REF 02-DOE-00900, 02-RF-01258, 00386-RF-02; DWF-055-02

Rocky Flats Environmental Technology Site

PRE-DEMOLITION SURVEY REPORT (PDSR)

BUILDINGS 662 AND 663 CLOSURE PROJECT

REVISION 0

May 31, 2002

CLASSIFICATION REVIEW NOT REQUIRED PER EXEMPTION NUMBER CEX-005-02

1/75

ADMIN RECORD

IA-A-001006

PRE-DEMOLITION SURVEY REPORT (PDSR)

BUILDINGS 662 AND 663 CLOSURE PROJECT

REVISION 0

May 31, 2002

Reviewed by: _____ Date: 6/5/02
Paul Miles, Quality Assurance

Reviewed by: _____ Date: 6/5/02
Duke Snyder, RISS ESH&Q Manager

Approved by: _____ Date: 6/6/02
Kurt Kehler, K-H Project Manager

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ATTACHMENTS

ABBREVIATIONS/ACRONYMS

ACM	Asbestos containing material
Be	Beryllium
CDPHE	Colorado Department of Public Health and the Environment
$DCGL_{EMC}$	Derived Concentration Guideline Level – elevated measurement comparison
$DCGL_W$	Derived Concentration Guideline Level – Wilcoxon Rank Sum Test
D&D	Decontamination and Decommissioning
DDCP	Decontamination and Decommissioning Characterization Protocol
DOE	U S Department of Energy
DPP	Decommissioning Program Plan
DQA	Data quality assessment
DQOs	Data quality objectives
EPA	U S Environmental Protection Agency
FDPM	Facility Disposition Program Manual
HVAC	Heating, ventilation, air conditioning
HSAR	Historical Site Assessment Report
HEUN	Highly Enriched Uranyl Nitrate
IHSS	Individual Hazardous Substance Site
IWCP	Integrated Work Control Package
K-H	Kaiser-Hill
LBP	Lead-based paint
LLW	Low-level waste
MARSSIM	Multi-Agency Radiation Survey and Site Investigation Manual
MDA	Minimum detectable activity
MDC	Minimum detectable concentration
NORM	Naturally occurring radioactive material
NRA	Non-Rad-Added Verification
OSHA	Occupational Safety and Health Administration
PARCC	Precision, accuracy, representativeness, comparability and completeness
PCBs	Polychlorinated Biphenyls
PDS	Pre-demolition survey
QC	Quality Control
RCRA	Resource Conservation and Recovery Act
RFCA	Rocky Flats Cleanup Agreement
RFETS	Rocky Flats Environmental Technology Site
RFFO	Rocky Flats Field Office
RLC	Reconnaissance Level Characterization
RLCR	Reconnaissance Level Characterization Report
RSP	Radiological Safety Practices
SVOCs	Semi-volatile organic compounds
TCLP	Toxicity Characteristic Leaching Procedure
TSA	Total surface activity
VOCs	Volatile organic compounds

EXECUTIVE SUMMARY

A Pre-Demolition Survey (PDS) was performed to enable compliant disposition and waste management of Buildings 662 and 663 Because these buildings will be demolished, the characterization was performed in accordance with the Pre-Demolition Survey Plan (MAN-127-PDSP) Building surfaces characterized as part of this PDS included the walls, ceilings, and roofs Based on the Reconnaissance Level Characterization Reports covering B662 and B663 (i e , the Group A and Group 13 RLCRs, respectively), the building slabs are radiologically contaminated, and therefore, will be disposed of as low-level waste Environmental media beneath and surrounding the facilities were not within the scope of this PDS and will be addressed using the Soil Disturbance Permit process and in compliance with RFCA

This PDS encompassed both radiological and chemical characterization to enable compliant disposition and waste management pursuant to the D&D Characterization Protocol (MAN-077-DDCP) The characterization built upon physical, chemical and radiological hazards identified in the facility-specific Historical Site Assessment Reports and Reconnaissance Level Characterization Reports

Results indicate that no radiological or chemical contamination exists in excess of the PDSP unrestricted release limits, with the exception of both building slabs. The slabs will be removed and disposed of as low level radioactive during building demolition Potentially PCB-containing fluorescent light ballasts and any hazardous-waste items (e g , mercury thermostats, fluorescent light bulbs, mercury vapor light bulbs, mercury-containing gauges, circuit boards, leaded glass, and lead-acid batteries) were previously removed from the building

Based upon this PDSR and subject to concurrence by the CDPHE, the 662 and 663 structures can be demolished and the waste managed as PCB Bulk Product waste or as sanitary waste, with exception of the contaminated portions of the facility slabs as identified above Uncontaminated concrete can be used for backfill on-Site per the RFCA RSOP for Recycling Concrete To ensure that the facilities remain free of contamination and that PDS data remain valid, isolation controls have been established, and the areas have been posted accordingly

1 INTRODUCTION

A Pre-Demolition Survey (PDS) was performed to enable compliant disposition and waste management of Buildings 662 and 663 Because these areas will be demolished, the characterization was performed in accordance with the Pre-Demolition Survey Plan (MAN-127-PDSP) Building surfaces characterized as a part of this PDS included walls, ceilings and roofs Additionally, environmental core samples of the slabs were taken and the results reported in this PDSR, to determine if the slabs had to be disposed of as low level mixed waste The environmental core sample results indicated no hazardous waste constituents or PCBs, and therefore, the slabs are not considered mixed waste Based on the Reconnaissance Level Characterization Reports covering B662 and B663 (i e , the Group A and Group 13 RLCRs, respectively), the building slabs are radiologically contaminated, and therefore, will be disposed of as low level waste Environmental media beneath and surrounding the facilities were not within the scope of this PDS and will be addressed using the Soil Disturbance Permit process and in compliance with RFCA

As part of the Rocky Flats Environmental Technology Site (RFETS) Closure Project, numerous facilities will be removed. Among these are Buildings 662 and 663 The locations of these facilities are shown in Attachment A, Facility Location Map These facilities no longer support the RFETS mission and will be removed to reduce Site infrastructure, risks and/or operating costs

Before the facilities can be removed, a Pre-Demolition Survey (PDS) must be conducted; this document presents the PDS results for Buildings 662 and 663 The PDS was conducted pursuant to the Decontamination and Decommissioning Characterization Protocol (MAN-077-DDCP) and the Pre-Demolition Survey Plan for D&D Facilities (MAN-127-PDSP) The PDS is built upon physical, chemical and radiological hazards identified in the facility-specific Historical Site Assessment Reports and Reconnaissance Level Characterization Reports

1.1 Purpose

The purpose of this report is to communicate and document the results of the B662 and B663 PDS effort. PDSs are performed before building demolition to define the final radiological and chemical conditions of a facility. Final conditions are compared with the release limits for radiological and non-radiological contaminants. PDS results will enable project personnel to make final disposition decisions, develop related worker health and safety controls, and estimate waste volumes by waste types

1.2 Scope

This report presents the final radiological and chemical conditions of Buildings 662 and 663, except the facility slabs Based on the Reconnaissance Level Characterization Reports covering B662 and B663 (i e , the Group A and Group 13 RLCRs, respectively), the building slabs are radiologically contaminated, and therefore, will be disposed of as low level waste Environmental media beneath and surrounding the facilities are not within the scope of this PDSR and will be addressed using the Soil Disturbance Permit process and in compliance with RFCA

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1.3 Data Quality Objectives

The Data Quality Objectives (DQOs) used in designing this PDS were the same DQOs identified in the Pre-Demolition Survey Plan for D&D Facilities (MAN-127-PDSP) Refer to section 2 0 of MAN-127-PDSP for these DQOs

2 HISTORICAL SITE ASSESSMENT

Facility-specific Historical Site Assessments (HSAs) and Reconnaissance Level Characterizations (RLCs) were conducted to understand facility histories and related hazards The HSAs consisted of facility walkdowns, interviews, and document review, including review of the Historical Release Report, and were used to design the RLCs The Building 662 RLC was performed in FY 1999 as part of Group A, and identified elevated total alpha levels, which exceeded the contamination limits prescribed in DOE Order 5400 5, on the roof perimeter and the west-central side of the floor slab (*Reconnaissance Level Characterization Report for Group A Facilities*, June 14, 2000, Rev 2) The elevated roof levels were investigated during December 2001 and January 2002, and were determined not to be the result of DOE-added material (Letter from Dennis Ferrera, Kaiser-Hill, to Steve Tower, DOE RFFO, Retyping of B551 and B662-DWF-010-02, 2/14/02) The Building 663 RLC was performed in FY 2002 as part of Group 13, and identified two elevated readings on the floor slab and two elevated readings on the roof (*Reconnaissance Level Characterization Report for Group 13 Facilities*, April 3, 2002). The elevated roof readings were investigated and determined to be due to uranium activities, which were below the uranium release limits Historical knowledge indicates that both building slabs may be contaminated from prior waste storage activities, and therefore, will be removed and disposed of as low level waste.

Based on the initial elevated readings and historical knowledge, Building 662 was designated as a Type 2 facility in the *Reconnaissance Level Characterization Report for Group A Facilities* However, based on the subsequent investigation of elevated readings, Building 662 was retyped as a Type 1 facility (Letter from Dennis Ferrera, Kaiser-Hill, to Steve Tower, DOE RFFO, Retyping of B551 and B662-DWF-010-02, 2/14/02) CDPHE concurred (Steven Gunderson, CDPHE, to Joseph Legare, DOE RFFO, *B662 and B551 Change from Type 2 to Type 1*, March 22, 2002). B663 was typed as a Type 1 facility in the *Reconnaissance Level Characterization Report for Group 13 Facilities* after elevated readings were investigated and determined to be due to uranium at activities below the uranium release limits

The HSA and RLC results were used to identify PDS data gaps and needs, and to develop radiological and chemical PDS characterization packages. HSA and RLC documentation is located in the RISS Characterization Project files.

