	0.1	pCi/g	11	0.0020	
BMRC Final Status Survey	2014 11 06 S2-02	Cobalt-60	-0.024 ±	0.21	0.127	pCi/g	3.8	-0.0063	
BMRC Final Status Survey	2014 11 06 S2-02	Europium-152	0 ±	0.004	0.31	pCi/g	6.9	0.0000	
BMRC Final Status Survey	2014 11 06 S2-02	Europium-154	0 ±	0.126	0.221	pCi/g	8	0.0000	
BMRC Final Status Survey	2014 11 06 S2-02	Nickel-63	0.597 ±	1.254	3.376	pCi/g	2100	0.0003	
BMRC Final Status Survey	2014 11 06 S2-02	Plutonium-238	0.009 ±	0.029	0.056	pCi/g	2.5	0.0036	
BMRC Final Status Survey	2014 11 06 S2-02	Pu-239/240	-0.001 ±	0.015	0.033	pCi/g	2.3	-0.0004	
BMRC Final Status Survey	2014 11 06 S2-02	Silver-108M	0 ±	0.06	0.11	pCi/g	8.2	0.0000	
BMRC Final Status Survey	2014 11 06 S2-02	Strontium-90	0.214 ±	0.114	0.204	pCi/g	1.7	0.1259	
BMRC Final Status Survey	2014 11 06 S2-02	Tritium	0.0348 ±	0.856	1.51	pCi/g	110	0.0003	
BMRC Final Status Survey	2014 11 06 S2-03	Americium-241	-0.024 ±	0.096	0.166	pCi/g	2.1	-0.0114	0.2906
BMRC Final Status Survey	2014 11 06 S2-03	Carbon-14	0.021 ±	0.38	0.689	pCi/g	12	0.0018	
BMRC Final Status Survey	2014 11 06 S2-03	Cesium-137	0.021 ±	0.045	0.079	pCi/g	11	0.0019	
BMRC Final Status Survey	2014 11 06 S2-03	Cobalt-60	-0.01 ±	1.294	0.107	pCi/g	3.8	-0.0026	
BMRC Final Status Survey	2014 11 06 S2-03	Europium-152	0.014 ±	0.073	0.129	pCi/g	6.9	0.0020	
BMRC Final Status Survey	2014 11 06 S2-03	Europium-154	0.007 ±	0.048	0.085	pCi/g	8	0.0009	
BMRC Final Status Survey	2014 11 06 S2-03	Nickel-63	-0.372 ±	1.271	3.913	pCi/g	2100	-0.0002	
BMRC Final Status Survey	2014 11 06 S2-03	Plutonium-238	0.007 ±	0.034	0.066	pCi/g	2.5	0.0028	
BMRC Final Status Survey	2014 11 06 S2-03	Pu-239/240	0.013 ±	0.016	0.025	pCi/g	2.3	0.0057	
BMRC Final Status Survey	2014 11 06 S2-03	Silver-108M	-0.005 ±	0.056	0.102	pCi/g	8.2	-0.0006	
BMRC Final Status Survey	2014 11 06 S2-03	Strontium-90	0.503 ±	0.176	0.255	pCi/g	1.7	0.2959	
BMRC Final Status Survey	2014 11 06 S2-03	Tritium	-0.595 ±	0.936	1.72	pCi/g	110	-0.0054	
BMRC Final Status Survey	2014 11 11 S2-01	Americium-241	-0.059 ±	0.339	0.584	pCi/g	2.1	-0.0281	0.1122
BMRC Final Status Survey	2014 11 11 S2-01	Carbon-14	1.42 ±	1.18	1.7	pCi/g	12	0.1183	
BMRC Final Status Survey	2014 11 11 S2-01	Cesium-137	0.025 ±	0.061	0.106	pCi/g	11	0.0023	
BMRC Final Status Survey	2014 11 11 S2-01	Cobalt-60	-0.014 ±	0.347	0.116	pCi/g	3.8	-0.0037	
BMRC Final Status Survey	2014 11 11 S2-01	Europium-152	-0.095 ±	0.192	0.285	pCi/g	6.9	-0.0138	
BMRC Final Status Survey	2014 11 11 S2-01	Europium-154	0.039 ±	0.1	0.171	pCi/g	8	0.0049	
BMRC Final Status Survey	2014 11 11 S2-01	Nickel-63	-0.231 ±	0.738	2.422	pCi/g	2100	-0.0001	
BMRC Final Status Survey	2014 11 11 S2-01	Plutonium-238	0.002 ±	0.039	0.062	pCi/g	2.5	0.0008	
BMRC Final Status Survey	2014 11 11 S2-01	Pu-239/240	-0.02 ±	0.021	0.04	pCi/g	2.3	-0.0087	
BMRC Final Status Survey	2014 11 11 S2-01	Silver-108M	0.011 ±	0.057	0.103	pCi/g	8.2	0.0013	
BMRC Final Status Survey	2014 11 11 S2-01	Strontium-90	0.0498 ±	0.085	0.191	pCi/g	1.7	0.0293	
BMRC Final Status Survey	2014 11 11 S2-01	Tritium	1.06 ±	1.47	2.48	pCi/g	110	0.0096	

Appendix H2 - Class 2 Stockpile Soil Analyses

Client Project	Sample ID	Parameter	Results	Sigma	MDA	Units	DCGL	Fraction	SOF
BMRC Final Status Survey	2014 11 11 S2-02	Americium-241	-0.029 ±	0.175	0.306	pCi/g	2.1	-0.0138	0.0944
BMRC Final Status Survey	2014 11 11 S2-02	Carbon-14	1.32 ±	1.17	1.73	pCi/g	12	0.1100	
BMRC Final Status Survey	2014 11 11 S2-02	Cesium-137	0.024 ±	0.085	0.153	pCi/g	11	0.0022	
BMRC Final Status Survey	2014 11 11 S2-02	Cobalt-60	-0.04 ±	0.283	0.193	pCi/g	3.8	-0.0105	
BMRC Final Status Survey	2014 11 11 S2-02	Europium-152	0.03 ±	0.096	0.171	pCi/g	6.9	0.0043	
BMRC Final Status Survey	2014 11 11 S2-02	Europium-154	0.076 ±	0.1	0.148	pCi/g	8	0.0095	
BMRC Final Status Survey	2014 11 11 S2-02	Nickel-63	-0.258 ±	0.61	1.668	pCi/g	2100	-0.0001	
BMRC Final Status Survey	2014 11 11 S2-02	Plutonium-238	0.018 ±	0.023	0.034	pCi/g	2.5	0.0072	
BMRC Final Status Survey	2014 11 11 S2-02	Pu-239/240	0.005 ±	0.016	0.026	pCi/g	2.3	0.0022	
BMRC Final Status Survey	2014 11 11 S2-02	Silver-108M	0.021 ±	0.039	0.126	pCi/g	8.2	0.0026	
BMRC Final Status Survey	2014 11 11 S2-02	Strontium-90	-0.0379 ±	0.071	0.193	pCi/g	1.7	-0.0223	
BMRC Final Status Survey	2014 11 11 S2-02	Tritium	0.35 ±	1.28	2.27	pCi/g	110	0.0032	
BMRC Final Status Survey	2014 11 13 S2-01	Americium-241	0 ±	0.014	0.603	pCi/g	2.1	0.0000	0.0682
BMRC Final Status Survey	2014 11 13 S2-01	Carbon-14	1.14 ±	1.09	1.66	pCi/g	12	0.0950	
BMRC Final Status Survey	2014 11 13 S2-01	Cesium-137	0.011 ±	0.054	0.098	pCi/g	11	0.0010	
BMRC Final Status Survey	2014 11 13 S2-01	Cobalt-60	-0.021 ±	0.227	0.144	pCi/g	3.8	-0.0055	
BMRC Final Status Survey	2014 11 13 S2-01	Europium-152	-0.094 ±	0.207	0.308	pCi/g	6.9	-0.0136	
BMRC Final Status Survey	2014 11 13 S2-01	Europium-154	0.015 ±	0.021	0.211	pCi/g	8	0.0019	
BMRC Final Status Survey	2014 11 13 S2-01	Nickel-63	0.11 ±	0.543	1.266	pCi/g	2100	0.0001	
BMRC Final Status Survey	2014 11 13 S2-01	Plutonium-238	0.027 ±	0.021	0.03	pCi/g	2.5	0.0108	
BMRC Final Status Survey	2014 11 13 S2-01	Pu-239/240	-0.011 ±	0.013	0.026	pCi/g	2.3	-0.0048	
BMRC Final Status Survey	2014 11 13 S2-01	Silver-108M	-0.017 ±	0.073	0.128	pCi/g	8.2	-0.0021	
BMRC Final Status Survey	2014 11 13 S2-01	Strontium-90	-0.0464 ±	0.075	0.207	pCi/g	1.7	-0.0273	
BMRC Final Status Survey	2014 11 13 S2-01	Tritium	1.4 ±	1.41	2.31	pCi/g	110	0.0127	
BMRC Final Status Survey	2014 11 13 S2-02	Americium-241	0.04 ±	0.181	0.314	pCi/g	2.1	0.0190	0.0079
BMRC Final Status Survey	2014 11 13 S2-02	Carbon-14	-0.255 ±	0.705	1.67	pCi/g	12	-0.0213	
BMRC Final Status Survey	2014 11 13 S2-02	Cesium-137	0.001 ±	0.087	0.163	pCi/g	11	0.0001	
BMRC Final Status Survey	2014 11 13 S2-02	Cobalt-60	0.001 ±	0.091	0.185	pCi/g	3.8	0.0003	
BMRC Final Status Survey	2014 11 13 S2-02	Europium-152	0 ±	0.144	0.259	pCi/g	6.9	0.0000	
BMRC Final Status Survey	2014 11 13 S2-02	Europium-154	0.048 ±	0.088	0.181	pCi/g	8	0.0060	
BMRC Final Status Survey	2014 11 13 S2-02	Nickel-63	-0.119 ±	0.699	2.153	pCi/g	2100	-0.0001	
BMRC Final Status Survey	2014 11 13 S2-02	Plutonium-238	0.02 ±	0.041	0.063	pCi/g	2.5	0.0080	
BMRC Final Status Survey	2014 11 13 S2-02	Pu-239/240	-0.006 ±	0.017	0.032	pCi/g	2.3	-0.0026	
BMRC Final Status Survey	2014 11 13 S2-02	Silver-108M	0.021 ±	0.029	0.169	pCi/g	8.2	0.0026	
BMRC Final Status Survey	2014 11 13 S2-02	Strontium-90	-0.0195 ±	0.075	0.192	pCi/g	1.7	-0.0115	
BMRC Final Status Survey	2014 11 13 S2-02	Tritium	0.809 ±	1.41	2.42	pCi/g	110	0.0074	
BMRC Final Status Survey	2014 11 13 S2-02-DUF	Americium-241	0.004 ±	0.169	0.299	pCi/g	2.1	0.0019	0.0435
BMRC Final Status Survey	2014 11 13 S2-02-DUF	Carbon-14	0.649 ±	0.993	1.71	pCi/g	12	0.0541	
BMRC Final Status Survey	2014 11 13 S2-02-DUF	Cesium-137	0 ±	0.094	0.175	pCi/g	11	0.0000	
BMRC Final Status Survey	2014 11 13 S2-02-DUF	Cobalt-60	0.039 ±	0.062	0.172	pCi/g	3.8	0.0103	
BMRC Final Status Survey	2014 11 13 S2-02-DUF	Europium-152	0 ±	0.004	0.265	pCi/g	6.9	0.0000	
BMRC Final Status Survey	2014 11 13 S2-02-DUF	Europium-154	-0.017 ±	0.103	0.181	pCi/g	8	-0.0021	
BMRC Final Status Survey	2014 11 13 S2-02-DUF	Nickel-63	0.123 ±	0.567	1.378	pCi/g	2100	0.0001	
BMRC Final Status Survey	2014 11 13 S2-02-DUF	Plutonium-238	0.026 ±	0.029	0.043	pCi/g	2.5	0.0104	
BMRC Final Status Survey	2014 11 13 S2-02-DUF	Pu-239/240	-0.009 ±	0.015	0.029	pCi/g	2.3	-0.0039	
BMRC Final Status Survey	2014 11 13 S2-02-DUF	Silver-108M	-0.002 ±	0.07	0.133	pCi/g	8.2	-0.0002	
BMRC Final Status Survey	2014 11 13 S2-02-DUF	Strontium-90	-0.0457 ±	0.059	0.162	pCi/g	1.7	-0.0269	
BMRC Final Status Survey	2014 11 13 S2-02-DUF	Tritium	0 ±	1.42	2.6	pCi/g	110	0.0000	
BMRC Final Status Survey	2014 11 14 S2-01	Americium-241	0.109 ±	0.305	0.525	pCi/g	2.1	0.0519	0.0140
BMRC Final Status Survey	2014 11 14 S2-01	Carbon-14	0.229 ±	0.318	0.535	pCi/g	12	0.0191	
BMRC Final Status Survey	2014 11 14 S2-01	Cesium-137	0.027 ±	0.054	0.093	pCi/g	11	0.0025	
BMRC Final Status Survey	2014 11 14 S2-01	Cobalt-60	-0.01 ±	0.392	0.048	pCi/g	3.8	-0.0026	
BMRC Final Status Survey	2014 11 14 S2-01	Europium-152	0.055 ±	0.147	0.252	pCi/g	6.9	0.0080	
BMRC Final Status Survey	2014 11 14 S2-01	Europium-154	0.029 ±	0.092	0.159	pCi/g	8	0.0036	
BMRC Final Status Survey	2014 11 14 S2-01	Nickel-63	2.208 ±	1.39	3.419	pCi/g	2100	0.0011	
BMRC Final Status Survey	2014 11 14 S2-01	Plutonium-238	-0.026 ±	0.031	0.065	pCi/g	2.5	-0.0104	