3 RADIOLOGICAL CHARACTERIZATION AND HAZARDS

Buildings 662 and 663 were characterized for radiological hazards per the PDSP Radiological characterization was performed to define the nature and extent of radioactive materials that may be present on the facility surfaces Measurements were performed to evaluate the contaminants of concern Based upon a review of historical and process knowledge, building walk-downs, and MARSSIM guidance, a Radiological Characterization Plan was developed during the planning phase that describes the minimum survey requirements (refer to the RISS Characterization Project files for the B662 and B663 Radiological Characterization Plan) Three radiological survey unit packages were developed 662-A-001 for the B662 interior, 662-B-002 for the B662 exterior, 663-A-003 for the B663 interior, and, G13-B-004 for the B663 exterior (B663 exterior was surveyed per PDS requirements as part of the Group 13 RLC) Individual radiological survey unit packages are maintained in the RISS Characterization Project files

B662 and B663 survey unit packages were developed in accordance with Radiological Safety Practices (RSP) 16 01, *Radiological Survey/Sampling Package Design, Preparation, Control, Implementation and Closure* Total surface activity (TSA), removable surface activity (RSA), and scan measurements were collected in accordance with RSP 16 02 *Radiological Surveys of Surfaces and Structures* Radiological survey data were verified, validated and evaluated in accordance with RSP 16.04, *Radiological Survey/Sample Data Analysis* Quality control measures were implemented relative to the survey process in accordance with RSP 16 05, *Radiological Survey/Sample Quality Control* Radiological survey data, statistical analysis results, survey locations, and radiological scan maps are presented in Attachment B, Radiological Data Summary and Survey Maps

B662 Interior (Survey Unit 662-A-001)
Prior to the PDS, the building was stripped of equipment The interior was classified as a MARSSIM Class 3 Survey Unit A total of 25 TSA measurements (15 random, 10 biased, and 2 QC) and 25 RSA measurements (15 random and 10 biased) were taken, and a 10% minimum scan survey was performed Scan surveys concentrated mostly on wall areas located adjacent to the floor None of the measurements or scans indicated elevated activity above appropriate DCGL values. Refer to Attachment B-1 for survey data, statistical analysis results, survey locations, and radiological scan maps

B662 Exterior (Survey Unit 662-B-003)
The B662 exterior was classified as a MARSSIM Class 3 Survey Unit. A total of 20 TSA measurements (15 random, 5 biased, and 2 QC) and 20 RSA measurements (15 random and 5 biased) were taken, and a 5% minimum scan survey was performed One measurement location possessed alpha activity (314 6 dpm/100 cm^2) in excess of the transuranic $DCGL_W$ (100 dpm/100 cm^2) A coupon sample was collected at this location and analyzed using the Canberra ISOCS system, and results did not detect any DOE-enhanced radioactive materials Therefore, the net activity at this location was reported as 0 dpm/100 cm^2, and no further investigation was required The exterior surfaces of B662 are acceptable for unrestricted release Refer to Attachment B-2 for survey data, statistical analysis results, survey locations, radiological scan maps, and gamma spectroscopy results

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B663 Interior (Survey Unit 663-A-003)
Prior to the PDS, the building was stripped of equipment The interior was classified as a MARSSIM Class 3 Survey Unit A total of 25 TSA measurements (15 random, 10 biased, and 2 QC) and 25 RSA measurements (15 random and 10 biased) were taken, and a 10% minimum scan survey was performed Scan surveys concentrated mostly on wall areas located adjacent to the floor None of the measurements or scans indicated elevated activity above appropriate DCGL values Refer to Attachment B-3 for survey data, statistical analysis results, survey locations, and radiological scan maps

B663 Exterior (Survey Unit G13-B-004)
A PDS of the exterior of B663 was conducted during the Group 13 RLC The B663 exterior was classified as a MARSSIM Class 3 Survey Unit A total of 15 TSA measurements (15 random and 2 QC) and 15 RSA measurements (15 random) were taken, and a 5% minimum scan survey was performed Elevated activity was observed on the exterior roof B663 at one location (location #1 = 175 4 dpm/100 cm^2) A metal coupon sample was collected and analyzed using the Canberra ISOCS gamma spectroscopy system Analytical results did not indicate the presence of any weapons grade plutonium, however, uranium was detected Therefore, the net activity for this sample location was compared to the Uranium $DCGL_W$ of 5,000 dpm/100 cm^2 Based on the Uranium $DCGL_W$ of 5,000 dpm/100 cm^2, the exterior surfaces of B663 are acceptable for unrestricted release Gamma spectroscopy results are included as a part of this PDSR (refer to Attachment B-4) All applicable DCGLs and DQOs were met and no further investigation is required Refer to Attachment B-4 for survey data, statistical analysis results, survey locations, and radiological scan maps

4 CHEMICAL CHARACTERIZATION AND HAZARDS

Buildings 662 and 663 were characterized for chemical hazards per the PDSP Chemical characterization was performed to determine the nature and extent of chemical contamination that may be present on or in these facilities Based upon a review of historical and process knowledge, visual inspections, and PDSP DQOs, additional sampling needs were determined A Chemical Characterization Plan was developed during the planning phase that describes sampling requirements and the justification for the sample locations and estimated sample numbers Contaminants of concern included asbestos, beryllium, PCBs, and RCRA/CERCLA constituents Refer to Attachment C, Chemical Summary Data and Sample Maps, for details on sample results and sample locations Isolation control postings are displayed on affected structures to ensure no hazardous materials are introduced

4.1 Asbestos

Asbestos surveys of building materials were conducted in Building 662 for the RLCR for Group A facilities, dated June 14, 2000, and in Building 663 for the RLCR for Group 13 facilities, dated March 25, 2002 A CDPHE-certified asbestos inspector conducted the inspections and sampling in accordance with the *Asbestos Characterization Protocol, PRO-563-ACPR, Revision 1* Building materials suspected of containing asbestos were identified for sampling at the discretion of the inspector

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All bulk samples of suspected friable and non-friable building materials (i e , 9 from B662 and 3 from B663) were negative for asbestos One (1) additional asbestos bulk sample was taken of the window caulking in Building 662 during the PDS since this material was not addressed in the previous B662 asbestos surveys The PLM result of the window caulking was negative for asbestos Asbestos laboratory analysis data and location maps are contained in Attachment C, "Chemical Data Summaries and Sample Maps " The Group A and Group 13 asbestos survey results are located in the RISS Characterization Project files

4.2 Beryllium (Be)

Beryllium surveys were conducted in Building 662 for the RLCR for Group A facilities, dated June 14, 2000, and in Building 663 for the RLCR for Group 13 facilities, dated March 25, 2002 All smear sample results (i e , 3 for B662 and 33 for B663) were less than 0 1 $\mu g/100cm^2$, however, an insufficient number of smears were taken in Building 662 to comply with the PDSP Therefore, five additional biased beryllium samples were collected in the building in accordance with the PDSP and the *Beryllium Characterization Procedure,* PRO-536-BCPR, Revision 0, September 9, 1999 Biased sample locations correspond with the most probable areas of dust accumulation (including beryllium dust), assuming airborne deposition

All beryllium smear sample results from Building 662 were less than 0 1 $\mu g/100cm^2$ Beryllium laboratory sample data and location maps are contained in Attachment C, "Chemical Data Summaries and Sample Maps " The Group A and Group 13 beryllium smear results are located in the RISS Characterization Project Files

4.3 RCRA/CERCLA Constituents [including metals and volatile organic compounds (VOCs)]

Based on the RLCRs for the Group A and Group 13 facilities, interviews, facility walkdowns and a review of historical WSRIC processes, the walls, ceilings and exterior surfaces of Buildings 662 and 663 are not suspected of being contaminated by chemical spills However, environmental core samples of both 662 and 663 slabs were taken to determine if the slabs had to be disposed of as low level mixed waste. The environmental core sample results indicated no hazardous waste constituents, and therefore the slabs are not considered mixed waste. There were positive results in the semi-VOA analysis for compounds identified as listed wastes (U Code) in 40CFR 261 33, however historical knowledge of 662/663 operations, based on WSRIC process review and interviews with building personnel, does not support assignment of the U Codes The materials are suspected of originating in the paint in 663 and in the floor tile mastic in 662, these uses do not constitute a listed hazardous waste as defined in 40CFR 261.33. RCRA/CERCLA Constituents laboratory sample data and location maps are contained in Attachment C, "Chemical Data Summaries and Sample Maps "

Environmental Waste Compliance Guidance #27, *Lead-based Paint (LBP) and Lead-based paint Debris Disposal*, states that LBP debris generated outside of currently identified high contamination areas (HCAs) shall be managed as non-hazardous (solid) wastes, and additional analysis for characteristics of hazardous waste derived from LBP debris is not a requirement for disposal Therefore, all painted surfaces in Buildings 662 and 663 will be managed as non-hazardous (solid) waste

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The buildings may have contained some RCRA regulated items, such as mercury thermostats, fluorescent light bulbs, mercury vapor light bulbs, mercury containing gauges, circuit boards, leaded glass and lead-acid batteries These items have been removed and managed in accordance with the Colorado Hazardous Waste Act

4.4 Polychlorinated Biphenyls (PCBs)

Based on the RLCRs for the Group A and Group 13 facilities, interviews and facility walkdowns, the walls, ceilings and exterior surfaces of Buildings 662 and 663 have not been contaminated by PCB spills However, environmental PCB core samples from the B662 and B663 slabs were taken to determine if the slabs had to be disposed of as low level mixed waste The environmental core sample results indicate no PCB waste constituents, and therefore the slabs are not considered PCB waste PCB laboratory sample data and location maps are contained in Attachment C, "Chemical Data Summaries and Sample Maps "

Based on the age of the facilities (constructed prior to 1980), paints used on the facilities may contain PCBs; and therefore, painted surfaces will be managed as PCB Bulk Product Waste Painted concrete surfaces can be used as backfill on site in accordance with approval received from EPA in November 2001 (letter from K Clough, US EPA Region 8, to J Legare, DOE RFFO, 8EPR-F, Approval of the Risk-Based Approach for Polychlorinated Biphenyls (PCB)-Based Painted Concrete), provided the concrete meets the unrestricted-release criteria outlined in the Concrete Recycling RSOP

Both facilities may have contained PCB fluorescent light ballasts, however, all PCB ballasts have been removed from the facility

5 PHYSICAL HAZARDS

Physical hazards associated with Buildings 662 and 663 consist of those common to standard industrial environments, and include hazards associated with energized systems, utilities, and trips and falls Refer to the Site Safety Analysis Report (PADC-1998-00662). Building 662 may have two layers of concrete slab There are no unique hazards associated with the facility. The facilities have been relatively well maintained and are in good physical condition, and therefore, do not present hazards associated with building deterioration Physical hazards are controlled by the Site Occupational Safety and Industrial Hygiene Program, which is based on OSHA regulations, DOE orders, and standard industry practices

6 DATA QUALITY ASSESSMENT

Data used in making management decisions for decommissioning of Buildings 662 and 663, and consequent waste management, are of adequate quality to support the decisions documented in this report. The data presented in this report (Attachments B and C) were verified and validated relative to DOE quality requirements, applicable EPA guidance, and original DQOs of the project

In summary, the Verification and Validation (V&V) process corroborates that the following elements of the characterization process are adequate

- the *number* of samples and surveys,
- the *types* of samples and surveys,
- the sampling/survey process as implemented "in the field", and
- the laboratory analytical process, relative to accuracy and precision considerations

Details of the DQA are provided in Attachment D

7 DECOMMISSIONING WASTE TYPES AND VOLUME ESTIMATES

The demolition and disposal of Buildings 662 and 663 will generate a variety of wastes Estimated waste types and waste volumes are presented below All wastes can be disposed of as sanitary waste, except PCB Bulk Product Waste and the building slabs (which are not part of PDS scope) PCB ballasts and hazardous-waste items have been removed and managed pursuant to Site PCB and waste management procedures. The building slabs are considered radiologically contaminated and will be disposed of as low level radioactive waste

WASTE TYPES AND VOLUME ESTIMATES								
Facility	**Low Level (cu ft)**	**Concrete (cu ft)**	**Wood (cu ft)**	**Metal (cu ft)**	**Corrugated Sheet Metal (cu ft)**	**Wall Board (cu ft)**	**ACM (cu ft)**	**Other Waste (cu ft)**
662	2,000	2,000	500	800	1,600	4,000	0	Insulation – 2,500
663	2,500	2,500	250	800	1,600	350	0	0

8 CONCLUSIONS

Based on the analysis of radiological, chemical and physical hazards, Buildings 662 and 663 possess no radiological or chemical contamination in excess of the PDSP unrestricted release limits, except for the building slabs PCB ballasts and hazardous-waste items have been removed and disposed of in compliance with Environmental Protection Agency (EPA) and Colorado Department of Public Health and Environment (CDPHE) regulations. The building slabs are considered radiologically contaminated and will be disposed of as low level radioactive waste after the building structures are demolished.

The B662 and B663 PDS was performed in accordance with the DDCP and PDSP, all PDSP DQOs were met, and all data satisfied the PDSP DQA criteria. Environmental media beneath and surrounding the facilities will be addressed at a future date using the Soil Disturbance Permit process and in compliance with RFCA To ensure that Buildings 662 and 663 remain free of contamination and that PDS data remain valid, isolation controls have been established, and the facilities are posted accordingly

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9 REFERENCES

DOE/RFFO, CDPHE, EPA, 1996 Rocky Flats Cleanup Agreement (RFCA), July 19, 1996

DOE Order 5400 5, "Radiation Protection of the Public and the Environment "

DOE Order 414 1A, "Quality Assurance "

EPA, 1994 "The Data Quality Objective Process," EPA QA/G-4

K-H, 1999 Decommissioning Program Plan, June 21, 1999

MAN-131-QAPM, *Kaiser-Hill Team Quality Assurance Program*, Rev 1, November 1, 2001

MAN-076-FDPM, *Facility Disposition Program Manual*, Rev 3, January 1, 2002

MAN-077-DDCP, *Decontamination and Decommissioning Characterization Protocol*, Rev 3, April 23, 2001

MAN-127-PDSP, *Pre-Demolition Survey Plan for D&D Facilities*, Rev 0, April 23, 2001

MARSSIM - Multi-Agency Radiation Survey and Site Investigation Manual (NUREG-1575, EPA 402-R-97-016)

PRO-475-RSP-16 01, *Radiological Survey/Sampling Package Design, Preparation, Control, Implementation, and Closure*, Rev 1, May 22, 2001

PRO-476-RSP-16 02, *Pre-Demolition (Final Status) Radiological Surveys of Surfaces and Structures*, Rev 1, May 22, 2001

PRO-477-RSP-16 03, *Radiological Samples of Building Media*, Rev. 1, May 22, 2001

PRO-478-RSP-16 04, *Radiological Survey/Sample Data Analysis for Final Status Survey*, Rev 1, May 22, 2001

PRO-479-RSP-16 05, *Radiological Survey/Sample Quality Control for Final Status Survey*, Rev 1, May 22, 2001

PRO-563-ACPR, Asbestos Characterization Procedure, Revision 0, August 24, 1999.

PRO-536-BCPR, Beryllium Characterization Procedure, Revision 0, August 24, 1999

RFETS, Environmental Waste Compliance Guidance #25, Management of Polychlorinated Biphenyls (PCBs) in Paint and Other Bulk Product Waste During Facility Disposition

RFETS, Environmental Waste Compliance Guidance #27, Lead-Based Paint (LBP) and Lead-Based Paint Debris Disposal

Reconnaissance Level Characterization Report for Group A Facilities, June 14, 2000, Rev 2

Reconnaissance Level Characterization Report for Group 13 Facilities, April 3, 2002

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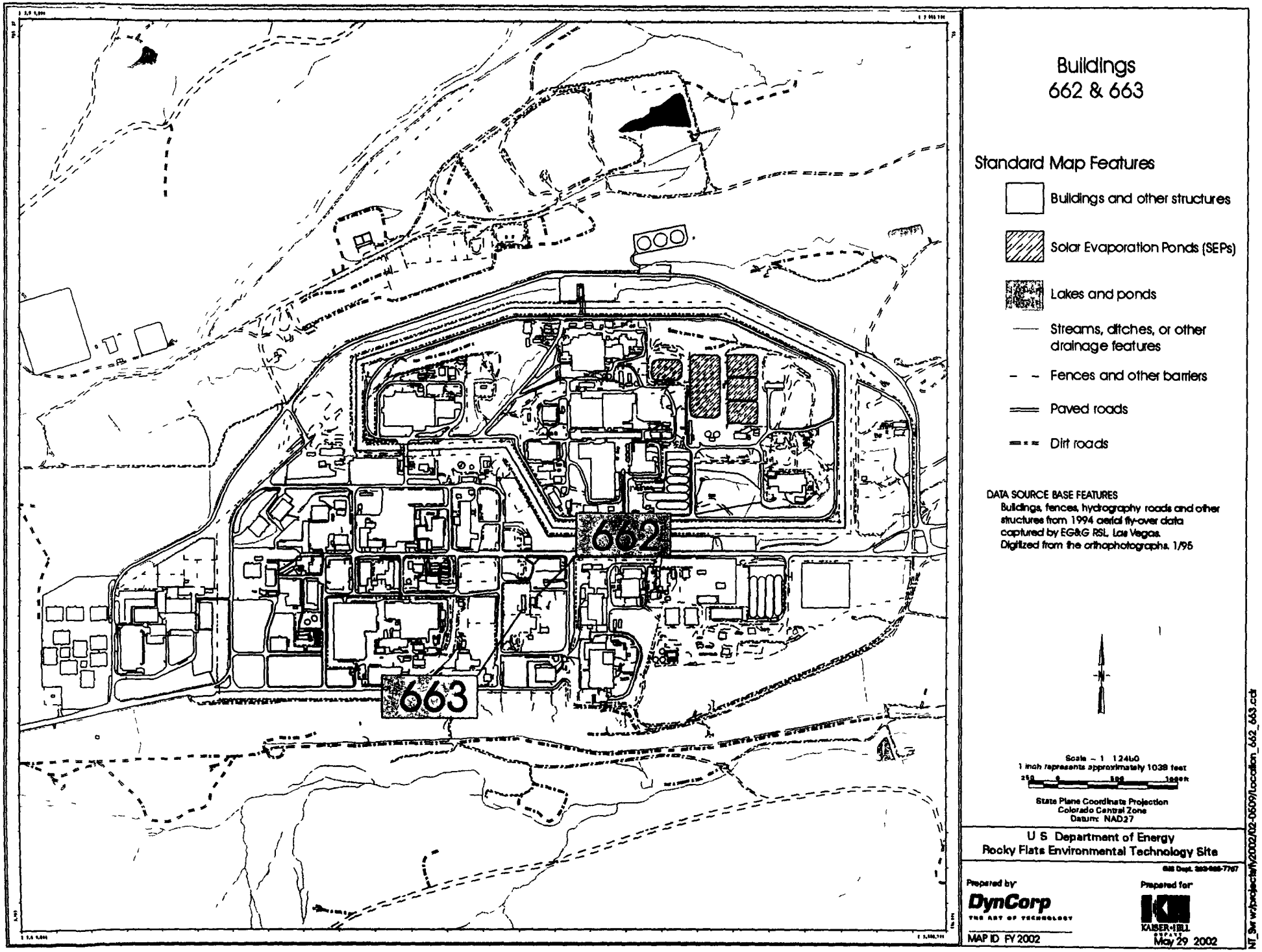
ATTACHMENT A

Facility Location Map



Buildings 662 & 663

Standard Map Features

- Buildings and other structures
- Solar Evaporation Ponds (SEPs)
- Lakes and ponds
- Streams, ditches, or other drainage features
- Fences and other barriers
- Paved roads
- Dirt roads

DATA SOURCE BASE FEATURES
Buildings, fences, hydrography roads and other structures from 1994 aerial fly-over data captured by EG&G RSL Las Vegas.
Digitized from the orthophotographs. 1/96