Appendix H2 - Class 2 Stockpile Soil Analyses

Client Project	Sample ID	Parameter	Results	Sigma	MDA	Units	DCGL	Fraction	SOF
BMRC Final Status Survey	2014 11 14 S2-01	Pu-239/240	0.004 ±	0.01	0.019	pCi/g	2.3	0.0017	
BMRC Final Status Survey	2014 11 14 S2-01	Silver-108M	-0.024 ±	0.067	0.117	pCi/g	8.2	-0.0029	
BMRC Final Status Survey	2014 11 14 S2-01	Strontium-90	-0.101 ±	0.092	0.251	pCi/g	1.7	-0.0594	
BMRC Final Status Survey	2014 11 14 S2-01	Tritium	0.172 ±	1.64	2.95	pCi/g	110	0.0016	
BMRC Final Status Survey	2014 11 14 S2-02	Americium-241	0.234 ±	0.334	0.553	pCi/g	2.1	0.1114	0.2381
BMRC Final Status Survey	2014 11 14 S2-02	Carbon-14	0.727 ±	0.378	0.555	pCi/g	12	0.0606	
BMRC Final Status Survey	2014 11 14 S2-02	Cesium-137	0.032 ±	0.06	0.102	pCi/g	11	0.0029	
BMRC Final Status Survey	2014 11 14 S2-02	Cobalt-60	-0.003 ±	0.11	0.11	pCi/g	3.8	-0.0008	
BMRC Final Status Survey	2014 11 14 S2-02	Europium-152	-0.005 ±	0.218	0.277	pCi/g	6.9	-0.0007	
BMRC Final Status Survey	2014 11 14 S2-02	Europium-154	-0.028 ±	0.104	0.178	pCi/g	8	-0.0035	
BMRC Final Status Survey	2014 11 14 S2-02	Nickel-63	1.562 ±	1.393	3.766	pCi/g	2100	0.0007	
BMRC Final Status Survey	2014 11 14 S2-02	Plutonium-238	0.018 ±	0.038	0.071	pCi/g	2.5	0.0072	
BMRC Final Status Survey	2014 11 14 S2-02	Pu-239/240	0.008 ±	0.021	0.042	pCi/g	2.3	0.0035	
BMRC Final Status Survey	2014 11 14 S2-02	Silver-108M	0.003 ±	0.06	0.109	pCi/g	8.2	0.0004	
BMRC Final Status Survey	2014 11 14 S2-02	Strontium-90	0.07 ±	0.114	0.254	pCi/g	1.7	0.0412	
BMRC Final Status Survey	2014 11 14 S2-02	Tritium	1.68 ±	1.75	2.87	pCi/g	110	0.0153	
BMRC Final Status Survey	2014 11 14 S2-03	Americium-241	0.023 ±	0.152	0.267	pCi/g	2.1	0.0110	0.0052
BMRC Final Status Survey	2014 11 14 S2-03	Carbon-14	-0.237 ±	0.293	0.563	pCi/g	12	-0.0198	
BMRC Final Status Survey	2014 11 14 S2-03	Cesium-137	0 ±	0.052	0.105	pCi/g	11	0.0000	
BMRC Final Status Survey	2014 11 14 S2-03	Cobalt-60	-0.018 ±	0.736	0.212	pCi/g	3.8	-0.0047	
BMRC Final Status Survey	2014 11 14 S2-03	Europium-152	0.091 ±	0.157	0.233	pCi/g	6.9	0.0132	
BMRC Final Status Survey	2014 11 14 S2-03	Europium-154	-0.03 ±	0.108	0.188	pCi/g	8	-0.0038	
BMRC Final Status Survey	2014 11 14 S2-03	Nickel-63	0.053 ±	1.302	3.912	pCi/g	2100	0.0000	
BMRC Final Status Survey	2014 11 14 S2-03	Plutonium-238	0.032 ±	0.034	0.056	pCi/g	2.5	0.0128	
BMRC Final Status Survey	2014 11 14 S2-03	Pu-239/240	0.012 ±	0.014	0.021	pCi/g	2.3	0.0052	
BMRC Final Status Survey	2014 11 14 S2-03	Silver-108M	-0.016 ±	0.098	0.177	pCi/g	8.2	-0.0020	
BMRC Final Status Survey	2014 11 14 S2-03	Strontium-90	-0.0142 ±	0.075	0.187	pCi/g	1.7	-0.0084	
BMRC Final Status Survey	2014 11 14 S2-03	Tritium	0.176 ±	1.67	3.01	pCi/g	110	0.0016	
BMRC Final Status Survey	2014 11 14 S2-04	Americium-241	-0.013 ±	0.368	0.482	pCi/g	2.1	-0.0062	0.1225
BMRC Final Status Survey	2014 11 14 S2-04	Carbon-14	1.22 ±	0.424	0.544	pCi/g	12	0.1017	
BMRC Final Status Survey	2014 11 14 S2-04	Cesium-137	0.038 ±	0.054	0.09	pCi/g	11	0.0035	
BMRC Final Status Survey	2014 11 14 S2-04	Cobalt-60	0.061 ±	0.06	0.096	pCi/g	3.8	0.0161	
BMRC Final Status Survey	2014 11 14 S2-04	Europium-152	-0.033 ±	0.119	0.206	pCi/g	6.9	-0.0048	
BMRC Final Status Survey	2014 11 14 S2-04	Europium-154	0.031 ±	0.062	0.172	pCi/g	8	0.0039	
BMRC Final Status Survey	2014 11 14 S2-04	Nickel-63	0.031 ±	0.632	0.913	pCi/g	2100	0.0000	
BMRC Final Status Survey	2014 11 14 S2-04	Plutonium-238	-0.017 ±	0.031	0.067	pCi/g	2.5	-0.0068	
BMRC Final Status Survey	2014 11 14 S2-04	Pu-239/240	0.006 ±	0.018	0.036	pCi/g	2.3	0.0026	
BMRC Final Status Survey	2014 11 14 S2-04	Silver-108M	0.038 ±	0.038	0.097	pCi/g	8.2	0.0046	
BMRC Final Status Survey	2014 11 14 S2-04	Strontium-90	-0.0021 ±	0.081	0.199	pCi/g	1.7	-0.0012	
BMRC Final Status Survey	2014 11 14 S2-04	Tritium	1.01 ±	1.89	3.26	pCi/g	110	0.0092	
BMRC Final Status Survey	2014 11 15 S2-01	Americium-241	0.07 ±	0.139	0.236	pCi/g	2.1	0.0333	0.1092
BMRC Final Status Survey	2014 11 15 S2-01	Carbon-14	-0.106 ±	0.292	0.542	pCi/g	12	-0.0088	
BMRC Final Status Survey	2014 11 15 S2-01	Cesium-137	0 ±	0.096	0.178	pCi/g	11	0.0000	
BMRC Final Status Survey	2014 11 15 S2-01	Cobalt-60	-0.046 ±	0.22	0.183	pCi/g	3.8	-0.0121	
BMRC Final Status Survey	2014 11 15 S2-01	Europium-152	0.114 ±	0.14	0.216	pCi/g	6.9	0.0165	
BMRC Final Status Survey	2014 11 15 S2-01	Europium-154	0.045 ±	0.085	0.144	pCi/g	8	0.0056	
BMRC Final Status Survey	2014 11 15 S2-01	Nickel-63	1.047 ±	1.367	3.851	pCi/g	2100	0.0005	
BMRC Final Status Survey	2014 11 15 S2-01	Plutonium-238	0.003 ±	0.034	0.066	pCi/g	2.5	0.0012	
BMRC Final Status Survey	2014 11 15 S2-01	Pu-239/240	-0.011 ±	0.016	0.041	pCi/g	2.3	-0.0048	
BMRC Final Status Survey	2014 11 15 S2-01	Silver-108M	0.01 ±	0.055	0.105	pCi/g	8.2	0.0012	
BMRC Final Status Survey	2014 11 15 S2-01	Strontium-90	0.121 ±	0.101	0.204	pCi/g	1.7	0.0712	
BMRC Final Status Survey	2014 11 15 S2-01	Tritium	0.584 ±	1.49	2.59	pCi/g	110	0.0053	
BMRC Final Status Survey	2014 11 15 S2-02	Americium-241	0.012 ±	0.296	0.526	pCi/g	2.1	0.0057	0.1804
BMRC Final Status Survey	2014 11 15 S2-02	Carbon-14	-0.257 ±	0.28	0.542	pCi/g	12	-0.0214	
BMRC Final Status Survey	2014 11 15 S2-02	Cesium-137	0.013 ±	0.06	0.107	pCi/g	11	0.0012	
BMRC Final Status Survey	2014 11 15 S2-02	Cobalt-60	-0.036 ±	0.117	0.122	pCi/g	3.8	-0.0095	

Appendix H2 - Class 2 Stockpile Soil Analyses

Client Project	Sample ID	Parameter	Results	Sigma	MDA	Units	DCGL	Fraction	SOF
BMRC Final Status Survey	2014 11 15 S2-02	Europium-152	0.043 ±	0.084	0.214	pCi/g	6.9	0.0062	
BMRC Final Status Survey	2014 11 15 S2-02	Europium-154	0.068 ±	0.086	0.14	pCi/g	8	0.0085	
BMRC Final Status Survey	2014 11 15 S2-02	Nickel-63	1.622 ±	1.334	3.361	pCi/g	2100	0.0008	
BMRC Final Status Survey	2014 11 15 S2-02	Plutonium-238	-0.004 ±	0.024	0.052	pCi/g	2.5	-0.0016	
BMRC Final Status Survey	2014 11 15 S2-02	Pu-239/240	0.005 ±	0.014	0.029	pCi/g	2.3	0.0022	
BMRC Final Status Survey	2014 11 15 S2-02	Silver-108M	0 ±	0.031	0.061	pCi/g	8.2	0.0000	
BMRC Final Status Survey	2014 11 15 S2-02	Strontium-90	0.304 ±	0.132	0.209	pCi/g	1.7	0.1788	
BMRC Final Status Survey	2014 11 15 S2-02	Tritium	1.04 ±	1.48	2.49	pCi/g	110	0.0095	
BMRC Final Status Survey	2014 12 08 S2-01	Americium-241	0 ±	0.173	0.305	pCi/g	2.1	0.0000	0.0487
BMRC Final Status Survey	2014 12 08 S2-01	Carbon-14	-0.065 ±	0.398	0.738	pCi/g	12	-0.0054	
BMRC Final Status Survey	2014 12 08 S2-01	Cesium-137	0.018 ±	0.074	0.134	pCi/g	11	0.0016	
BMRC Final Status Survey	2014 12 08 S2-01	Cobalt-60	-0.018 ±	0.721	0.083	pCi/g	3.8	-0.0047	
BMRC Final Status Survey	2014 12 08 S2-01	Europium-152	0.072 ±	0.134	0.226	pCi/g	6.9	0.0104	
BMRC Final Status Survey	2014 12 08 S2-01	Europium-154	0.028 ±	0.049	0.181	pCi/g	8	0.0035	
BMRC Final Status Survey	2014 12 08 S2-01	Nickel-63	1.317 ±	1.282	3.405	pCi/g	2100	0.0006	
BMRC Final Status Survey	2014 12 08 S2-01	Plutonium-238	0.005 ±	0.019	0.034	pCi/g	2.5	0.0020	
BMRC Final Status Survey	2014 12 08 S2-01	Pu-239/240	0 ±	0.009	0.019	pCi/g	2.3	0.0000	
BMRC Final Status Survey	2014 12 08 S2-01	Silver-108M	0.181 ±	0.069	0.138	pCi/g	8.2	0.0221	
BMRC Final Status Survey	2014 12 08 S2-01	Strontium-90	0.0395 ±	0.099	0.227	pCi/g	1.7	0.0232	
BMRC Final Status Survey	2014 12 08 S2-01	Tritium	-0.512 ±	1.8	3.33	pCi/g	110	-0.0047	
BMRC Final Status Survey	2014 12 09 S2-01	Americium-241	-0.087 ±	0.31	0.538	pCi/g	2.1	-0.0414	-0.0790
BMRC Final Status Survey	2014 12 09 S2-01	Carbon-14	0.211 ±	0.415	0.717	pCi/g	12	0.0176	
BMRC Final Status Survey	2014 12 09 S2-01	Cesium-137	0.021 ±	0.056	0.098	pCi/g	11	0.0019	
BMRC Final Status Survey	2014 12 09 S2-01	Cobalt-60	0.013 ±	0.06	0.112	pCi/g	3.8	0.0034	
BMRC Final Status Survey	2014 12 09 S2-01	Europium-152	-0.033 ±	0.169	0.292	pCi/g	6.9	-0.0048	
BMRC Final Status Survey	2014 12 09 S2-01	Europium-154	-0.002 ±	0.193	0.201	pCi/g	8	-0.0003	
BMRC Final Status Survey	2014 12 09 S2-01	Nickel-63	-0.537 ±	1.159	3.57	pCi/g	2100	-0.0003	
BMRC Final Status Survey	2014 12 09 S2-01	Plutonium-238	0.009 ±	0.027	0.048	pCi/g	2.5	0.0036	
BMRC Final Status Survey	2014 12 09 S2-01	Pu-239/240	0.009 ±	0.015	0.026	pCi/g	2.3	0.0039	
BMRC Final Status Survey	2014 12 09 S2-01	Silver-108M	0.047 ±	0.042	0.1	pCi/g	8.2	0.0057	
BMRC Final Status Survey	2014 12 09 S2-01	Strontium-90	-0.12 ±	0.094	0.268	pCi/g	1.7	-0.0706	
BMRC Final Status Survey	2014 12 09 S2-01	Tritium	0.24 ±	1.75	3.12	pCi/g	110	0.0022	
BMRC Final Status Survey	2014 12 10 S2-01	Americium-241	0.058 ±	0.126	0.216	pCi/g	2.1	0.0276	-0.0192
BMRC Final Status Survey	2014 12 10 S2-01	Carbon-14	0.38 ±	0.433	0.715	pCi/g	12	0.0317	
BMRC Final Status Survey	2014 12 10 S2-01	Cesium-137	-0.012 ±	0.081	0.132	pCi/g	11	-0.0011	
BMRC Final Status Survey	2014 12 10 S2-01	Cobalt-60	-0.017 ±	2.158	0.167	pCi/g	3.8	-0.0045	
BMRC Final Status Survey	2014 12 10 S2-01	Europium-152	-0.01 ±	0.295	0.22	pCi/g	6.9	-0.0014	
BMRC Final Status Survey	2014 12 10 S2-01	Europium-154	0.016 ±	0.085	0.15	pCi/g	8	0.0020	
BMRC Final Status Survey	2014 12 10 S2-01	Nickel-63	0.964 ±	1.104	2.541	pCi/g	2100	0.0005	
BMRC Final Status Survey	2014 12 10 S2-01	Plutonium-238	-0.012 ±	0.032	0.061	pCi/g	2.5	-0.0048	
BMRC Final Status Survey	2014 12 10 S2-01	Pu-239/240	0.003 ±	0.009	0.018	pCi/g	2.3	0.0013	
BMRC Final Status Survey	2014 12 10 S2-01	Silver-108M	-0.01 ±	0.084	0.153	pCi/g	8.2	-0.0012	
BMRC Final Status Survey	2014 12 10 S2-01	Strontium-90	-0.119 ±	0.095	0.268	pCi/g	1.7	-0.0700	
BMRC Final Status Survey	2014 12 10 S2-01	Tritium	0.0903 ±	1.64	2.93	pCi/g	110	0.0008	
BMRC Final Status Survey	2014 12 10 S2-02	Americium-241	0.183 ±	0.287	0.478	pCi/g	2.1	0.0871	0.0225
BMRC Final Status Survey	2014 12 10 S2-02	Carbon-14	0.278 ±	0.428	0.726	pCi/g	12	0.0232	
BMRC Final Status Survey	2014 12 10 S2-02	Cesium-137	-0.014 ±	0.053	0.093	pCi/g	11	-0.0013	
BMRC Final Status Survey	2014 12 10 S2-02	Cobalt-60	-0.001 ±	0.067	0.094	pCi/g	3.8	-0.0003	
BMRC Final Status Survey	2014 12 10 S2-02	Europium-152	0 ±	0.153	0.267	pCi/g	6.9	0.0000	
BMRC Final Status Survey	2014 12 10 S2-02	Europium-154	0.028 ±	0.089	0.153	pCi/g	8	0.0035	
BMRC Final Status Survey	2014 12 10 S2-02	Nickel-63	-0.3 ±	1.074	2.994	pCi/g	2100	-0.0001	
BMRC Final Status Survey	2014 12 10 S2-02	Plutonium-238	0.027 ±	0.03	0.048	pCi/g	2.5	0.0108	
BMRC Final Status Survey	2014 12 10 S2-02	Pu-239/240	-0.006 ±	0.014	0.032	pCi/g	2.3	-0.0026	
BMRC Final Status Survey	2014 12 10 S2-02	Silver-108M	0.036 ±	0.055	0.093	pCi/g	8.2	0.0044	
BMRC Final Status Survey	2014 12 10 S2-02	Strontium-90	-0.168 ±	0.095	0.265	pCi/g	1.7	-0.0988	
BMRC Final Status Survey	2014 12 10 S2-02	Tritium	-0.375 ±	1.66	3.04	pCi/g	110	-0.0034	