Scale – 1 1240
1 inch represents approximately 1038 feet

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

U S Department of Energy
Rocky Flats Environmental Technology Site

Prepared by
DynCorp
THE ART OF TECHNOLOGY

Prepared for
KAISER-HILL

MAP ID FY 2002

May 29 2002

NT_9w:\projects\fy2002\02-0609\location_662_663.cdr

ATTACHMENT B

Radiological Data Summaries and Survey Maps

ATTACHMENT B-1

Building 662 Interior

(Survey Unit 662-A-001)

SURVEY UNIT 662-A-001
RADIOLOGICAL DATA SUMMARY

Survey Unit Description. Interior of B662

662-A-001
Radiological
Data Summary

Total Surface Activity Measurements

	25 Number Required	25 Number Obtained	
MIN	-10 5		dpm/100 cm^2
MAX	40 9		dpm/100 cm^2
MEAN	10 8		dpm/100 cm^2
STD DEV	15 4		dpm/100 cm^2
TRANSURANIC DCGL$_W$	100		dpm/100 cm^2

Removable Activity Measurements

	25 Number Required	25 Number Obtained	
MIN	-0 6		dpm/100 cm^2
MAX	8 8		dpm/100 cm^2
MEAN	0 9		dpm/100 cm^2
STD DEV	2 3		dpm/100 cm^2
TRANSURANIC DCGL$_W$	20		dpm/100 cm^2

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SURVEY UNIT 662-A-001
TSA DATA SUMMARY

Manufacturer	NE Electra	NE Electra	NE Electra
Model	DP-6	DP-6	DP-6
Instrument ID#	7	10	11
Serial #	1379	3114	394
Cal Due Date.	5/6/02	8/13/02	6/6/02
Analysis Date	4/29/02	5/13/02	5/13/02
Alpha Eff. (c/d)	0 198	0 218	0 222
Alpha Bkgd (cpm)	5 3	2 7	4 7
Sample Time (min)	1 5	1 5	1 5
LAB Time (min)	1 5	1 5	1 5
MDC (dpm/100cm^2)	48 0	48 0	48 0

Sample Location Number	Instrument ID#	Sample Gross Counts (cpm)	Sample Gross Activity (dpm/100cm2)	LAB Gross Counts (cpm)	LAB Gross Activity (dpm/100cm2)	Sample Net Activity (dpm/100cm2)
1	11	8 7	39 2	3 3	14 9	19 5
2	7	6 0	30 3	5 3	26 8	10 6
3	10	5 3	24 3	4 7	21 6	4 6
4	7	12.0	60 6	4 7	23 7	40 9
5	10	3 3	15 1	4 7	21 6	-4 5
6	10	4 7	21 6	2.0	9 2	1 9
7	11	8 0	36.0	0 7	3.2	16 4
8	7	11 0	55 6	6 0	30 3	35 9
9	7	9 3	47 0	12.0	60 6	27 3
10	11	9 7	43 7	2.0	9 0	24 0
11	7	10 7	54 0	4 7	23 7	34 4
12	10	2.0	9.2	2.0	9 2	10 5
13	10	2.0	9.2	6 7	30 7	10 5
14	11	2.7	12 2	2.0	9 0	-7 5
15	10	4 7	21 6	3 3	15 1	1 9
16	11	4 7	21.2	2.0	9 0	1 5
17	10	2.7	12.4	0 7	3 2	-7 3
18	11	3 3	14 9	6 7	30.2	-4 8
19	11	10 7	48 2	8 0	36 0	28 5
20	11	4 7	21.2	1 3	5 9	1 5
21	11	10 0	45 0	6 7	30.2	25 4
22	11	6 7	30 2	6 0	27 0	10 5
23	11	5 3	23 9	3 3	14 9	4 2
24	11	8.7	39 2	4 7	21 2	19 5
25	10	6 0	27 5	1.3	6 0	7 8
					19 7	*Sample LAB Average*
					MIN	10 5
					MAX	40 9
					MEAN	10 8
					SD	15 4
					Transuranic DCGL$_w$	100

1 Average LAB used to subtract from Gross Sample Activity

QC Measurements

20OC	10	10 0	45 9	9 3	42.7	14 0
8OC	11	6 0	27 0	4 7	21.2	-4 9
					31 9	QC LAB Average
					Transuranic DCGL$_w$	100

1 Average QC LAB used to subtract from Gross Sample Activity

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SURVEY UNIT 662-A-001
SMEAR DATA SUMMARY

Manufacturer	Eberline	Eberline	Eberline	Eberline
Model	SAC-4	SAC-4	SAC-4	SAC-4
Instrument ID#	1	2	3	4
Serial #	770	851	959	1164
Cal Due Date	7/25/02	10/29/02	7/14/02	5/13/02
Analysis Date	5/13/02	5/13/02	5/13/02	5/13/02
Alpha Eff (c/d)	0 33	0 33	0 33	0.33
Alpha Bkgd (cpm)	0 1	0 1	0 0	0 2
Sample Time (min)	2	2	2	2
Bkgd Time (min)	10	10	10	10
MDC (dpm/100cm^2)	7 0	7 0	4 5	8 0

Sample Location Number	Instrument ID#	Gross Counts (cpm)	Net Activity (dpm/100 cm^2)
1	3	0 0	0 0
2	2	1 0	2 7
3	1	1 0	2 7
4	4	0 0	-0 6
5	1	0 0	-0 3
6	2	2 0	5 8
7	3	0 0	0 0
8	1	0 0	-0.3
9	1	0 0	-0 3
10	4	1 0	2 4
11	4	0 0	-0 6
12	1	0 0	-0 3
13	2	1 0	2 7
14	3	0 0	0 0
15	1	0 0	-0.3
16	2	0 0	-0.3
17	2	0 0	-0.3
18	3	0 0	0 0
19	3	0 0	0 0
20	1	0 0	-0.3
21	4	0 0	-0 6
22	2	3 0	8 8
23	3	1 0	3 0
24	2	0 0	-0 3
25	4	0 0	-0 6
		MIN	-0 6
		MAX	8 8
		MEAN	0 9
		SD	2.3
		Transuranic DCGL$_W$	20

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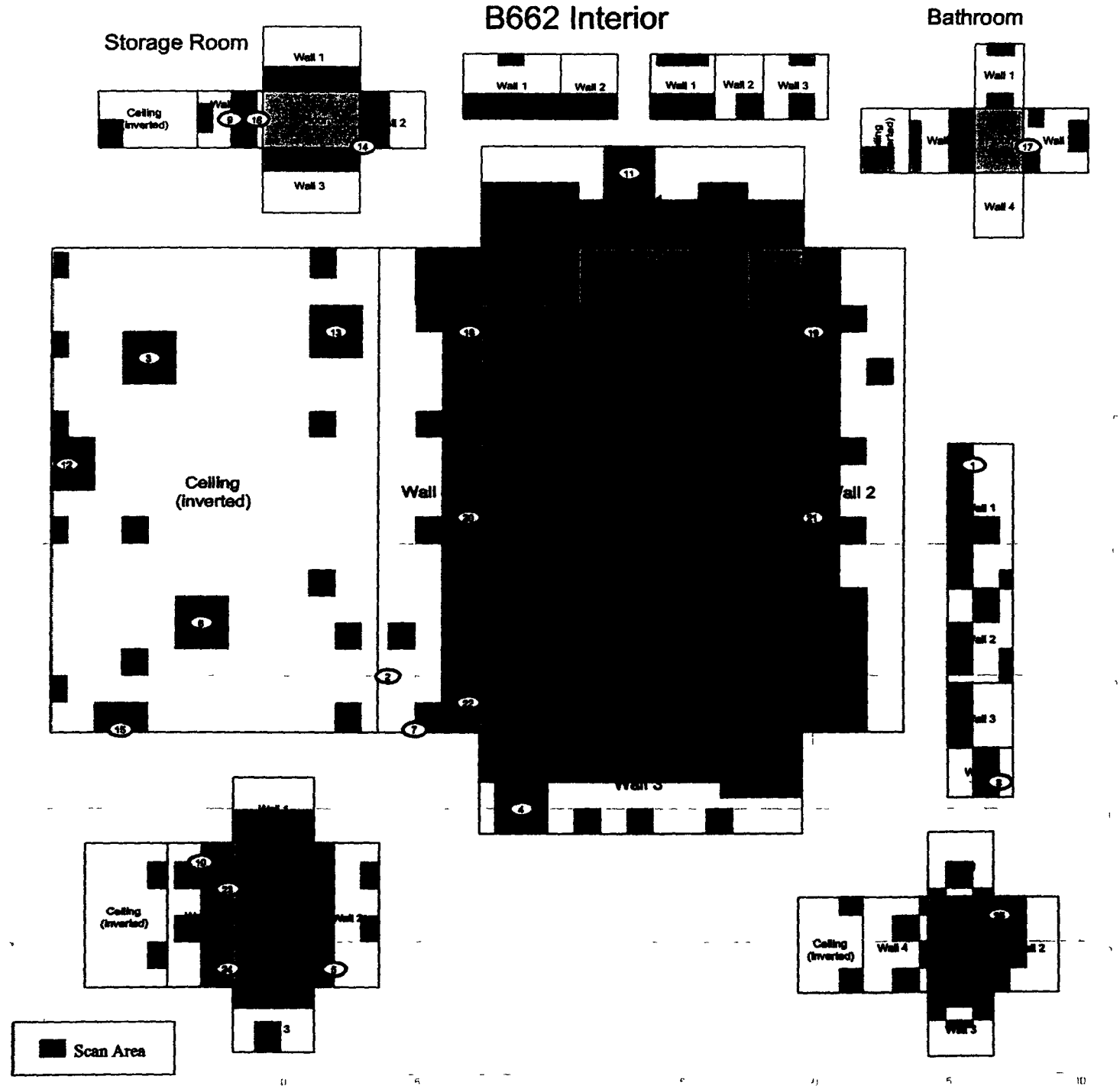
PRE-DEMOLITION SURVEY FOR B662