Appendix H2 - Class 2 Stockpile Soil Analyses

Client Project	Sample ID	Parameter	Results	Sigma	MDA	Units	DCGL	Fraction	SOF
BMRC Final Status Survey	2014 12 10 S2-02-DUF	Americium-241	0.038 ±	0.142	0.245	pCi/g	2.1	0.0181	0.1001
BMRC Final Status Survey	2014 12 10 S2-02-DUF	Carbon-14	0.278 ±	0.427	0.725	pCi/g	12	0.0232	
BMRC Final Status Survey	2014 12 10 S2-02-DUF	Cesium-137	0.013 ±	0.049	0.092	pCi/g	11	0.0012	
BMRC Final Status Survey	2014 12 10 S2-02-DUF	Cobalt-60	0.003 ±	0.061	0.128	pCi/g	3.8	0.0008	
BMRC Final Status Survey	2014 12 10 S2-02-DUF	Europium-152	0.024 ±	0.111	0.196	pCi/g	6.9	0.0035	
BMRC Final Status Survey	2014 12 10 S2-02-DUF	Europium-154	0.013 ±	0.023	0.163	pCi/g	8	0.0016	
BMRC Final Status Survey	2014 12 10 S2-02-DUF	Nickel-63	2.948 ±	1.468	3.776	pCi/g	2100	0.0014	
BMRC Final Status Survey	2014 12 10 S2-02-DUF	Plutonium-238	0.014 ±	0.022	0.038	pCi/g	2.5	0.0056	
BMRC Final Status Survey	2014 12 10 S2-02-DUF	Pu-239/240	-0.01 ±	0.008	0.022	pCi/g	2.3	-0.0043	
BMRC Final Status Survey	2014 12 10 S2-02-DUF	Silver-108M	0.034 ±	0.043	0.124	pCi/g	8.2	0.0041	
BMRC Final Status Survey	2014 12 10 S2-02-DUF	Strontium-90	0.086 ±	0.118	0.257	pCi/g	1.7	0.0506	
BMRC Final Status Survey	2014 12 10 S2-02-DUF	Tritium	-0.622 ±	1.9	3.52	pCi/g	110	-0.0057	
BMRC Final Status Survey	2014 12 12 S2-01	Americium-241	-0.005 ±	0.193	0.288	pCi/g	2.1	-0.0024	-0.0180
BMRC Final Status Survey	2014 12 12 S2-01	Carbon-14	0.064 ±	0.403	0.722	pCi/g	12	0.0053	
BMRC Final Status Survey	2014 12 12 S2-01	Cesium-137	-0.017 ±	0.083	0.151	pCi/g	11	-0.0015	
BMRC Final Status Survey	2014 12 12 S2-01	Cobalt-60	0.018 ±	0.117	0.222	pCi/g	3.8	0.0047	
BMRC Final Status Survey	2014 12 12 S2-01	Europium-152	0.011 ±	0.11	0.2	pCi/g	6.9	0.0016	
BMRC Final Status Survey	2014 12 12 S2-01	Europium-154	0.06 ±	0.098	0.164	pCi/g	8	0.0075	
BMRC Final Status Survey	2014 12 12 S2-01	Nickel-63	11.897 ±	2.175	3.559	pCi/g	2100	0.0057	
BMRC Final Status Survey	2014 12 12 S2-01	Plutonium-238	0.049 ±	0.05	0.08	pCi/g	2.5	0.0196	
BMRC Final Status Survey	2014 12 12 S2-01	Pu-239/240	0.002 ±	0.021	0.044	pCi/g	2.3	0.0009	
BMRC Final Status Survey	2014 12 12 S2-01	Silver-108M	0 ±	0.085	0.161	pCi/g	8.2	0.0000	
BMRC Final Status Survey	2014 12 12 S2-01	Strontium-90	-0.0993 ±	0.056	0.111	pCi/g	1.7	-0.0584	
BMRC Final Status Survey	2014 12 12 S2-01	Tritium	-0.106 ±	1.14	2.08	pCi/g	110	-0.0010	
BMRC Final Status Survey	2014 12 12 S2-02	Americium-241	-0.067 ±	0.175	0.296	pCi/g	2.1	-0.0319	-0.0271
BMRC Final Status Survey	2014 12 12 S2-02	Carbon-14	-0.164 ±	0.364	0.695	pCi/g	12	-0.0137	
BMRC Final Status Survey	2014 12 12 S2-02	Cesium-137	0.025 ±	0.078	0.14	pCi/g	11	0.0023	
BMRC Final Status Survey	2014 12 12 S2-02	Cobalt-60	-0.047 ±	0.366	0.191	pCi/g	3.8	-0.0124	
BMRC Final Status Survey	2014 12 12 S2-02	Europium-152	-0.003 ±	29.46	0.262	pCi/g	6.9	-0.0004	
BMRC Final Status Survey	2014 12 12 S2-02	Europium-154	-0.019 ±	0.113	0.194	pCi/g	8	-0.0024	
BMRC Final Status Survey	2014 12 12 S2-02	Nickel-63	0.491 ±	1.004	2.23	pCi/g	2100	0.0002	
BMRC Final Status Survey	2014 12 12 S2-02	Plutonium-238	-0.005 ±	0.021	0.042	pCi/g	2.5	-0.0020	
BMRC Final Status Survey	2014 12 12 S2-02	Pu-239/240	-0.002 ±	0.014	0.029	pCi/g	2.3	-0.0009	
BMRC Final Status Survey	2014 12 12 S2-02	Silver-108M	0.006 ±	0.097	0.179	pCi/g	8.2	0.0007	
BMRC Final Status Survey	2014 12 12 S2-02	Strontium-90	0.0412 ±	0.061	0.111	pCi/g	1.7	0.0242	
BMRC Final Status Survey	2014 12 12 S2-02	Tritium	0.996 ±	1.84	3.16	pCi/g	110	0.0091	
BMRC Final Status Survey	2014 12 23 S2-01	Americium-241	0 ±	0.062	0.645	pCi/g	2.1	0.0000	0.0948
BMRC Final Status Survey	2014 12 23 S2-01	Carbon-14	0.171 ±	0.349	0.6	pCi/g	12	0.0143	
BMRC Final Status Survey	2014 12 23 S2-01	Cesium-137	0 ±	0.058	0.145	pCi/g	11	0.0000	
BMRC Final Status Survey	2014 12 23 S2-01	Cobalt-60	0.054 ±	0.111	0.109	pCi/g	3.8	0.0142	
BMRC Final Status Survey	2014 12 23 S2-01	Europium-152	0.227 ±	0.202	0.239	pCi/g	6.9	0.0329	
BMRC Final Status Survey	2014 12 23 S2-01	Europium-154	0.126 ±	0.06	0.212	pCi/g	8	0.0158	
BMRC Final Status Survey	2014 12 23 S2-01	Nickel-63	1.294 ±	1.569	5.288	pCi/g	2100	0.0006	
BMRC Final Status Survey	2014 12 23 S2-01	Plutonium-238	0.013 ±	0.019	0.032	pCi/g	2.5	0.0052	
BMRC Final Status Survey	2014 12 23 S2-01	Pu-239/240	0.007 ±	0.009	0.015	pCi/g	2.3	0.0030	
BMRC Final Status Survey	2014 12 23 S2-01	Silver-108M	0.096 ±	0.066	0.126	pCi/g	8.2	0.0117	
BMRC Final Status Survey	2014 12 23 S2-01	Strontium-90	0.037 ±	0.083	0.19	pCi/g	1.7	0.0218	
BMRC Final Status Survey	2014 12 23 S2-01	Tritium	-2.71 ±	2.01	3.92	pCi/g	110	-0.0246	
BMRC Final Status Survey	2014 12 23 S2-02	Americium-241	0 ±	0.067	0.301	pCi/g	2.1	0.0000	0.1102
BMRC Final Status Survey	2014 12 23 S2-02	Carbon-14	0.413 ±	0.37	0.598	pCi/g	12	0.0344	
BMRC Final Status Survey	2014 12 23 S2-02	Cesium-137	-0.036 ±	0.154	0.179	pCi/g	11	-0.0033	
BMRC Final Status Survey	2014 12 23 S2-02	Cobalt-60	0.05 ±	0.061	0.093	pCi/g	3.8	0.0132	
BMRC Final Status Survey	2014 12 23 S2-02	Europium-152	0.17 ±	0.141	0.162	pCi/g	6.9	0.0246	
BMRC Final Status Survey	2014 12 23 S2-02	Europium-154	0.084 ±	0.11	0.197	pCi/g	8	0.0105	
BMRC Final Status Survey	2014 12 23 S2-02	Nickel-63	0.57 ±	1.345	4.077	pCi/g	2100	0.0003	
BMRC Final Status Survey	2014 12 23 S2-02	Plutonium-238	0.017 ±	0.015	0.023	pCi/g	2.5	0.0068	

Appendix H2 - Class 2 Stockpile Soil Analyses

Client Project	Sample ID	Parameter	Results	Sigma	MDA	Units	DCGL	Fraction	SOF
BMRC Final Status Survey	2014 12 23 S2-02	Pu-239/240	0.004 ±	0.009	0.017	pCi/g	2.3	0.0017	
BMRC Final Status Survey	2014 12 23 S2-02	Silver-108M	0.076 ±	0.082	0.088	pCi/g	8.2	0.0093	
BMRC Final Status Survey	2014 12 23 S2-02	Strontium-90	0.039 ±	0.119	0.277	pCi/g	1.7	0.0229	
BMRC Final Status Survey	2014 12 23 S2-02	Tritium	-1.13 ±	1.82	3.4	pCi/g	110	-0.0103	
BMRC Final Status Survey	2014 12 29 S2-01	Americium-241	0.102 ±	0.467	0.588	pCi/g	2.1	0.0486	0.1197
BMRC Final Status Survey	2014 12 29 S2-01	Carbon-14	0.403 ±	0.351	0.566	pCi/g	12	0.0336	
BMRC Final Status Survey	2014 12 29 S2-01	Cesium-137	0.024 ±	0.062	0.07	pCi/g	11	0.0022	
BMRC Final Status Survey	2014 12 29 S2-01	Cobalt-60	0.054 ±	0.039	0.04	pCi/g	3.8	0.0142	
BMRC Final Status Survey	2014 12 29 S2-01	Europium-152	0.108 ±	0.153	0.27	pCi/g	6.9	0.0157	
BMRC Final Status Survey	2014 12 29 S2-01	Europium-154	-0.021 ±	0.132	0.162	pCi/g	8	-0.0026	
BMRC Final Status Survey	2014 12 29 S2-01	Nickel-63	-0.844 ±	1.255	4.159	pCi/g	2100	-0.0004	
BMRC Final Status Survey	2014 12 29 S2-01	Plutonium-238	-0.008 ±	0.011	0.026	pCi/g	2.5	-0.0032	
BMRC Final Status Survey	2014 12 29 S2-01	Pu-239/240	0 ±	0.007	0.004	pCi/g	2.3	0.0000	
BMRC Final Status Survey	2014 12 29 S2-01	Silver-108M	0.017 ±	0.029	0.106	pCi/g	8.2	0.0021	
BMRC Final Status Survey	2014 12 29 S2-01	Strontium-90	0.055 ±	0.123	0.281	pCi/g	1.7	0.0324	
BMRC Final Status Survey	2014 12 29 S2-01	Tritium	-2.5 ±	1.85	3.61	pCi/g	110	-0.0227	
BMRC Final Status Survey	2014 12 29 S2-02	Americium-241	0 ±	0.115	0.303	pCi/g	2.1	0.0000	0.0822
BMRC Final Status Survey	2014 12 29 S2-02	Carbon-14	0.615 ±	0.377	0.576	pCi/g	12	0.0513	
BMRC Final Status Survey	2014 12 29 S2-02	Cesium-137	0.016 ±	0.068	0.088	pCi/g	11	0.0015	
BMRC Final Status Survey	2014 12 29 S2-02	Cobalt-60	0.032 ±	0.056	0.097	pCi/g	3.8	0.0084	
BMRC Final Status Survey	2014 12 29 S2-02	Europium-152	0.034 ±	0.194	0.249	pCi/g	6.9	0.0049	
BMRC Final Status Survey	2014 12 29 S2-02	Europium-154	0.171 ±	0.118	0.175	pCi/g	8	0.0214	
BMRC Final Status Survey	2014 12 29 S2-02	Nickel-63	-0.346 ±	1.232	3.801	pCi/g	2100	-0.0002	
BMRC Final Status Survey	2014 12 29 S2-02	Plutonium-238	0.001 ±	0.025	0.048	pCi/g	2.5	0.0004	
BMRC Final Status Survey	2014 12 29 S2-02	Pu-239/240	0.003 ±	0.011	0.023	pCi/g	2.3	0.0013	
BMRC Final Status Survey	2014 12 29 S2-02	Silver-108M	0.129 ±	0.074	0.121	pCi/g	8.2	0.0157	
BMRC Final Status Survey	2014 12 29 S2-02	Strontium-90	-0.0014 ±	0.089	0.216	pCi/g	1.7	-0.0008	
BMRC Final Status Survey	2014 12 29 S2-02	Tritium	-2.38 ±	1.71	3.34	pCi/g	110	-0.0216	
BMRC Final Status Survey	2015 01 05 S2-01	Americium-241	0 ±	0.168	0.604	pCi/g	2.1	0.0000	0.0429
BMRC Final Status Survey	2015 01 05 S2-01	Carbon-14	0.162 ±	0.309	0.53	pCi/g	12	0.0135	
BMRC Final Status Survey	2015 01 05 S2-01	Cesium-137	0.051 ±	0.069	0.073	pCi/g	11	0.0046	
BMRC Final Status Survey	2015 01 05 S2-01	Cobalt-60	0.044 ±	0.083	0.085	pCi/g	3.8	0.0116	
BMRC Final Status Survey	2015 01 05 S2-01	Europium-152	0.192 ±	0.252	0.235	pCi/g	6.9	0.0278	
BMRC Final Status Survey	2015 01 05 S2-01	Europium-154	0.149 ±	0.088	0.215	pCi/g	8	0.0186	
BMRC Final Status Survey	2015 01 05 S2-01	Nickel-63	0.575 ±	1.32	3.914	pCi/g	2100	0.0003	
BMRC Final Status Survey	2015 01 05 S2-01	Plutonium-238	0.008 ±	0.024	0.045	pCi/g	2.5	0.0032	
BMRC Final Status Survey	2015 01 05 S2-01	Pu-239/240	0.005 ±	0.012	0.02	pCi/g	2.3	0.0022	
BMRC Final Status Survey	2015 01 05 S2-01	Silver-108M	0.044 ±	0.032	0.12	pCi/g	8.2	0.0054	
BMRC Final Status Survey	2015 01 05 S2-01	Strontium-90	-0.0527 ±	0.079	0.209	pCi/g	1.7	-0.0310	
BMRC Final Status Survey	2015 01 05 S2-01	Tritium	-1.46 ±	1.73	3.27	pCi/g	110	-0.0133	
BMRC Final Status Survey	2016 01 07 S2-01	Americium-241	0 ±	0.065	0.316	pCi/g	2.1	0.0000	0.0220
BMRC Final Status Survey	2016 01 07 S2-01	Carbon-14	-0.074 ±	0.336	0.613	pCi/g	12	-0.0062	
BMRC Final Status Survey	2016 01 07 S2-01	Cesium-137	-0.018 ±	0.097	0.116	pCi/g	11	-0.0016	
BMRC Final Status Survey	2016 01 07 S2-01	Cobalt-60	0 ±	0.015	0.171	pCi/g	3.8	0.0000	
BMRC Final Status Survey	2016 01 07 S2-01	Europium-152	0.14 ±	0.247	0.24	pCi/g	6.9	0.0203	
BMRC Final Status Survey	2016 01 07 S2-01	Europium-154	0.097 ±	0.075	0.171	pCi/g	8	0.0121	
BMRC Final Status Survey	2016 01 07 S2-01	Nickel-63	0.159 ±	1.269	3.796	pCi/g	2100	0.0001	
BMRC Final Status Survey	2016 01 07 S2-01	Plutonium-238	0.042 ±	0.027	0.039	pCi/g	2.5	0.0168	
BMRC Final Status Survey	2016 01 07 S2-01	Pu-239/240	-0.003 ±	0.009	0.019	pCi/g	2.3	-0.0013	
BMRC Final Status Survey	2016 01 07 S2-01	Silver-108M	0.02 ±	0.026	0.163	pCi/g	8.2	0.0024	
BMRC Final Status Survey	2016 01 07 S2-01	Strontium-90	-0.026 ±	0.109	0.272	pCi/g	1.7	-0.0153	
BMRC Final Status Survey	2016 01 07 S2-01	Tritium	-0.588 ±	1.79	3.27	pCi/g	110	-0.0053	
BRMC Final Status Survey	2015 01 29 S2-01	Strontium-90	-0.016 ±	0.091	-0.206	pCi/g	2.1	-0.0076	-0.5377
BRMC Final Status Survey	2015 01 29 S2-01	Americium-241	0 ±	0.07	-0.333	pCi/g	12	0.0000	
BRMC Final Status Survey	2015 01 29 S2-01	Cesium-137	-0.018 ±	0.108	-0.131	pCi/g	11	-0.0016	
BRMC Final Status Survey	2015 01 29 S2-01	Cobalt-60	0.078 ±	0.045	-0.084	pCi/g	3.8	0.0205	

Appendix H2 - Class 2 Stockpile Soil Analyses

Client Project	Sample ID	Parameter	Results	Sigma	MDA	Units	DCGL	Fraction	SOF
BRMC Final Status Survey	2015 01 29 S2-01	Europium-152	0.142 ±	0.103	-0.283	pCi/g	6.9	0.0206	
BRMC Final Status Survey	2015 01 29 S2-01	Europium-154	0.102 ±	0.079	-0.184	pCi/g	8	0.0128	
BRMC Final Status Survey	2015 01 29 S2-01	Silver-108M	0 ±	0.028	-0.169	pCi/g	2100	0.0000	
BRMC Final Status Survey	2015 01 29 S2-01	Plutonium-238	0.011 ±	0.023	-0.041	pCi/g	2.5	0.0044	
BRMC Final Status Survey	2015 01 29 S2-01	Pu-239/240	0.01 ±	0.012	-0.019	pCi/g	2.3	0.0043	
BRMC Final Status Survey	2015 01 29 S2-01	Carbon-14	-0.532 ±	0.391	-0.746	pCi/g	8.2	-0.0649	
BRMC Final Status Survey	2015 01 29 S2-01	Nickel-63	-0.882 ±	0.935	-2.627	pCi/g	1.7	-0.5188	
BRMC Final Status Survey	2015 01 29 S2-01	Tritium	-0.811 ±	1.34	-2.52	pCi/g	110	-0.0074	
BRMC Final Status Survey	2015 01 29 S2-01-dup	Strontium-90	-0.0369 ±	0.076	-0.177	pCi/g	2.1	-0.0176	0.2003
BRMC Final Status Survey	2015 01 29 S2-01-dup	Americium-241	0 ±	0.278	-0.672	pCi/g	12	0.0000	
BRMC Final Status Survey	2015 01 29 S2-01-dup	Cesium-137	0 ±	0.012	-0.147	pCi/g	11	0.0000	
BRMC Final Status Survey	2015 01 29 S2-01-dup	Cobalt-60	0 ±	0.022	-0.133	pCi/g	3.8	0.0000	
BRMC Final Status Survey	2015 01 29 S2-01-dup	Europium-152	0 ±	0.048	-0.275	pCi/g	6.9	0.0000	
BRMC Final Status Survey	2015 01 29 S2-01-dup	Europium-154	0 ±	0.043	-0.221	pCi/g	8	0.0000	
BRMC Final Status Survey	2015 01 29 S2-01-dup	Silver-108M	0.053 ±	0.095	-0.098	pCi/g	2100	0.0000	
BRMC Final Status Survey	2015 01 29 S2-01-dup	Plutonium-238	-0.001 ±	0.015	-0.031	pCi/g	2.5	-0.0004	
BRMC Final Status Survey	2015 01 29 S2-01-dup	Pu-239/240	0.006 ±	0.009	-0.014	pCi/g	2.3	0.0026	
BRMC Final Status Survey	2015 01 29 S2-01-dup	Carbon-14	-0.298 ±	0.379	-0.703	pCi/g	8.2	-0.0363	
BRMC Final Status Survey	2015 01 29 S2-01-dup	Nickel-63	0.432 ±	1.283	-3.95	pCi/g	1.7	0.2541	
BRMC Final Status Survey	2015 01 29 S2-01-dup	Tritium	-0.237 ±	1.79	-3.25	pCi/g	110	-0.0022	