Survey Area A **Survey Unit. 662-A-001** **Classification 3**
Building 662
Survey Unit Description Interior of Building
Total Area 654 5 sq m **Total Floor Area 223 sq m**



SURVEY MAP LEGEND

- Smear & TSA Location
- Smear, TSA & Sample Location
- Open/Inaccessible Area
- Area in Another Survey Unit

N

0 FEET 25
0 METERS 8
1 inch = 18 feet 1 grid sq. = 1 sq m

Scan Survey Information
Survey Instrument ID #(s) 9, 10, 11
RCT ID #(s) 1, 2, 3

U.S Department of Energy
Rocky Flats Environmental Technology Site

Prepared by: GIS Dept. 303-966-7707 Prepared for:

DynCorp
THE ART OF TECHNOLOGY

MAP ID 02-0509/662-IN-SC May 16, 2002

ATTACHMENT B-2

Building 662 Exterior

(Survey Unit 662-B-002)

SURVEY UNIT 662-B-002
RADIOLOGICAL DATA SUMMARY

Survey Unit Description: Exterior of B662

662-B-002
Radiological
Data Summary

Total Surface Activity Measurements

	20 Number Required	20 Number Obtained	
MIN	-6 1		dpm/100 cm^2
MAX	90 1		dpm/100 cm^2
MEAN	46 4		dpm/100 cm^2
STD DEV	29 2		dpm/100 cm^2
TRANSURANIC DCGL$_W$	100		dpm/100 cm^2

Removable Activity Measurements

	20 Number Required	20 Number Obtained	
MIN	-0 6		dpm/100 cm^2
MAX	5 8		dpm/100 cm^2
MEAN	1 2		dpm/100 cm^2
STD DEV	1 9		dpm/100 cm^2
TRANSURANIC DCGL$_W$	20		dpm/100 cm^2

• The roof of B662 had initial alpha activity greater than the Transuranic DCGL$_W$ (100 dpm/100 cm^2) at sample location # 6 (314 6 dpm/100 cm^2) A roof coupon/sample was collected and analyzed using the Canberra ISOCS gamma spectroscopy system Results did not indicate/detect any DOE enhanced radioactive material Therefore, the net activity for this sample location was reported as 0 dpm/100 cm^2, and no further investigation is required The exterior surfaces of B662 are acceptable for unrestricted release Gamma spectroscopy results are included as a part of this survey package See TSA Data Sheet for details

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SURVEY UNIT 662-B-002
TSA DATA SUMMARY

Manufacturer	NE Electra	NE Electra	NE Electra
Model	DP-6	DP-6	DP-6
Instrument ID#	7	8	9
Serial #	1379	3114	3114
Cal Due Date	5/6/02	8/13/02	8/13/02
Analysis Date	4/29/02	4/29/02	5/9/02
Alpha Eff (c/d)	0 198	0 208	0 208
Alpha Bkgd (cpm)	5 3	1 3	1 3
Sample Time (min)	1 5	1 5	1 5
LAB Time (min)	1 5	1 5	1 5
MDC (dpm/100cm^2)	48 0	48 0	48 0

Sample Location Number	Instrument ID#	Sample Gross Counts (cpm)	Sample Gross Activity (dpm/100cm2)	LAB Gross Counts (cpm)	LAB Gross Activity (dpm/100cm2)	Sample Net Activity (dpm/100cm2)
1	9	14 7	70 7	1 3	6 3	48 7
2	7	18 0	90 9	4 7	23 7	69 0
3	9	23 3	112.0	6 7	32 2	90 1
4	9	16 7	80 3	3 3	15 9	58 4
5	8	3 3	15 9	2.7	13 0	-6 1
6 *	9	70.0	336.5	1.3	6.3	0 *
7	9	22.0	105 8	4 0	19 2	83 8
8	7	11 3	57 1	5 3	26 8	35 1
9	9	19 3	92 8	5 3	25 5	70 9
10	7	13 3	67 2	2 0	10 1	45 2
11	7	8.0	40.4	8.0	40 4	18 5
12	7	12.0	60 6	7 3	36 9	38 7
13	7	7 3	36 9	5 3	26 8	14 9
14	7	6 0	30 3	4 7	23 7	8 4
15	9	22.7	109 1	5 3	25 5	87 2
16	8	17 3	83 2	3 3	15 9	61 2
17	8	16 0	76 9	6 7	32 2	55 0
18	8	8 0	38 5	3 3	15 9	16 5
19	8	7.3	35 1	3 3	15 9	13 2
20	7	18 7	94 4	5 3	26 8	72.5
1 Average LAB used to subtract from Gross Sample Activity					21 9	Sample LAB Average
					MIN	-6 1
					MAX	90 1
					MEAN	46 4
					SD	29.2
					Transuranic DCGL$_W$	100

QC Measurements

16QC	7	13.3	67.2	3 3	16 7	47 0
17QC	7	15.3	77 3	4 7	23 7	57 1
1 Average QC LAB used to subtract from Gross Sample Activity					20.2	QC LAB Average
					Transuranic DCGL$_W$	100

* The roof of B662 had initial alpha activity greater than the Transuranic DCGL$_W$ (100 dpm/100 cm^2) at sample location # 6 (314 6 dpm/100 cm^2) A roof coupon/sample was collected and analyzed using the Canberra ISOCS gamma spectroscopy system. Results did not indicate/detect any DOE enhanced radioactive material Therefore the net activity for this sample location was reported as 0 dpm/100 cm^2 and no further investigation is required The exterior surfaces of B662 are acceptable for unrestricted release Gamma spectroscopy results are included as a part of this survey package

SURVEY UNIT 662-B-002
SMEAR DATA SUMMARY

Manufacturer	Eberline	Eberline	Eberline	Eberline
Model	SAC-4	SAC-4	SAC-4	SAC-4
Instrument ID#	1	2	3	4
Serial #	770	851	959	1164
Cal Due Date	7/25/02	10/29/02	7/14/02	5/13/02
Analysis Date	5/13/02	5/13/02	5/13/02	5/13/02
Alpha Eff (c/d)	0 33	0 33	0 33	0 33
Alpha Bkgd (cpm)	0 1	0 1	0 0	0 2
Sample Time (min)	2	2	2	2
Bkgd Time (min)	10	10	10	10
MDC (dpm/100cm^2)	7 0	7 0	4 5	8 0

Sample Location Number	Instrument ID#	Gross Counts (cpm)	Net Activity (dpm/100 cm^2)
1	2	1 0	2 7
2	1	0 0	-0.3
3	2	0 0	-0 3
4	1	0 0	-0 3
5	3	1 0	3 0
6	3	0 0	0 0
7	3	0 0	0 0
8	1	0 0	-0 3
9	4	0 0	-0 6
10	2	1 0	2 7
11	4	0 0	-0 6
12	2	1 0	2 7
13	4	1 0	2 4
14	2	2 0	5 8
15	4	1 0	2 4
16	1	0 0	-0.3
17	3	0 0	0 0
18	3	1 0	3 0
19	1	1 0	2 7
20	4	0 0	-0 6
		MIN	-0 6
		MAX	5 8
		MEAN	1.2
		SD	1 9
		Transuranic $DCGL_w$	20

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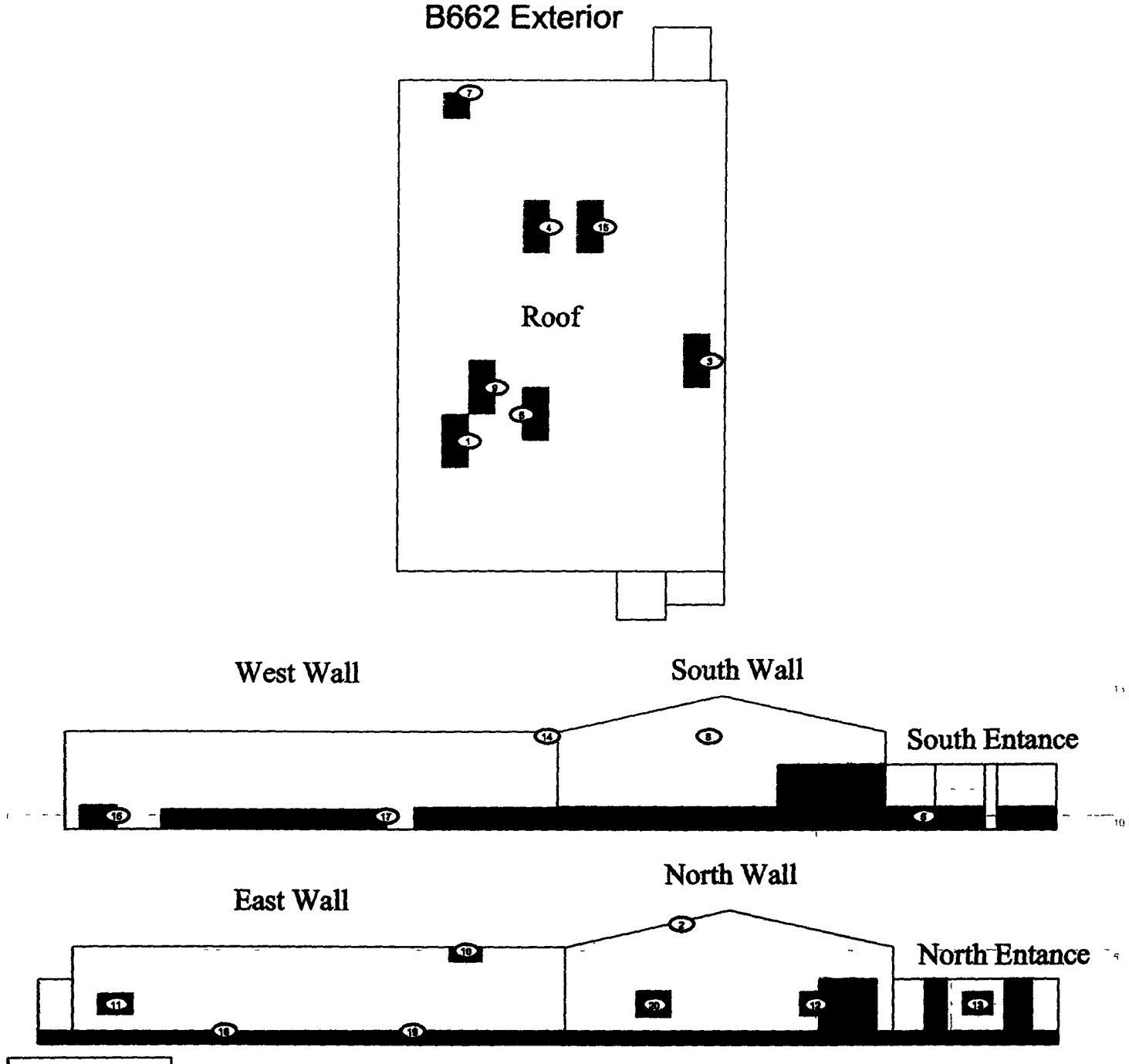
PRE-DEMOLITION SURVEY FOR B662