Appendix H3 - Class 3 Stockpile Soil Analyses

Client Project	Sample ID	Parameter	Results	Sigma	MDC	Units	DCGL	Fraction	SOF
BMRC Final Status Survey	2014 11 01 S3-01	Americium-241	-0.12 ±	0.427	0.704	pCi/g	2.1	-0.05714	-0.018
BMRC Final Status Survey	2014 11 01 S3-01	Carbon-14	-0.043 ±	0.388	0.716	pCi/g	12	-0.00358	
BMRC Final Status Survey	2014 11 01 S3-01	Cesium-137	0.052 ±	0.063	0.103	pCi/g	11	0.004727	
BMRC Final Status Survey	2014 11 01 S3-01	Cobalt-60	0.023 ±	0.065	0.12	pCi/g	3.8	0.006053	
BMRC Final Status Survey	2014 11 01 S3-01	Europium-152	-0.001 ±	0.214	0.287	pCi/g	6.9	-0.00014	
BMRC Final Status Survey	2014 11 01 S3-01	Europium-154	-0.046 ±	0.123	0.21	pCi/g	8	-0.00575	
BMRC Final Status Survey	2014 11 01 S3-01	Nickel-63	-0.103 ±	1.267	3.773	pCi/g	2100	-4.9E-05	
BMRC Final Status Survey	2014 11 01 S3-01	Plutonium-238	-0.006 ±	0.031	0.064	pCi/g	2.5	-0.0024	
BMRC Final Status Survey	2014 11 01 S3-01	Pu-239/240	-0.001 ±	0.015	0.035	pCi/g	2.3	-0.00043	
BMRC Final Status Survey	2014 11 01 S3-01	Silver-108M	0 ±	0.05	0.095	pCi/g	8.2	0	
BMRC Final Status Survey	2014 11 01 S3-01	Strontium-90	0.0632 ±	0.062	0.129	pCi/g	1.7	0.037176	
BMRC Final Status Survey	2014 11 01 S3-01	Tritium	0.394 ±	0.994	1.71	pCi/g	110	0.003582	
BMRC Final Status Survey	2014 11 01 S3-02	Americium-241	0.004 ±	0.16	0.286	pCi/g	2.1	0.001905	0.18832
BMRC Final Status Survey	2014 11 01 S3-02	Carbon-14	-0.379 ±	0.349	0.707	pCi/g	12	-0.03158	
BMRC Final Status Survey	2014 11 01 S3-02	Cesium-137	0.12 ±	0.108	0.165	pCi/g	11	0.010909	
BMRC Final Status Survey	2014 11 01 S3-02	Cobalt-60	0.041 ±	0.088	0.163	pCi/g	3.8	0.010789	
BMRC Final Status Survey	2014 11 01 S3-02	Europium-152	-0.028 ±	0.196	0.243	pCi/g	6.9	-0.00406	
BMRC Final Status Survey	2014 11 01 S3-02	Europium-154	-0.019 ±	0.101	0.178	pCi/g	8	-0.00238	
BMRC Final Status Survey	2014 11 01 S3-02	Nickel-63	0.991 ±	1.25	3.169	pCi/g	2100	0.000472	
BMRC Final Status Survey	2014 11 01 S3-02	Plutonium-238	0.013 ±	0.049	0.093	pCi/g	2.5	0.0052	
BMRC Final Status Survey	2014 11 01 S3-02	Pu-239/240	-0.012 ±	0.023	0.058	pCi/g	2.3	-0.00522	
BMRC Final Status Survey	2014 11 01 S3-02	Silver-108M	-0.053 ±	0.112	0.192	pCi/g	8.2	-0.00646	
BMRC Final Status Survey	2014 11 01 S3-02	Strontium-90	0.343 ±	0.144	0.228	pCi/g	1.7	0.201765	
BMRC Final Status Survey	2014 11 01 S3-02	Tritium	0.768 ±	0.952	1.59	pCi/g	110	0.006982	
BMRC Final Status Survey	2014 11 04 S3-01	Americium-241	-0.03 ±	0.391	0.594	pCi/g	2.1	-0.01429	0.05844
BMRC Final Status Survey	2014 11 04 S3-01	Carbon-14	0 ±	0.379	0.693	pCi/g	12	0	
BMRC Final Status Survey	2014 11 04 S3-01	Cesium-137	0.073 ±	0.064	0.099	pCi/g	11	0.006636	
BMRC Final Status Survey	2014 11 04 S3-01	Cobalt-60	0.037 ±	0.057	0.1	pCi/g	3.8	0.009737	
BMRC Final Status Survey	2014 11 04 S3-01	Europium-152	0.055 ±	0.104	0.224	pCi/g	6.9	0.007971	
BMRC Final Status Survey	2014 11 04 S3-01	Europium-154	-0.008 ±	0.067	0.12	pCi/g	8	-0.001	
BMRC Final Status Survey	2014 11 04 S3-01	Nickel-63	0.947 ±	1.222	3.03	pCi/g	2100	0.000451	
BMRC Final Status Survey	2014 11 04 S3-01	Plutonium-238	-0.006 ±	0.025	0.053	pCi/g	2.5	-0.0024	
BMRC Final Status Survey	2014 11 04 S3-01	Pu-239/240	0.005 ±	0.015	0.03	pCi/g	2.3	0.002174	
BMRC Final Status Survey	2014 11 04 S3-01	Silver-108M	-0.031 ±	0.069	0.118	pCi/g	8.2	-0.00378	
BMRC Final Status Survey	2014 11 04 S3-01	Strontium-90	0.089 ±	0.101	0.215	pCi/g	1.7	0.052353	
BMRC Final Status Survey	2014 11 04 S3-01	Tritium	0.0647 ±	0.798	1.4	pCi/g	110	0.000588	
BMRC Final Status Survey	2015 02 07 S3-01	Americium-241	0.057 ±	0.114	0.192	pCi/g	2.1	0.027	0.114
BMRC Final Status Survey	2015 02 07 S3-01	Carbon-14	-0.100 ±	0.220	0.470	pCi/g	12	-0.008	
BMRC Final Status Survey	2015 02 07 S3-01	Cesium-137	0.021 ±	0.048	0.084	pCi/g	11	0.002	
BMRC Final Status Survey	2015 02 07 S3-01	Cobalt-60	0.000 ±	0.012	0.045	pCi/g	3.8	0.000	
BMRC Final Status Survey	2015 02 07 S3-01	Europium-152	0.038 ±	0.081	0.196	pCi/g	6.9	0.006	
BMRC Final Status Survey	2015 02 07 S3-01	Europium-154	0.024 ±	0.141	1.080	pCi/g	8	0.003	
BMRC Final Status Survey	2015 02 07 S3-01	Nickel-63	0.160 ±	2.800	6.290	pCi/g	2100	0.000	
BMRC Final Status Survey	2015 02 07 S3-01	Plutonium-238	0.001 ±	0.023	0.068	pCi/g	2.5	0.000	
BMRC Final Status Survey	2015 02 07 S3-01	Plutonium-239/2-	0.009 ±	0.021	0.048	pCi/g	2.3	0.004	
BMRC Final Status Survey	2015 02 07 S3-01	Silver-108m	0.006 ±	0.028	0.062	pCi/g	8.2	0.001	
BMRC Final Status Survey	2015 02 07 S3-01	Total Beta Stronl	0.131 ±	0.131	0.213	pCi/g	1.7	0.077	
BMRC Final Status Survey	2015 02 07 S3-01	Tritium	0.345 ±	0.561	0.942	pCi/g	110	0.003	
BMRC Final Status Survey	2015 02 07 S3-02	Americium-241	0.051 ±	0.120	0.204	pCi/g	2.1	0.024	0.112
BMRC Final Status Survey	2015 02 07 S3-02	Carbon-14	-0.076 ±	0.220	0.476	pCi/g	12	-0.006	
BMRC Final Status Survey	2015 02 07 S3-02	Cesium-137	0.031 ±	0.060	0.103	pCi/g	11	0.003	
BMRC Final Status Survey	2015 02 07 S3-02	Cobalt-60	0.006 ±	0.038	0.128	pCi/g	3.8	0.002	
BMRC Final Status Survey	2015 02 07 S3-02	Europium-152	0.016 ±	0.129	0.234	pCi/g	6.9	0.002	
BMRC Final Status Survey	2015 02 07 S3-02	Europium-154	0.039 ±	0.114	0.741	pCi/g	8	0.005	
BMRC Final Status Survey	2015 02 07 S3-02	Nickel-63	0.391 ±	2.700	6.070	pCi/g	2100	0.000	
BMRC Final Status Survey	2015 02 07 S3-02	Plutonium-238	0.020 ±	0.037	0.071	pCi/g	2.5	0.008	
BMRC Final Status Survey	2015 02 07 S3-02	Plutonium-239/2-	0.015 ±	0.030	0.059	pCi/g	2.3	0.007	
BMRC Final Status Survey	2015 02 07 S3-02	Silver-108m	0.009 ±	0.048	0.086	pCi/g	8.2	0.001	
BMRC Final Status Survey	2015 02 07 S3-02	Total Beta Stronl	0.115 ±	0.129	0.212	pCi/g	1.7	0.068	
BMRC Final Status Survey	2015 02 07 S3-02	Tritium	-0.048 ±	0.524	0.937	pCi/g	110	0.000	

Appendix H3 - Class 3 Stockpile Soil Analyses

Client Project	Sample ID	Parameter	Results	Sigma	MDC	Units	DCGL	Fraction	SOF
BMRC Final Status Survey	2015 02 07 S3-03	Americium-241	-0.049 ±	1.960	0.274	pCi/g	2.1	-0.023	0.075
BMRC Final Status Survey	2015 02 07 S3-03	Carbon-14	-0.154 ±	0.210	0.463	pCi/g	12	-0.013	
BMRC Final Status Survey	2015 02 07 S3-03	Cesium-137	0.020 ±	0.056	0.099	pCi/g	11	0.002	
BMRC Final Status Survey	2015 02 07 S3-03	Cobalt-60	0.005 ±	0.023	0.130	pCi/g	3.8	0.001	
BMRC Final Status Survey	2015 02 07 S3-03	Europium-152	-0.009 ±	0.032	0.239	pCi/g	6.9	-0.001	
BMRC Final Status Survey	2015 02 07 S3-03	Europium-154	0.005 ±	0.021	0.792	pCi/g	8	0.001	
BMRC Final Status Survey	2015 02 07 S3-03	Nickel-63	-0.144 ±	2.700	6.140	pCi/g	2100	0.000	
BMRC Final Status Survey	2015 02 07 S3-03	Plutonium-238	0.011 ±	0.031	0.068	pCi/g	2.5	0.004	
BMRC Final Status Survey	2015 02 07 S3-03	Plutonium-239/2-	-0.002 ±	0.004	0.048	pCi/g	2.3	-0.001	
BMRC Final Status Survey	2015 02 07 S3-03	Silver-108m	-0.008 ±	0.048	0.085	pCi/g	8.2	-0.001	
BMRC Final Status Survey	2015 02 07 S3-03	Total Beta Stronl	0.182 ±	0.141	0.221	pCi/g	1.7	0.107	
BMRC Final Status Survey	2015 02 07 S3-03	Tritium	-0.081 ±	0.510	0.912	pCi/g	110	-0.001	
BMRC Final Status Survey	2015 02 07 S3-04	Americium-241	0.070 ±	0.109	0.181	pCi/g	2.1	0.033	0.264
BMRC Final Status Survey	2015 02 07 S3-04	Carbon-14	0.019 ±	0.220	0.474	pCi/g	12	0.002	
BMRC Final Status Survey	2015 02 07 S3-04	Cesium-137	-0.008 ±	0.059	0.107	pCi/g	11	-0.001	
BMRC Final Status Survey	2015 02 07 S3-04	Cobalt-60	0.004 ±	0.014	0.107	pCi/g	3.8	0.001	
BMRC Final Status Survey	2015 02 07 S3-04	Europium-152	0.135 ±	0.202	0.239	pCi/g	6.9	0.020	
BMRC Final Status Survey	2015 02 07 S3-04	Europium-154	0.033 ±	0.069	0.696	pCi/g	8	0.004	
BMRC Final Status Survey	2015 02 07 S3-04	Nickel-63	0.457 ±	2.700	6.090	pCi/g	2100	0.000	
BMRC Final Status Survey	2015 02 07 S3-04	Plutonium-238	0.012 ±	0.028	0.058	pCi/g	2.5	0.005	
BMRC Final Status Survey	2015 02 07 S3-04	Plutonium-239/2-	-0.002 ±	0.004	0.043	pCi/g	2.3	-0.001	
BMRC Final Status Survey	2015 02 07 S3-04	Silver-108m	0.011 ±	0.039	0.082	pCi/g	8.2	0.001	
BMRC Final Status Survey	2015 02 07 S3-04	Total Beta Stronl	0.332 ±	0.174	0.258	pCi/g	1.7	0.195	
BMRC Final Status Survey	2015 02 07 S3-04	Tritium	0.460 ±	0.570	0.939	pCi/g	110	0.004	
BMRC Final Status Survey	2015 02 07 S3-05	Americium-241	-0.050 ±	2.140	0.306	pCi/g	2.1	-0.024	0.127
BMRC Final Status Survey	2015 02 07 S3-05	Carbon-14	0.101 ±	0.220	0.466	pCi/g	12	0.008	
BMRC Final Status Survey	2015 02 07 S3-05	Cesium-137	-0.006 ±	0.095	0.140	pCi/g	11	-0.001	
BMRC Final Status Survey	2015 02 07 S3-05	Cobalt-60	-0.008 ±	0.121	0.161	pCi/g	3.8	-0.002	
BMRC Final Status Survey	2015 02 07 S3-05	Europium-152	0.002 ±	0.037	0.264	pCi/g	6.9	0.000	
BMRC Final Status Survey	2015 02 07 S3-05	Europium-154	-0.008 ±	0.504	0.952	pCi/g	8	-0.001	
BMRC Final Status Survey	2015 02 07 S3-05	Nickel-63	2.180 ±	2.900	6.360	pCi/g	2100	0.001	
BMRC Final Status Survey	2015 02 07 S3-05	Plutonium-238	0.002 ±	0.021	0.061	pCi/g	2.5	0.001	
BMRC Final Status Survey	2015 02 07 S3-05	Plutonium-239/2-	-0.004 ±	0.005	0.052	pCi/g	2.3	-0.002	
BMRC Final Status Survey	2015 02 07 S3-05	Silver-108m	0.009 ±	0.050	0.090	pCi/g	8.2	0.001	
BMRC Final Status Survey	2015 02 07 S3-05	Total Beta Stronl	0.232 ±	0.118	0.165	pCi/g	1.7	0.136	
BMRC Final Status Survey	2015 02 07 S3-05	Tritium	0.828 ±	0.615	0.965	pCi/g	110	0.008	
BMRC Final Status Survey	2015 02 07 S3-06	Americium-241	-0.015 ±	0.117	0.204	pCi/g	2.1	-0.007	0.108
BMRC Final Status Survey	2015 02 07 S3-06	Carbon-14	0.114 ±	0.230	0.471	pCi/g	12	0.010	
BMRC Final Status Survey	2015 02 07 S3-06	Cesium-137	0.000 ±	0.014	0.072	pCi/g	11	0.000	
BMRC Final Status Survey	2015 02 07 S3-06	Cobalt-60	-0.010 ±	0.071	0.135	pCi/g	3.8	-0.003	
BMRC Final Status Survey	2015 02 07 S3-06	Europium-152	0.084 ±	0.154	0.175	pCi/g	6.9	0.012	
BMRC Final Status Survey	2015 02 07 S3-06	Europium-154	0.076 ±	0.163	0.750	pCi/g	8	0.009	
BMRC Final Status Survey	2015 02 07 S3-06	Nickel-63	-0.140 ±	2.700	6.200	pCi/g	2100	0.000	
BMRC Final Status Survey	2015 02 07 S3-06	Plutonium-238	-0.010 ±	0.009	0.069	pCi/g	2.5	-0.004	
BMRC Final Status Survey	2015 02 07 S3-06	Plutonium-239/2-	-0.004 ±	0.006	0.055	pCi/g	2.3	-0.002	
BMRC Final Status Survey	2015 02 07 S3-06	Silver-108m	-0.013 ±	0.043	0.076	pCi/g	8.2	-0.002	
BMRC Final Status Survey	2015 02 07 S3-06	Total Beta Stronl	0.112 ±	0.107	0.170	pCi/g	1.7	0.066	
BMRC Final Status Survey	2015 02 07 S3-06	Tritium	3.080 ±	0.802	0.937	pCi/g	110	0.028	
BMRC Final Status Survey	2015 02 07 S3-07	Americium-241	0.137 ±	0.163	0.267	pCi/g	2.1	0.065	0.178
BMRC Final Status Survey	2015 02 07 S3-07	Carbon-14	0.033 ±	0.220	0.466	pCi/g	12	0.003	
BMRC Final Status Survey	2015 02 07 S3-07	Cesium-137	0.000 ±	0.067	0.125	pCi/g	11	0.000	
BMRC Final Status Survey	2015 02 07 S3-07	Cobalt-60	0.042 ±	0.053	0.115	pCi/g	3.8	0.011	
BMRC Final Status Survey	2015 02 07 S3-07	Europium-152	0.124 ±	0.234	0.290	pCi/g	6.9	0.018	
BMRC Final Status Survey	2015 02 07 S3-07	Europium-154	0.042 ±	0.096	0.917	pCi/g	8	0.005	
BMRC Final Status Survey	2015 02 07 S3-07	Nickel-63	-0.769 ±	2.600	6.090	pCi/g	2100	0.000	
BMRC Final Status Survey	2015 02 07 S3-07	Plutonium-238	0.013 ±	0.030	0.062	pCi/g	2.5	0.005	
BMRC Final Status Survey	2015 02 07 S3-07	Plutonium-239/2-	-0.004 ±	0.005	0.053	pCi/g	2.3	-0.002	
BMRC Final Status Survey	2015 02 07 S3-07	Silver-108m	0.016 ±	0.051	0.091	pCi/g	8.2	0.002	
BMRC Final Status Survey	2015 02 07 S3-07	Total Beta Stronl	0.106 ±	0.134	0.223	pCi/g	1.7	0.062	
BMRC Final Status Survey	2015 02 07 S3-07	Tritium	0.946 ±	0.612	0.938	pCi/g	110	0.009	

**APPENDIX I –
VARIATIONS FROM THE DECOMMISSIONING PLAN**

Appendix I - Variations from the Decommissioning Plan

In performing the Decommissioning, a few minor variation from the DP were necessary. Provisions for minor changes were included in the DP (see below). These changes included minor changes to the survey packages and development and revision to work instructions for sampling stock piled materials. Approval of these changes are documented in the 3 attached letters.

Minor changes to the DP that do not change the original intent of the DP and which do not involve an unreviewed safety question may be approved by the Operating Committee, a sub-group of the RDSC, as defined in the BMRC Technical Specifications and this section. The licensee may make changes to the DP without prior NRC approval provided the proposed changes do not:

- i. Require Commission approval pursuant to 10 CFR 50.59;*
- ii. Use a statistical test other than the Sign test or WRS test for evaluation of the FSS;*
- iii. Increase the radioactivity level, relative to the applicable derived concentration guideline level, at which an investigation occurs;*
- iv. Reduce the coverage requirements for scan measurements;*
- v. Decrease an area classification (i.e., impacted to unimpacted; Class 1 to Class 2; Class 2 to Class 3; or Class 1 to Class 3);*
- vi. Increase the Type I decision error;*
- vii. Increase the DCGLs and related MDCs (for both scan and fixed measurement methods); or*
- viii. Result in significant environmental impacts not previously reviewed.*



University at Buffalo
The State University of New York
Environment, Health & Safety Services

To: BMRC Operating Committee File

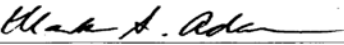
Date: May 6, 2015

Re: Approval of Revision to Enercon Work Instruction

The Operating Committee has reviewed and approved the changes of May 6th, 2015 to the Work Instruction – Survey and Sampling of Class 2 and Class 3 Excavated Soil Material.

 5/6/15

David R. Vasbinder, BMRC Director

 5/7/15

Mark Adams, Operations Manager

 5/7/15

Jeff Slawson, Radiation Safety Officer



ENERCON

Excellence—Every project. Every day.

Revised Work Instruction Survey and Sampling of Class 2 and Class 3 Excavated Soil Material

Prepared by:

Charles Beatty

05/06/15

Safety Manager

Reviewed by:

Frank Brown

Radiation Protection Manager

Approved by:

Gerald E. Williams, PE

5/6/2015

Project Manager

1.0 INTRODUCTION

1.1 Background and Purpose

Upon completion of demolition of the entire BMRC structure, excavated Class 2 and Class 3 material is intended to be used as backfill. In the interim between excavation and backfilling, the excavated material will be stockpiled in the designated area just northwest of the facility. Surveying and sampling of stockpiled material is not described in the Final Status Survey Plan.

The purpose of this work instruction is to provide a systematic approach for surveying and sampling of soil material excavated from designated MARSSIM Class 2 and Class 3 areas during decommissioning of the BMRC facility.

1.2 Scope

This procedure applies to soil material excavated from designated MARSSIM Class 2 and Class 3 areas during decommissioning of the BMRC facility.

1.3 References

- Final Status Survey Plan, Revision 1, dated September 20, 2012
- Decommissioning Plan, Revision 1, dated May 31, 2012

1.4 Prerequisites

Ensure all meters and detectors have a current calibration, and daily Quality Control checks have been performed.

2.0 RESPONSIBILITIES

2.1 Project Manager

The Project Manager is responsible for ensuring that sufficient resources, funding, and capable personnel are available for implementing this procedure.

2.2 Radiation Protection Manager (RPM)

The RPM is responsible for implementing this procedure and directing the personnel who may perform radiological tasks.

2.3 Other Personnel

The Project Manager, or designate, will assign sampling duties to any available technical personnel. The RPM will assign surveying efforts to health physics technicians or other qualified technical personnel.

3.0 PROCEDURE

3.1 Equipment

Equipment required to perform surveys and sampling of excavated material:

- Appropriate survey meter and a 2x2 sodium iodide detector.
- GPS equipment capable of electronically logging the scan data. Alternately, the scan data may be recorded manually.
- Gallon freezer bags.
- Garden trowel.
- Appropriate survey, custody, and log forms.
- P.P.E. as required by H.A.S.P.

3.2 Soil Sampling

Soil samples will be systematically taken daily as the material is excavated and stockpiled. The rate of sampling will be approximately one sample per 100 cubic meters. The sampling event will be estimated by following the rate of stockpiling. An example follows:

- Assuming a CAT Loader with a 3.5 cubic yard bucket, the volume will average 2.7 cubic meters per load. At that rate, one sample will be collected for each 37 bucket loads. Alternatively, a similar calculation will be made for other sized equipment. The sampling rate was computed using the following assessment:
 - Using a standard Class 2 sized area (10,000 square meters) covered with 15 centimeters of soil, the volume is computed to 1,500 cubic meters. Based on the Final Status Survey Plan criteria of 14 samples, the volumetric sampling criteria is 1 sample for each 107 cubic meters. A sampling frequency of 1 sample for each 100 cubic meters exceeds the required sampling frequency.
- Sampling will be unbiased to the extent possible. Sampling will be biased to the extent that it should be representative of the soil placed in the stockpile on the date of the sampling event.

Each soil sample will be taken with a clean garden trowel and placed in a gallon freezer bag. Each soil sample will be numbered, logged, and then appropriately sealed. Proper chain-of-custody procedures will be followed. The numbering scheme will be as follows:

- Class 2 Soil Sample Numbering

Year Month Day S2-##

For example the first Class 2 sample on October 29, 2014 would be numbered: 2014
10 29 S2-01

- **Class 3 Soil Sample Numbering**

Year Month Day S3-##

For example the first Class 3 sample on October 29, 2014 would be numbered: 2014
10 29 S3-01

Sampling equipment will be checked for radiological contamination between samples.

The soil samples will be secured, surveyed for DOT compliance, and sent to a qualified laboratory for analysis, per Table 3-1 in the Final Status Survey Plan.

It is expected that execution of this this sampling system will result in at least 42 samples.

3.3 Assessment of Soil Sample Analysis Results

The analytical results will be compiled and assessed in accordance with the Final Status Survey Plan.

3.4 Gamma Walkover

3.4.1 Class 2 Gamma Walkover

Following assessment of the soil analysis results, the stockpiled material may be approved by the Operating Committee for backfill. The approved material will then be placed and compacted within the excavation cavity in eight inch layers. A gamma walkover survey will be completed on one out of every three layers after the placement and compaction of the lift by the decommissioning contractor. The survey will cover 100% of the backfill surface of lift. Allowing for the effective depth of instrumentation detection of six inches, a systematic 100% scan of a two foot placement is comparable to an overall effective systematic 25% walkover scan, which is in accordance with the approved Final Status Survey Plan.

3.4.2 Class 3 Gamma Walkover

Following assessment of the soil analysis results, the stockpiled material may be approved by the Operating Committee for backfill. The approved material will then be placed and compacted within the excavation cavity in eight inch layers. A gamma walkover survey will be completed on one out of every seven layers after the placement and compaction of the lift by the decommissioning contractor. The survey will cover 100% of the backfill surface of lift. Allowing for the effective depth of instrumentation detection of six inches, a systematic 100% scan of each seventh layer is comparable to an overall effective systematic 10.7% walkover scan, which is in accordance with the approved Final Status Survey Plan. In the event that less than seven layers of Class 3 backfill soil are available, the last placed and compacted backfill layer will be scanned to meet the Final Status Survey Plan requirement.



University at Buffalo
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Environment, Health & Safety Services

To: Operating Committee File

Date: January 14, 2015

Subject: Review and Change to BMRC Decommissioning Plan

The Operating Committee has reviewed and approved the revised survey package for Bedrock Surface Survey Units SU1, SU2, SU3, & SU 4 discussed on January 13th and prepared by Enercon.

The BMRC Decommissioning Plan Section 9.0 Changes to the Decommissioning Plan indicates that:

“Minor changes to the DP that do not change the original intent of the DP and which do not involve an unreviewed safety question may be approved by the Operating Committee, a sub-group of the RDSC, as defined in the BMRC Technical Specifications and this section.

This revised survey package is a minor change to the Decommissioning Plan that does not change the original intent of the DP. It specifies the process by which these survey units will be surveyed and sampled. The changes have been reviewed by the Operating Committee.

Specifically the changes do not:

1. Require Commission approval pursuant to 10 CFR 50.59
2. Use a statistical test other than the Sign test or WRS test for evaluation of the FSS
3. Increase the radioactivity level, relative to the applicable derived concentration guideline level, at which an investigation occurs
4. Reduce the coverage requirements for scan measurements
5. Decrease an area classification (i.e. impacted to unimpacted; Class 1 to Class 2 ; Class 2 to Class 3; or Class 1 to Class 3)
6. Increase the Type 1 decision error
7. Increase the DCGL's and related MDC's (for both scan and fixed measurement methods); or
8. Result in significant environmental impacts not previously reviewed

Therefore this change to the DP has been approved by the Operating Committee.

David R. Vasbinder, BMRC Director

Date

1/14/15

Mark Adams, BMRC Operations Manager

1/14/15

Jeff Slawson, Radiation Safety Officer

1/14/15

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Building: Bedrock Surface	Survey Units #: SU1, SU2, SU3 & SU4	
Classification:	<input checked="" type="checkbox"/> Class 1 – Impacted	<input type="checkbox"/> Class 2- Impacted <input type="checkbox"/> Class 3 - Impacted

Survey Type:	<input type="checkbox"/> Characterization	<input type="checkbox"/> Demolition	<input checked="" type="checkbox"/> Final Status Survey
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Applicable Nuclides of Concern:	
Nuclide	SEE SPECIAL SURVEY INSTRUCTIONS SECTION
Release Limit	7,100 (dpm/100cm ²) for Bedrock surface (Based on conservatively using the lowest applicable screening for Co-60) Soil release will be based on the soil concentration DCGLs and the Sum-of-fraction rule. Soil DCGLs are provided in Table 1.
Investigation Level	5,300 (dpm/100cm ²) for Static measurements on Bedrock surface (Based on using 75% of Co-60 screening value) For soils - Result > DCGL _{emc} (Based on Area Factor of 5 for 1 square meter elevated area)

Applicable Survey Unit Surfaces:	% of Surface Requiring Scan Surveys
<input checked="" type="checkbox"/> Bedrock Surface	<input type="checkbox"/> 10% <input type="checkbox"/> 50% <input checked="" type="checkbox"/> 100% <input type="checkbox"/> N/A
<input checked="" type="checkbox"/> Residual soil on Bedrock surfaces	<input type="checkbox"/> 10% <input type="checkbox"/> 50% <input checked="" type="checkbox"/> 100% <input type="checkbox"/> N/A

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Overview of Survey Process for Bedrock Surfaces:

The bedrock, the survey will be conducted in stages. SU1, SU2, SU3 and SU4 will be surveyed in segments that may overlap the individual survey units. The following work sequence may be implemented if directed by the Project Manager.