Survey Area B **Survey Unit** 662-B-002 **Classification** 3
Building 662
Survey Unit Description Exterior
Total Area 491 sq m **Total Roof Area** 233 sq m



CANBERRA

GAMMA SPECTROSCOPY

ANALYTICAL RESULTS

CANBERRA

COVER PAGE

RC10B, On-Site Radiological Screening by Gamma Spectrometry

Gamma Spectrometry

PROJECT SAMPLE IDENTIFICATION CROSS-REFERENCE TO CMLS SAMPLE LABORATORY IDs

BATCH 0201314467
Subcontract KH001076OZ

COC NUMBER	PROJECT SAMPLE ID NUMBER	SITE SAMPLE NUMBER(S)	CMLS SAMPLE ID NUMBER(S)	OBJECT NUMBER(S) CMLS	LINE ITEM CODE(S)
02D0736#001	02D0736-001.001	02D0736-001.001	CMLS-909	G1900065	RC10B019
02D0736#001	02D0736-002.001	02D0736-002.001	CMLS-910	G1900066	RC10B019

Calibration Package ID: Objects individually modeled using ISOCS.

Comments:

Sample was counted in T130A using LeGe Detector LI004

Certification Statement:

"I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this sample data package and the computer-readable EDD, as applicable, submitted on diskette or by modem, has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature."

Larry Umbaugh — Date: 02/04/02
Signature

Laboratory Director
Title

DOT Non-Radioactive Determination
using 32 year-old Weapons Grade Plutonium, for CY 2001

Isotope	Det Limit (pCi/g)	Activity (pCi/g)	U-235/238 %wt. ratio	Uranium Determination
Am-241	1 21E+00	0 00E+00		
U-235	1 81E+00	0	#DIV/0!	Below MDA
U-238	8 67E+00	0 00E+00		

	Ci/g
Am-241	0 00E+00
Pa-234m	0 00E+00
Pu-238	0 00E+00
Pu-239	0 00E+00
Pu-240	0 00E+00
Pu-241	0 00E+00
Pu-242	0 00E+00
Th-230	Not Estimated
Th-231	0 00E+00
Th-234	0 00E+00
U-234	0.00E+00
U-235	0 00E+00
U-236	Not Estimated
U-238	0 00E+00
Total (nCi/g)	0.0
Total (Bq/g)	0.0
DOT Status	Nonradioactive

uCi/g	Spl Wt	Tot uCi
0	8 2	0

B662

rin 02d0736-002 001

02/05/02

B651/B662
& spec results

B662

A
CANBERRA

Analysis Results Header 2/04/2002 8.59 44 AM Page 1

****
***** GAMMA SPECTRUM ANALYSIS *****
** Canberra Mobile Laboratory Services **
****

Report Generated On : 2/04/2002 8:59:44 AM

RIN Number : 02D0736
Analytical Batch ID : 0201314467
Line Item Code : RC10B019

Filename: A:\G1900066.CNF

Sample Number : 02D0736-002.001
Lab Sample Number : CMLS-910
Sample Receipt Date : 1/31/2002
Sample Volume Received : 5.40E+000 GRAMS

Result Identifier : N/A

Peak Locate Threshold : 3.00
Peak Locate Range (in channels) : 100 - 8192
Peak Area Range (in channels) : 100 - 8192
Identification Energy Tolerance : 1.500 keV

Sample (Final Aliquot Size) : 5.400E+000 GRAMS
Sample Quantity Error : 0.000E+000
Systematic Error Applied : 0.000E+000

Sample Taken On : 1/31/2002 10:30:00 AM
Acquisition Started : 1/31/2002 3:23:48 PM

Count Time : 7200.0 seconds
Real Time : 7203.2 seconds
Dead Time : 0.04 %

Energy Calibration Used Done On : 1/14/02
Energy = -0.509 + 0.250*ch + -6.15E-008*ch^2 + 6.19E-012*ch^3

Corrections Applied:
None

Efficiency Calibration Used Done On : 1/31/02
Efficiency Geometry ID : 02D0736-002.001

Analyzed By: Lee Jones Date: 2/4/02

Reviewed By: Sheri Chambers Date: 2/4/02

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B662

A
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****
***** Sample and QC Sample Results Summary *****
****

Site Sample ID : 02D0736-002.001

Analytical Batch ID : 0201314467

Sample Type (Result Identifier). G19

Lab Sample Number : CMLS-910

Geometry ID : 02D0736-002.001

Filename: A:\G1900066.CNF

Detector Name: LEGE

MDA = Curie method as specified in Genie-2000 Customization Tools Manual Appendix B; Basic Algorithms.

Analyte	Activity (pCi/GRAMS)	2-Sigma Uncertainty (pCi/GRAMS)	MDA (pCi/GRAMS)
K-40	4.21E+002	4.53E+001	2.78E+001
TL-208	0.00E+000	0.00E+000	2.73E+000
PO-210	0.00E+000	0.00E+000	2.49E+005
BI-212	0.00E+000	0.00E+000	3.94E+001
PB-212	3.45E+000	1.60E+000	2.57E+000
BI-214	8.67E+000	2.97E+000	4.38E+000
PB-214	0.00E+000	0.00E+000	4.14E+000
RA-224	0.00E+000	0.00E+000	3.44E+001
RA-226	0.00E+000	0.00E+000	2.90E+001
AC-228	0.00E+000	0.00E+000	8.40E+000
TH-230	0.00E+000	0.00E+000	1.12E+002
Th-231	1.75E+001	5.63E+000	6.57E+000
NP/U-233	0.00E+000	0.00E+000	4.34E+000
PA-234	0.00E+000	0.00E+000	2.05E+000
PA-234M	0.00E+000	0.00E+000	2.73E+002
U-235	0.00E+000	0.00E+000	1.81E+000
U238/234	0.00E+000	0.00E+000	8.67E+000
AM-241	0.00E+000	0.00E+000	1.21E+000

ATTACHMENT B-3

Building 663 Interior

(Survey Unit 663-A-003)

SURVEY UNIT 662-A-003
RADIOLOGICAL DATA SUMMARY

Survey Unit Description: Interior of B663

662-A-003
Radiological
Data Summary

Total Surface Activity Measurements

	25 Number Required	25 Number Obtained	
MIN	-12 9		dpm/100 cm^2
MAX	68 4		dpm/100 cm^2
MEAN	15 3		dpm/100 cm^2
STD DEV	21 9		dpm/100 cm^2
TRANSURANIC DCGL$_W$	100		dpm/100 cm^2

Removable Activity Measurements

	25 Number Required	25 Number Obtained	
MIN	-0 3		dpm/100 cm^2
MAX	6 1		dpm/100 cm^2
MEAN	1 4		dpm/100 cm^2
STD DEV	2 0		dpm/100 cm^2
TRANSURANIC DCGL$_W$	20		dpm/100 cm^2

SURVEY UNIT 662-A-003
TSA DATA SUMMARY

Manufacturer	NE Electra	NE Electra
Model	DP-6	DP-6
Instrument ID#	7	8
Serial #	1379	3114
Cal Due Date:	5/6/02	8/13/02
Analysis Date	5/2/02	5/2/02
Alpha Eff (c/d)	0 198	0 208
Alpha Bkgd (cpm)	5 3	2 0
Sample Time (min)	1 5	1 5
LAB Time (min)	1 5	1 5
MDC (dpm/100cm^2)	48 0	48 0

Sample Location Number	Instrument ID#	Sample Gross Counts (cpm)	Sample Gross Activity (dpm/100cm2)	LAB Gross Counts (cpm)	LAB Gross Activity (dpm/100cm2)	Sample Net Activity (dpm/100cm2)
1	8	6 0	28 8	3 3	15 9	6 3
2	8	4 0	19 2	2.0	9 6	3 3
3	8	4 7	22.6	2 0	9 6	0 1
4	8	7 3	35 1	1.3	6 3	12.6
5	8	5 3	25 5	3.3	15 9	2.9
6	8	8 7	41 8	7.3	35 1	19 3
7	8	2.0	9 6	2.7	13 0	-12 9
8	7	8 0	40 4	8.0	40 4	17 9
9	8	4 7	22 6	2.7	13 0	0 1
10	8	2.0	9 6	1 3	6 3	-12 9
11	8	7 3	35 1	0 7	3 4	12 6
12	8	3 3	15 9	0 7	3 4	-6.7
13	8	2.7	13 0	3.3	15 9	-9 6
14	7	10.7	54 0	8.0	40.4	31 5
15	8	2.7	13 0	0.7	3 4	-9 6
16	7	12.7	64 1	8.0	40.4	41 6
17	7	12.0	60.6	7.3	36.9	38.1
18	7	10.7	54 0	6.0	30.3	31 5
19	7	12.0	60 6	7.3	36.9	38 1
20	7	18 0	90 9	4 0	20.2	68 4
21	7	10 7	54 0	5.3	26 8	31 5
22	7	10.0	50 5	8 7	43 9	28 0
23	7	10 0	50.5	9 3	47 0	28 0
24	8	2.0	9 6	3.3	15 9	-12.9
25	7	12.7	64 1	6 7	33 8	41 6
					22.5	Sample LAB Average
					MIN	-12.9
					MAX	68.4
					MEAN	15 3
					SD **	21 9
					Transuranic DCGL$_w$	100