- Step 1 – The influx of water into the excavation must be controlled to the extent that removal by pumping is adequate to implement this survey process.
- Step 2 – Establish a dike around the deepest section of the excavation that incorporates the central cavity under the former reactor vessel and the pipe lines that have been removed.
- Step 3 – Remove as much water and residual soil as possible from this diked area. Allow the area to dry out.
- Step 4 – A layer of soil ≤ 1 " thick is allowable on the surface of the bedrock material.
- Step 5 – Conduct scan survey, collect soil samples and static measurements of the central cavity area in accordance with these instructions.
- Step 6 – Repeat Steps 4 & 5 for other areas of this central cavity until the entire bedrock surface area within the central cavity has been surveyed.
- Step 7 – After the survey information has been reviewed and approved by the Project Manager, the central cavity will then be backfilled with clean off-site gravel material up to the level of the surrounding bedrock surface. A sump will be constructed within the gravel backfill to facilitate water removal as the FSS proceeds.
- Step 8 – Clean off as much soil as necessary from another section of the bedrock surface. A layer of soil ≤ 1 " thick is allowable on the surface of the bedrock material. Excess soil can be either removed from the excavation, pushed to another area that has not yet been surveyed, or spread over areas that have not yet been surveyed with less than 1" of soil to effectively achieve an overall soil distribution of ≤ 1 " thick. When the surface has been cleared, establish a dike around this section of the bedrock surface as necessary to control water influx and allow the surface to dry.
- Step 9 – When the area is sufficiently dry, conduct scan survey, collect soil samples and static measurements of the area in accordance with these instructions.
- Step 10 – After required measurements are completed for all portions within this diked area and the survey information has been reviewed and approved by the Project Manager, the dike may be moved inward to assure that the portion of the bedrock surface that was under the dike material can be included in another area to be surveyed.
- Step 11 – Repeat Steps 8 through 10 until all sections of the bedrock surface have been surveyed in accordance with this instructions.
- Step 12 – A thorough photographic history shall be taken during the conduct of these surveys to document the process.

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Required Survey Instrumentation	Measurement Type	Static Count Time	Scan Rate	Instrument Efficiencies Based on:		Typical MDA(dpm/100 cm ²)
<input checked="" type="checkbox"/> L-2221/44-10	Gamma scan	N/A	0.5 meter/sec	N/A	N/A	3.4 pCi/g
<input type="checkbox"/> L-3/HP-210	Beta scan	N/A	1 probe width/ sec	Tc-99	N/A	2460
<input checked="" type="checkbox"/> L-2360/43-93	Beta static	1 Minute	N/A	Tc-99	N/A	393
<input checked="" type="checkbox"/> L-19	Gamma Dose Rate	N/A	N/A	Cs-137	N/A	N/A
<input checked="" type="checkbox"/> L-3030/43-10-1	Alpha/Beta	1 Minute	N/A	Th-230	Tc-99	Alpha – 10 Beta - 120
<input checked="" type="checkbox"/> L-2929/43-10-1	Alpha/Beta	1 Minute	N/A	Th-230	Tc-99	Alpha – 20 Beta - 120
<input checked="" type="checkbox"/> A Planchet Counter shall be used for analysis of any required removal contamination measurements. See General Survey Instructions Item #7.						

Since this instrumentation is non-nuclide specific (gross measurements), the applicable efficiency and DCGL_w values have been selected based on the most limiting nuclides of concern for the survey unit.

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General Survey Instructions: Bedrock Survey Units SU1, SU2, SU3 & SU4

1. Accurate location of the survey locations and definition of the areas scanned depends on establishing the accuracy and reproducibility of the Trimble instruments. In order to record measurements that will provide the necessary information, follow these steps:
 - Before conducting any radiological measurements, establish 3 or 4 benchmark locations that will remain throughout the FSS process. These locations should be outside the area shown in Figure 1 and be mark in a durable fashion to allow easy return to the same location.
 - When first established, make and record measurements of the location's coordinates using the Trimble instrument(s). Allow adequate time for the instrument to stabilize to provide the highest possible accuracy of the location information for each benchmark.
 - At the beginning and end of each day for which the Trimble Instruments are used to either find a survey location or to record the outline of a survey area, make a location measurement at each of the benchmark locations using the same techniques as for other field measurements.
2. Perform scan surveys of the required surface area at the prescribed scan rates using the 2x2 NaI detector. If less than a 100% scan is required, use professional judgment to select the areas scan surveyed. Select areas with the highest probability to contain residual activity (i.e., areas of known radionuclide usage, excavation floor traffic pathways, cracks and/or crevices not easily cleaned, stained or water spotted areas, or areas with a known history of contamination).
3. If elevated activity is detected during the scan surveys, then establish the extent (size) of the contaminated area(s) and mark the affected area(s) and quantify the activity by taking static measurements of the affected area(s). Notify the Project Manager or designee of the type, amount, and extent of any contamination. Contaminated areas shall be re-cleaned and additional soil shall be removed.
4. Document all scan survey results on the applicable survey maps and data results sheets.
5. The established number of static measurement locations needed for the statistical evaluation of this survey unit is **18 for SU1 and 29 each for SU2, SU3 and SU4**. However, due to statistical and geometrical considerations, the actual number of locations may vary. In this case, collect the actual locations provided on the survey maps.
6. Locate and mark the required static measurements locations using the survey map(s) coordinates. Survey maps with sufficient detail to measure and locate all of these locations have been provided.
7. Collect a soil sample(s) of the residual soil at the same rate for the Class 1 stockpile material of 1 sample per 10 cubic meters of soil. The volume of residual soil is to be based on a conservative estimate of the thickness of the residual soil remaining. For example, if the average thickness of the residual soil is estimated to be 0.5 inch then the volume over the bedrock surface (915 square meters) then the total estimated volume of soil would be 12 cubic meters requiring a minimum of two soil samples. These soil samples must be collected in a manner to assure that a representative volume of the residual soil is collected.

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8. Collect all required static measurements and document the results on the associated data results sheets. If necessary brush any soil aside that is covering the measurement location such that the static measurement is made directly on the bedrock surface. Additional static measurements may be taken in suspect areas at the discretion of the Project Manager or survey technician. However, these additional locations are not included in the analysis of the statistical sample set.
9. Removable contamination measurements (swipes) shall be performed at the established measurement locations and counted on a planchet counter accounting for alpha/beta contamination.
10. Measure the gamma dose rate at contact and at a height of 1 meter above the surface where the static measurements are made.
11. Notify the Project Manager or designee if elevated activity is detected by any of the static measurements or applicable removable contamination measurements.
12. Collect all QC measurements in accordance with the procedure.
13. If any pipe or drain openings are identified in a survey area make static measurements inside the accessible opening and collect smears. Notify the Radiation Protection Manager of the finding for review.

Ensure that all package information is completed and signed prior to turning in this Survey Package to the RSO or designee for review.

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General Survey Instructions: Bedrock Survey Units SU1, SU2, SU3 & SU4

Special Survey Instructions:

Table 1: BMRC Radionuclides of Concern

Radionuclide	DCGL (pCi/g)	Half Life (yr)	Emission	Area(s) of Concern
Ag-108m	8.2	4.38E+02	β, γ	Soil; Tank Water; SSCs
Am-241	2.1	4.32E+02	α, γ	Tank sediment
C-14	12	5.73E+03	β	Laboratory areas
Co-60	3.8	5.27E+00	β, γ	Soil; SSCs; Bioshield
Cs-137	11	3.01E+01	β, γ^*	Soil; SSCs; Bioshield
Eu-152	6.9	1.36E+01	β, γ	Soil; SSCs; Bioshield
Eu-154	8	8.59E+00	β, γ	Soil; SSCs; Bioshield
H-3	110	1.23E+01	β	Soil; Bioshield and Tank Water
Ni-63	2,100	1.00E+02	β	Soil; SSCs; Bioshield
Pu-238	2.	8.78E+01	α, γ	Tank sediment
Pu-239	2.5	2.41E+04	α, γ	Tank sediment
Pu-240	2.3	6.60E+03	α, γ	Tank sediment
Sr-90	1.7	2.88E+01	β	SSCs; Ventilation systems; Soil

* γ emission from Ba-137m progeny.

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Location Code Description : Bedrock Survey Units SU1, SU2, SU3 & SU4	
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A unique location code shall be assigned to each individual survey location to ensure proper data management of the survey results. The following format shall be used to ensure consistency throughout the final status survey process:

BBB-RRRR-M-LLL

Where:

- BBB** = Building or area code. This field represents the facility area. (3 characters) **(Use SUN for Field Surveys)**
- RRRR** = Survey unit ID code. This field represents the survey unit i.e. 2-01, 2-02 etc. (up to 4 characters). Building system survey units (i.e. ventilation systems, drain systems, or vacuum systems) are assigned unique 4-digit numbers that are consistent with the building section and floor. (up to 4 characters) **(Use SU1, SU2, SU3 or SU4 for Bedrock Static Measurements)**
- M** = Structural material code. This field represents the type of structural material on which a particular measurement is taken. This field is usually used to track and assign specific material natural background levels. If not material background value is to be assigned, the default character shall be "M." (1 character) **(Use B for Bedrock and S for Soils)**
- LLL** = Numerical identification number. This field represents the survey point assigned numerical identifier. The field "001" means survey point location number 1. Numerical identifiers shall not be duplicated within the same survey unit. (3 characters)

Prepared By: _____
Printed Name/Signature

Date: _____

Reviewed By: _____
Printed Name/Signature

Date: _____

Package Complete: _____
Printed Name/Signature

Date: _____

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Building: Reactor Building	Survey Unit #: Bedrock Survey Units SU1, SU2, SU3 & SU4	
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Before Beginning Surveys

Examine the area to ensure no hazards are present. Verify that all radiological instrumentation intended for use is source checked, in calibration, and operating properly.

Identify any area within a given survey unit where contamination has been measured, even if less than the release guidelines.

Survey Technician(s):

Step #1	Bedrock Surface Survey – Completed in accordance with the survey package				
	<input type="checkbox"/> N/A				
	<input checked="" type="checkbox"/> Gamma Scan	Date Completed		Initials	
	<input checked="" type="checkbox"/> Soil Sample taken	Date Completed		Initials	
	<input checked="" type="checkbox"/> Beta Static	Date Completed		Initials	
	<input type="checkbox"/> Alpha Static	Date Completed	N/A	Initials	N/A
	<input checked="" type="checkbox"/> Smears	Date Completed		Initials	
	<input checked="" type="checkbox"/> Gamma dose rate	Date Completed		Initials	
Step #2	Penetrations, Drains, and Openings Survey – Completed in accordance with the survey package				
	<input type="checkbox"/> N/A				
	<input checked="" type="checkbox"/> Beta Scan	Date Completed		Initials	
	<input checked="" type="checkbox"/> Smears	Date Completed		Initials	

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Table 2: Coordinates for Corner and Sample Locations for SU1, SU2, SU3 and SU4

Sample Name	Latitude	Longitude
SU1-C-01	42.95036915	-78.81901132
SU1-C-02	42.95027347	-78.81911904
SU1-C-03	42.95031078	-78.81891525
SU1-C-04	42.95023907	-78.81906242
SU1-01	42.95029546	-78.81903516
SU1-02	42.95026657	-78.81909839
SU1-03	42.95030992	-78.81899721
SU1-04	42.9502858	-78.81907313
SU1-05	42.95032915	-78.81897195
SU1-06	42.95031458	-78.81906374
SU1-07	42.95033381	-78.81903848
SU1-08	42.95034827	-78.81900053
SU1-09	42.95027626	-78.81905092
SU1-10	42.95031961	-78.81894975
SU1-11	42.95028219	-78.81903204
SU1-12	42.95029707	-78.8190104
SU1-13	42.95029615	-78.81904467
SU1-14	42.95026734	-78.81906989
SU1-15	42.95031069	-78.81896871
SU1-16	42.95035374	-78.81901955
SU2-C-01	42.950014	-78.818933
SU2-C-02	42.950033	-78.818806
SU2-C-03	42.95008	-78.818819
SU2-C-04	42.950129	-78.818833
SU2-C-05	42.950105	-78.818958
SU2-01	42.950017	-78.818918
SU2-02	42.950033	-78.81893
SU2-03	42.950033	-78.818905
SU2-04	42.950033	-78.818881
SU2-05	42.950033	-78.818856
SU2-06	42.950033	-78.818831
SU2-07	42.950049	-78.818918
SU2-08	42.950049	-78.818893
SU2-09	42.950049	-78.818868
SU2-10	42.950049	-78.818843
SU2-11	42.950049	-78.818819