1 Average LAB used to subtract from Gross Sample Activity

QC Measurements

50C	7	8 7	43 9	7 3	36 9	18.7
150C	7	8 0	40 4	2 7	13 6	15 2
					25 3	QC LAB Average
					Transuranic DCGL$_w$	100

1 Average QC LAB used to subtract from Gross Sample Activity

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SURVEY UNIT 662-A-003
SMEAR DATA SUMMARY

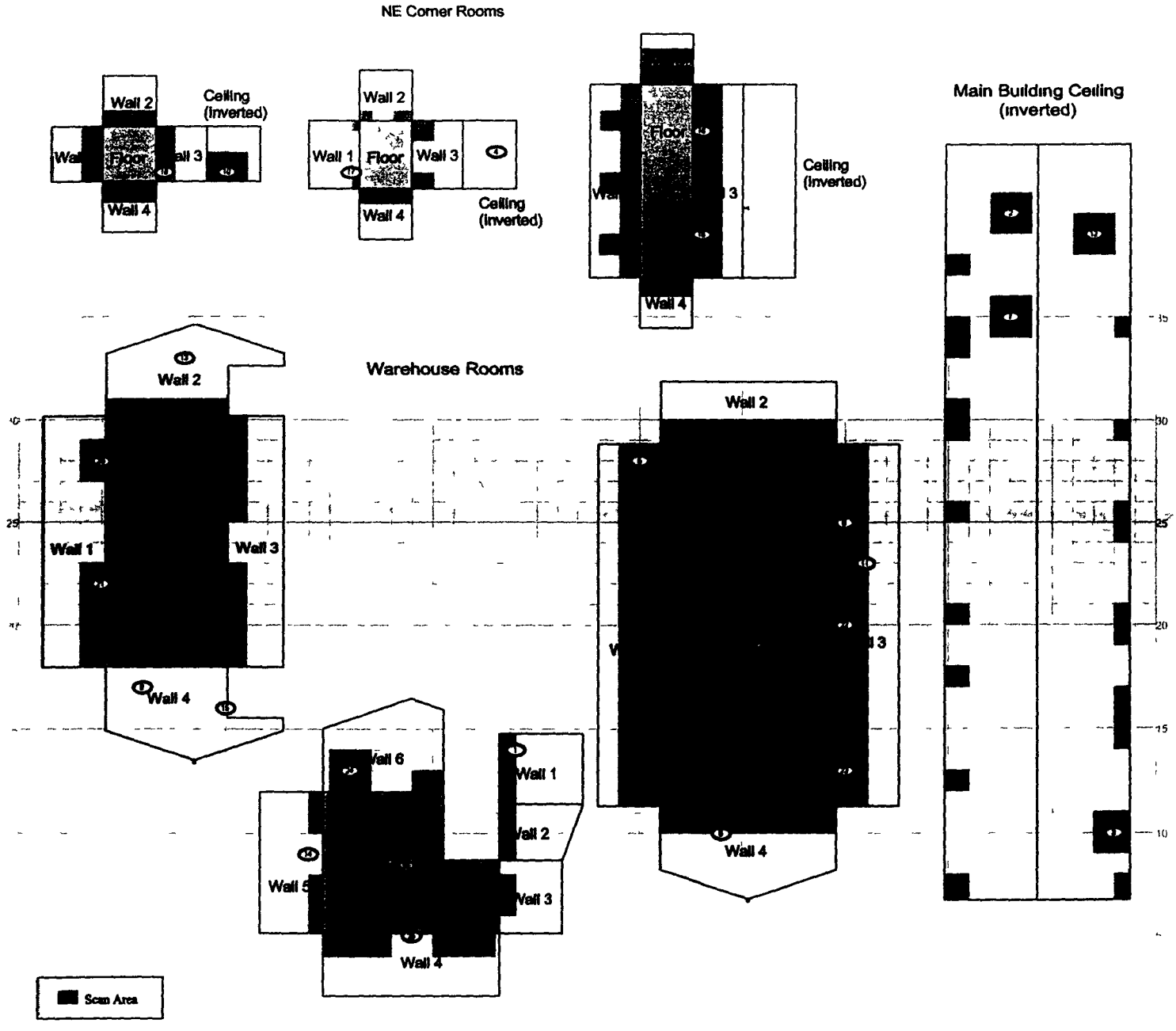
Manufacturer	Eberline	Eberline	Eberline	Eberline
Model	SAC-4	SAC-4	SAC-4	SAC-4
Instrument ID#	1	2	3	4
Serial #	770	851	959	1164
Cal Due Date	7/25/02	10/29/02	7/14/02	5/13/02
Analysis Date	5/3/02	5/3/02	5/3/02	5/3/02
Alpha Eff (c/d)	0 33	0 33	0 33	0 33
Alpha Bkgd (cpm)	0 0	0 1	0 1	0 0
Sample Time (min)	2	2	2	2
Bkgd Time (min)	10	10	10	10
MDC (dpm/100cm^2)	4 5	7 0	7 0	4.5

Sample Location Number	Instrument ID#	Gross Counts (cpm)	Net Activity (dpm/100 cm^2)
1	1	1 0	3 0
2	2	0 0	-0 3
3	2	0 0	-0 3
4	4	0 0	0 0
5	4	2 0	6 1
6	4	0 0	0 0
7	3	0 0	-0.3
8	3	1 0	2 7
9	4	0 0	0 0
10	1	0 0	0 0
11	2	0 0	-0.3
12	1	0 0	0 0
13	2	0 0	-0.3
14	2	1 0	2 7
15	3	1 0	2 7
16	3	0 0	-0 3
17	1	1 0	3 0
18	4	0 0	0 0
19	2	2 0	5 8
20	1	1 0	3 0
21	4	0 0	0 0
22	3	1 0	2 7
23	1	1 0	3 0
24	1	1 0	3 0
25	3	0 0	-0 3
		MIN	-0 3
		MAX	6 1
		MEAN	1 4
		SD	2 0
		Transuranic $DCGL_W$	20

PRE-DEMOLITION SURVEY FOR b663

Survey Area A **Survey Unit** 663-A-003 **Classification** 3
Building 663
Survey Unit Description Interior
Total Area 868 sq m **Total Floor Area** 326 sq m

Building 663
(interior)



SURVEY MAP LEGEND
- Smear & TSA Location
- Smear, TSA & Sample Location
- Open/Inaccessible Area
- Area in Another Survey Unit

N

0 FEET 30
0 METERS 10

1 inch = 24 feet 1 grid sq = 1 sq m.

Scan Survey Information
Survey Instrument ID #(s) 7, 8
RCT ID #(s) 1, 2

U.S Department of Energy
Rocky Flats Environmental Technology Site

Prepared by: GIS Dept 303-966-7707 Prepared for:

DynCorp
THE ART OF TECHNOLOGY

MAP ID: 02-0509/663-IN-SC May 16, 2002

ATTACHMENT B-4

Building 663 Exterior

(Survey Unit G13-B-004)

G13-B-004
Radiological
Data Summary

Total Surface Activity Measurements

	15 Number Required	15 Number Obtained	
MIN	7 1		dpm/100 cm^2
MAX *	175 4		dpm/100 cm^2
MEAN	66 1		dpm/100 cm^2
STD DEV **	40 7		dpm/100 cm^2
TRANSURANIC DCGL$_W$	100		dpm/100 cm^2

Removable Activity Measurements

	15 Number Required	15 Number Obtained	
MIN	-0 9		dpm/100 cm^2
MAX	5 8		dpm/100 cm^2
MEAN	1 8		dpm/100 cm^2
STD DEV	2 1		dpm/100 cm^2
TRANSURANIC DCGL$_W$	20		dpm/100 cm^2

* The roof of B663 had initial alpha activity greater than the Transuranic DCGL$_W$ (100 dpm/100 cm^2) at sample location # 1 (175 4 dpm/100 cm^2) A roof coupon/sample was collected and analyzed using the Canberra ISOCS gamma spectroscopy system Results did not indicate any weapons grade plutonium was present; however, uranium was detected Therefore, the net activity for this sample location was compared to the Uranium DCGL$_W$ of 5,000 dpm/100 cm^2, and no further investigation is required The surfaces of B663 are acceptable for unrestricted release Gamma spectroscopy results are included as a part of this survey package

** Due to the intial alpha activity at sample location #1, the standard deviation at location #1 was greater than 30 percent. However, since the contaminant was determined to be uranium and below the applicable DCGL$_W$, sample location #1 was determined to not be an anomaly and a sufficient number of samples was taken in this survey unit. In addition, the original sample quantity of 15 has a 20 percent correction factor incorporated to ensure adequate sample quantities are taken in the field

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SURVEY UNIT G13-B-004
TSA DATA SUMMARY

Manufacturer	*NE Electra*	*NE Electra*	*NE Electra*
Model	*DP-6*	*DP-6*	*DP-6*
Instrument ID#	7	8	9
Serial #	1379	1379	3114
Cal Due Date	5/6/02	5/6/02	8/15/02
***Analysis* Date**	2/5/02	2/14/02	2/19/02
Alpha Eff (e/d)*	0 202	0 202	0 216
Alpha Bkgd (cpm)	4 7	4 7	3 3
Sample Time (min)	1 5	1 5	1 5
LAB Time (min)	1 5	1 5	1 5
MDC (dpm/100cm^2)	*48 0*	*48 0*	*48 0*