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Sample Name	Latitude	Longitude
SU2-12	42.950064	-78.81893
SU2-13	42.950064	-78.818905
SU2-14	42.950064	-78.818881
SU2-15	42.950064	-78.818856
SU2-16	42.950065	-78.818831
SU2-17	42.95008	-78.818943
SU2-18	42.95008	-78.818918
SU2-19	42.95008	-78.818893
SU2-20	42.95008	-78.818868
SU2-21	42.95008	-78.818843
SU2-22	42.95008	-78.818819
SU2-23	42.950096	-78.81893
SU2-24	42.950096	-78.818906
SU2-25	42.950096	-78.818881
SU2-26	42.950096	-78.818856
SU2-27	42.950096	-78.818831
SU2-28	42.950112	-78.818844
SU2-29	42.95008	-78.818943
SU2-30	42.95008	-78.818943
SU3-C-01	42.950224	-78.818787
SU3-C-02	42.950311	-78.818915
SU3-C-03	42.95032	-78.818931
SU3-C-04	42.950254	-78.818754
SU3-C-05	42.950346	-78.818902
SU3-C-06	42.950362	-78.818929
SU3-C-07	42.950388	-78.818899
SU3-C-08	42.950374	-78.818876
SU3-C-09	42.950425	-78.818819
SU3-C-10	42.950323	-78.818651
SU3-C-11	42.950335	-78.818638
SU3-C-12	42.950235	-78.818721
SU3-C-13	42.950272	-78.818724
SU3-C-14	42.950294	-78.818698
SU3-C-15	42.950244	-78.818624
SU3-C-16	42.950286	-78.818693
SU3-C-17	42.950293	-78.818569
SU3-01	42.95025	-78.818784
SU3-02	42.95025	-78.81874

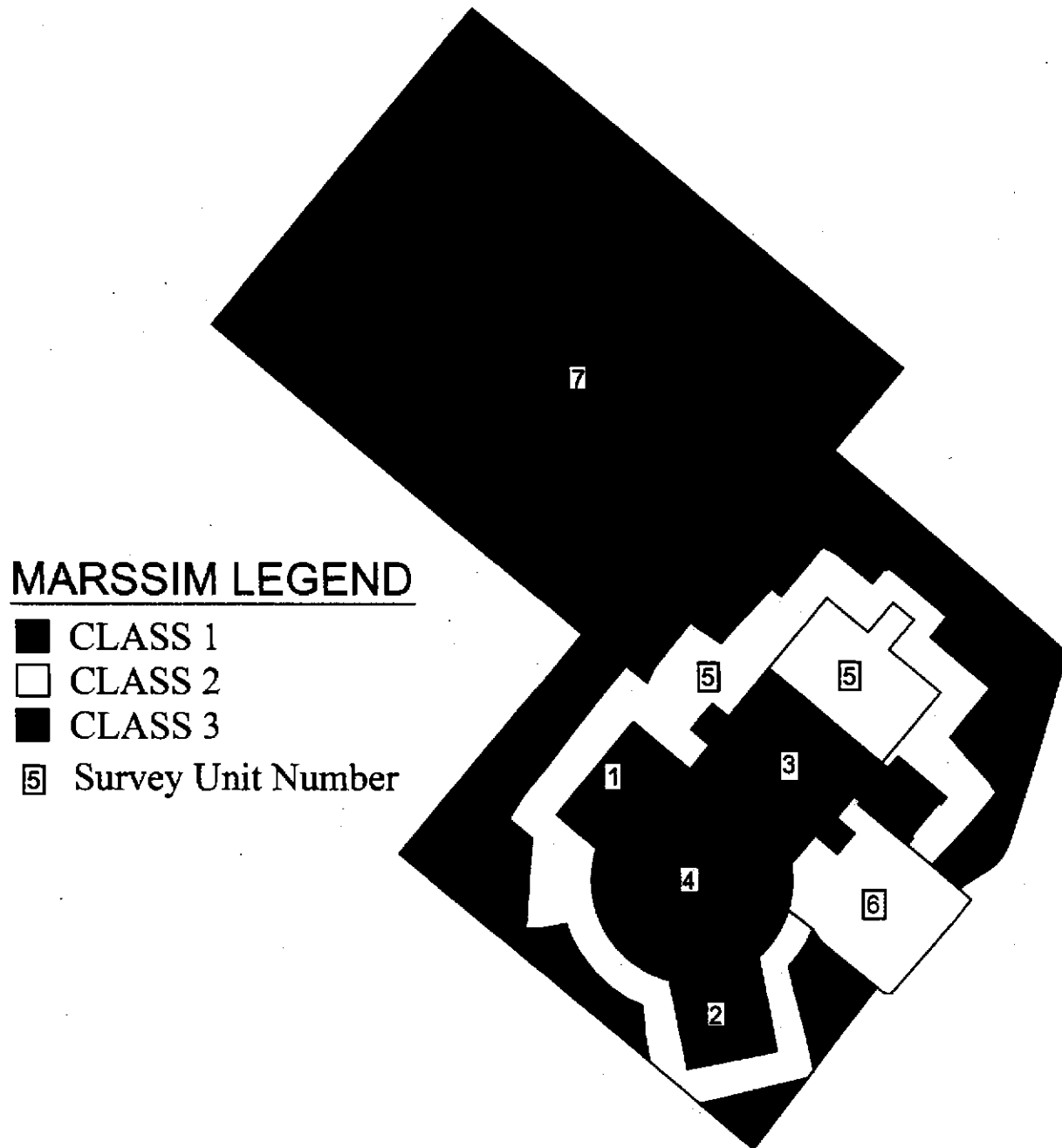
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Sample Name	Latitude	Longitude
SU3-03	42.950256	-78.818698
SU3-04	42.950287	-78.818838
SU3-05	42.950278	-78.818806
SU3-06	42.950278	-78.818762
SU3-07	42.950278	-78.818719
SU3-08	42.950278	-78.818675
SU3-09	42.950278	-78.818631
SU3-10	42.950281	-78.818592
SU3-11	42.950306	-78.818872
SU3-12	42.950306	-78.818828
SU3-13	42.950306	-78.818785
SU3-14	42.950306	-78.818741
SU3-15	42.950306	-78.818697
SU3-16	42.950306	-78.818653
SU3-17	42.950306	-78.818609
SU3-18	42.950334	-78.818894
SU3-19	42.950334	-78.81885
SU3-20	42.950334	-78.818807
SU3-21	42.950334	-78.818763
SU3-22	42.950334	-78.818719
SU3-23	42.950334	-78.818675
SU3-24	42.950362	-78.818916
SU3-25	42.950362	-78.818873
SU3-26	42.950362	-78.818829
SU3-27	42.950362	-78.818785
SU3-28	42.950362	-78.818741
SU3-29	42.95039	-78.818807
SU3-30	42.95039	-78.818763
SU4-C-01	42.950239	-78.819062
SU4-C-02	42.950279	-78.819029
SU4-C-03	42.950301	-78.818989
SU4-C-04	42.950311	-78.818915
SU4-C-05	42.950292	-78.818846
SU4-C-06	42.950263	-78.818808
SU4-C-07	42.950224	-78.818787
SU4-C-08	42.950105	-78.818958
SU4-C-09	42.950181	-78.819065
SU4-C-10	42.950126	-78.819016

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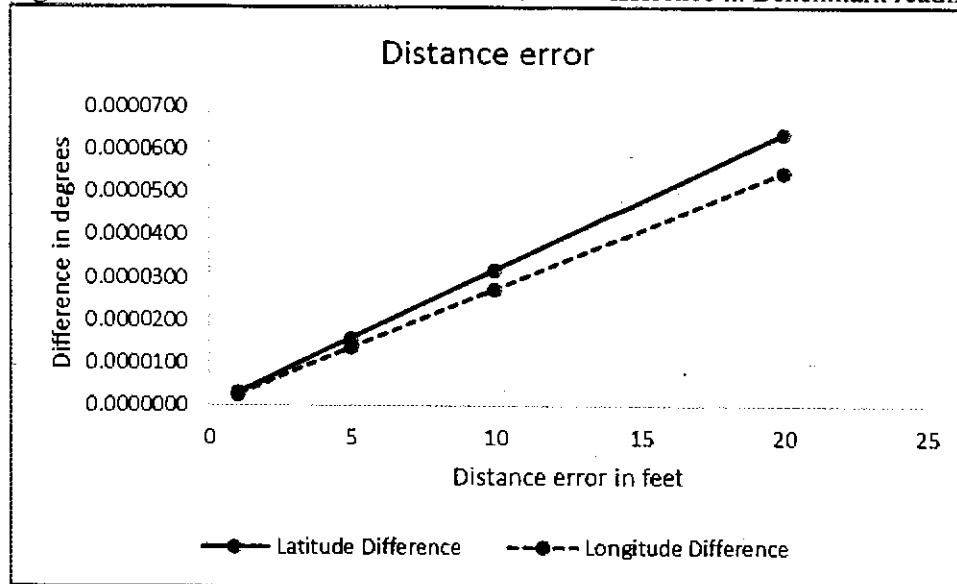
Sample Name	Latitude	Longitude
SU4-C-11	42.950106	-78.818894
SU4-C-12	42.950178	-78.818791
SU4-01	42.950127	-78.818983
SU4-02	42.950127	-78.818933
SU4-03	42.950127	-78.818883
SU4-04	42.950133	-78.818839
SU4-05	42.950158	-78.819008
SU4-06	42.950159	-78.818958
SU4-07	42.950159	-78.818908
SU4-08	42.950159	-78.818858
SU4-09	42.950159	-78.818808
SU4-10	42.95019	-78.819033
SU4-11	42.95019	-78.818983
SU4-12	42.95019	-78.818933
SU4-13	42.950191	-78.818883
SU4-14	42.950191	-78.818833
SU4-15	42.950201	-78.818786
SU4-16	42.950222	-78.819059
SU4-17	42.950222	-78.819009
SU4-18	42.950222	-78.818958
SU4-19	42.950222	-78.818908
SU4-20	42.950222	-78.818858
SU4-21	42.950223	-78.818808
SU4-22	42.950254	-78.819034
SU4-23	42.950254	-78.818984
SU4-24	42.950254	-78.818934
SU4-25	42.950254	-78.818884
SU4-26	42.950254	-78.818833
SU4-27	42.950286	-78.818959
SU4-28	42.950286	-78.818909
SU4-29	42.950286	-78.818859

Figure 1: Survey Unit Designations



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Figure 2: Distance Error Determination based on Difference in Benchmark readings



9.0 CHANGES TO THE DECOMMISSIONING PLAN

Following NRC review and approval of the DP, the DP will be incorporated as an amendment to license R-77. Minor changes to the DP that do not change the original intent of the DP and which do not involve an unreviewed safety question may be approved by the Operating Committee, a sub-group of the RDSC, as defined in the BMRC Technical Specifications and this section. The licensee may make changes to the DP without prior NRC approval provided the proposed changes do not:

- i. Require Commission approval pursuant to 10 CFR 50.59;
- ii. Use a statistical test other than the Sign test or WRS test for evaluation of the FSS;
- iii. Increase the radioactivity level, relative to the applicable derived concentration guideline level, at which an investigation occurs;
- iv. Reduce the coverage requirements for scan measurements;
- v. Decrease an area classification (i.e., impacted to unimpacted; Class 1 to Class 2; Class 2 to Class 3; or Class 1 to Class 3);
- vi. Increase the Type I decision error;
- vii. Increase the DCGLs and related MDCs (for both scan and fixed measurement methods); or
- viii. Result in significant environmental impacts not previously reviewed.

If a significant change to the DP is required, the BMRC RDSC will apply the criteria identified in 10 CFR 50.59 (March 2001) as it applies to non-power reactors in decommissioning. Guidance on implementing the requirements 10 CFR 50.59 is provided in the following documents:

- NRC Regulatory Guide 1.187 Guidance for Implementation of 10 CFR 50.59, Changes, Tests, and Experiments
- Nuclear Energy Institute (NEI) Guidance NEI 96-07, Guidelines for 10 CFR 50.59 Implementation, Revision 1, September 2000
- NRC Inspection Guidance (Part 9900)

If the RDSC determines that the change is significant and could pose a significant increase in potential worker, public, or environmental impacts, NRC approval will be obtained prior to implementing the change.

Changes to the DP are to be listed in the Summary of Changes table at the beginning of this DP with special demarcations in the margins next to the revised text. A report of changes made to the DP without NRC approval is to be maintained for review by the NRC during routine decommissioning inspections. Records of all changes to the DP are maintained until license termination.



University at Buffalo
The State University of New York

Environment, Health & Safety Services

To: Operating Committee File

Date: November 6, 2014

Subject: Review and Change to BMRC Decommissioning Plan

The Operating Committee has reviewed and approved the Work Instruction: Survey and Sampling of Class 2 and Class 3 Excavated Soil Material prepared by Enercon.

The BMRC Decommissioning Plan Section 9.0 Changes to the Decommissioning Plan indicates that:

"Minor changes to the DP that do not change the original intent of the DP and which do not involve an unreviewed safety question may be approved by the Operating Committee, a sub-group of the RDSC, as defined in the BMRC Technical Specifications and this section.

This Work Instruction is a minor change to the DP that does not change the original intent of the DP: It specifies the process by which these soils will be surveyed and sampled. It includes methods by which the coverage requirements for scan measurements (defined in the DP) will be achieved and how representative sample will be collected.

Specifically the change does not:

1. Require Commission approval pursuant to 10 CFR 50.59
2. Use a statistical test other than the Sign test or WRS test for evaluation of the FSS
3. Increase the radioactivity level, relative to the applicable derived concentration guideline level, at which an investigation occurs
4. Reduce the coverage requirements for scan measurements
5. Decrease an area classification (i.e. impacted to unimpacted; Class 1 to Class 2; Class 2 to Class 3; or Class 1 to Class 3)
6. Increase the Type I decision error
7. Increase the DCGL's and related MDC's (for both scan and fixed measurement methods); or
8. Result in significant environmental impacts not previously reviewed

Therefore this change to the DP has been approved by the Operating Committee.

David R. Vasbinder, BMRC Director

Date

11/6/14

Mark Adams, BMRC Operations Manager

11/6/14

Jeff Slawson, Radiation Safety Officer

11/6/14