Sample Location Number	Instrument ID#	Sample Gross Counts (cpm)	Sample Gross Activity (dpm/100cm2)	LAB Gross Counts (cpm)	LAB Gross Activity (dpm/100cm2)	Sample Net Activity (dpm/100cm2)
1 *	8	43 3	214 4	8 7	43 1	175 4
2	7	9 3	46 0	8 0	39 6	7 1
3	7	24 3	120 3	12 0	59 4	81 4
4	8	12.7	62 9	12.0	59 4	23 9
5	7	16 0	79 2	6 7	33 2	40 3
6	8	26 0	128 7	6 0	29 7	89 8
7	7	19.3	95 5	9.3	46 0	56 6
8	7	24 0	118 8	6 0	29 7	79 9
9	8	26 7	132.2	4 0	19 8	93 2
10	8	26 0	128 7	9 3	46 0	89 8
11	8	23.3	115.3	6 7	33 2	76 4
12	8	16.7	82 7	12.0	59 4	43 7
13	7	21.3	105 4	4 7	23.3	66 5
14	7	12.7	62.9	5.3	26.2	23.9
15	7	16.7	82.7	7.3	36 1	43 7
1 Average LAB used to subtract from Gross Sample Activity					38.9	Sample LAB Average
					MIN	7 1
					MAX	175 4
					MEAN	66.1
					SD **	40 7
					Transuranic DCGL$_W$	100

QC Measurements

8QC	9	23.3	107 9	4 0	18 5	78 5
3QC	9	22.7	105 1	8.7	40.3	75 7
1 Average QC LAB used to subtract from Gross Sample Activity					29 4	QC LAB Average
					QC MIN	75 7
					QC MAX	78.5
					QC MEAN	77 1
					QC SD	2.0
					Transuranic DCGL$_W$	100

* The roof of B663 had initial alpha activity greater than the Transuranic DCGL$_W$ (100 dpm/100 cm^2) at sample location # 1 (175 4 dpm/100 cm^2) A roof coupon/sample was collected and analyzed using the Canberra ISOCS gamma spectroscopy system. Results did not indicate any weapons grade plutonium was present; however uranium was detected. Therefore the net activity for this sample location was compared to the Uranium DCGL$_W$ of 5 000 dpm/100 cm^2 and no further investigation is required. The surfaces of B663 are acceptable for unrestricted release Gamma spectroscopy results are included as a part of this survey package

** Due to the initial alpha activity at sample location #1 the standard deviation for this survey unit was greater than 30 percent. However since the contaminant was determined to be uranium and below the applicable DCGL$_W$, sample location #1 was determined to not be an anomaly and a sufficient number of samples was taken in this survey unit. In addition, the original sample quantity of 15 has a 20 percent correction factor incorporated to ensure adequate sample quantities are taken in the field

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SURVEY UNIT G13-B-004
SMEAR DATA SUMMARY

Manufacturer	Eberline	Eberline	Eberline	Eberline
Model	SAC-4	SAC-4	SAC-4	SAC-4
Instrument ID#	1	2	3	4
Serial #	767	1164	770	959
Cal Due Date	4/30/02	5/13/02	7/25/02	7/14/02
Analysis Date	2/19/02	2/19/02	2/19/02	2/19/02
Alpha Eff (c/d)	0 33	0 33	0 33	0.33
Alpha Bkgd (cpm)	0 3	0 1	0 0	0 1
Sample Time (min)	2	2	2	2
Bkgd Time (min)	10	10	10	10
MDC (dpm/100cm^2)	8 8	7 0	4 5	7 0

Sample Location Number	Instrument ID#	Gross Counts (cpm)	Net Activity (dpm/100 cm^2)
1	2	0 0	-0.3
2	1	0 0	-0 9
3	4	0 0	-0 3
4	3	0 0	0 0
5	2	1 0	2 7
6	3	0 0	0 0
7	3	1 0	3 0
8	3	1 0	3 0
9	2	2 0	5 8
10	1	2 0	5.2
11	1	1 0	2 1
12	4	1 0	2 7
13	2	1 0	2 7
14	1	1 0	2 1
15	4	0 0	-0.3
		MIN	-0 9
		MAX	5 8
		MEAN	1 8
		SD	2 1
		Transuranic $DCGL_W$	20

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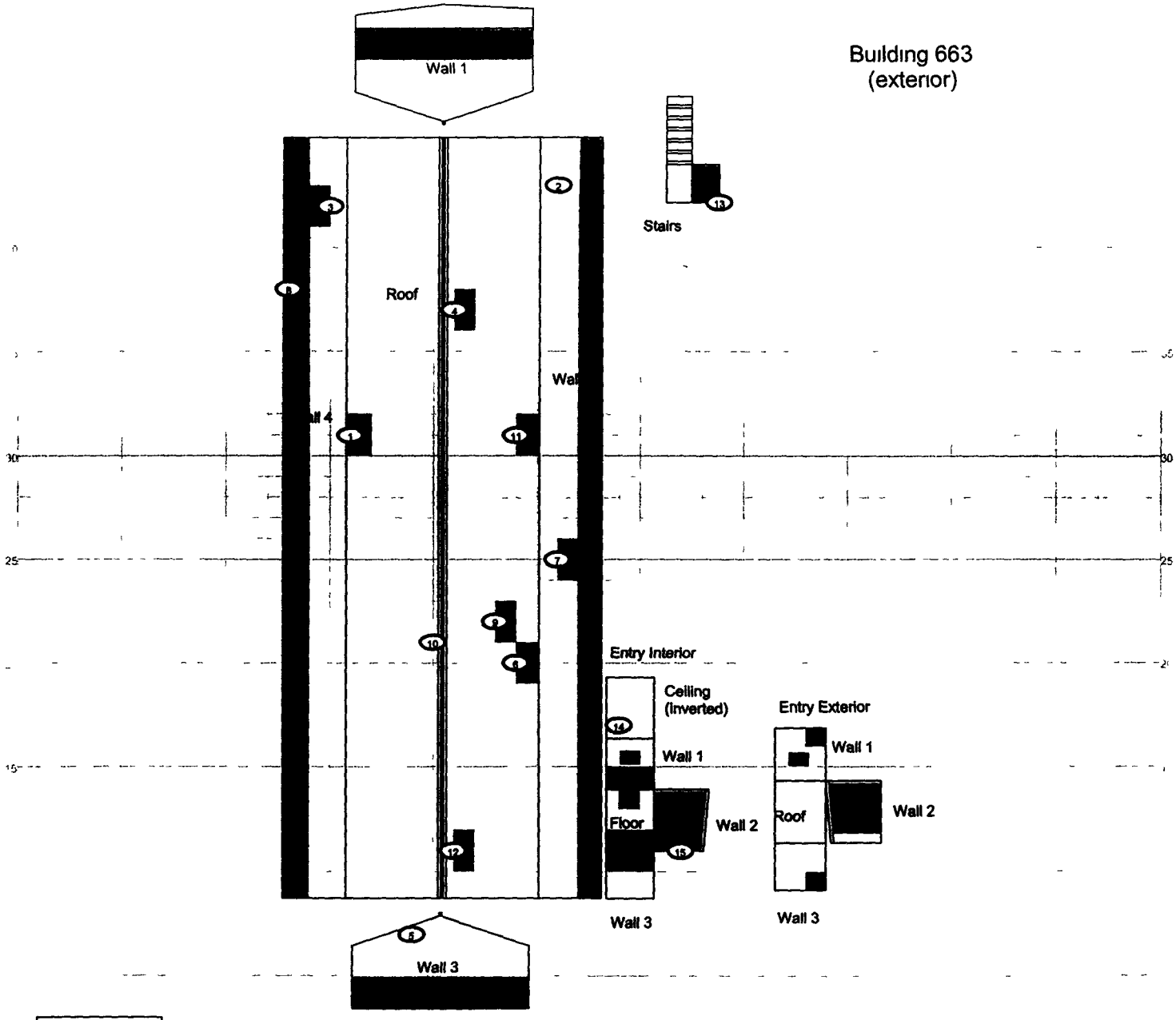
PRE-DEMOLITION SURVEY FOR GROUP 13

Survey Area B **Survey Unit** G13-B-004 **Classification** 3
Building 663
Survey Unit Description Exterior
Total Area 691 sq m **Total Floor Area** 348 sq m



SURVEY MAP LEGEND

- Smear & TSA Location
- Smear TSA & Sample Location
- Open/Inaccessible Area
- Area in Another Survey Unit

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N

0 FEET 30
0 METERS 10
1 inch = 24 feet 1 grid sq = 1 sq m.

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Scan Survey Information
Survey Instrument ID #(s): 7, 8, 9
RCT ID #(s): 1

MAP ID: 02-0155/B663-EX-SC March 22, 2002

G13-B-004

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CANBERRA

GAMMA SPECTROSCOPY

ANALYTICAL RESULTS

CANBERRA

COVER PAGE

RC10B, On-Site Radiological Screening by Gamma Spectrometry

Gamma Spectrometry

PROJECT SAMPLE IDENTIFICATION CROSS-REFERENCE TO CMLS SAMPLE LABORATORY IDs

BATCH 0203204732

Subcontract KH001076OZ

COC NUMBER	PROJECT SAMPLE ID NUMBER	SITE SAMPLE NUMBER(S)	CMLS SAMPLE ID NUMBER(S)	OBJECT NUMBER(S) CMLS	LINE ITEM CODE(S)
02D1015#001	02D1015-001.001	02D1015-001.001	CMLS-1022	G1900016	RC10B019
02D1015#001	02D1015-002.001	02D1015-002.001	CMLS-1023	G1900017	RC10B019

Calibration Package ID: Object individually modeled using ISOCS

Comments:

Sample was counted in T130A using BEGe Detector LI012

Certification Statement.

"I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above Release of the data contained in this sample data package and the computer-readable EDD, as applicable, submitted on diskette or by modem, has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature "

Larry Umbaugh Date 3/21/02
Signature

Laboratory Director
Title

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Best Available Copy

RISS RFETS	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	COC: 02D1015#001	Page 1 of 1

Sampler(s) (Print/date)	Contact/Requestor: JOHNSEN, SHELLY/BRITTEN, JAY	Telephone No.: 8401/3060
RIN: 02D1015	Sampling Origin: B663, 666, [illegible]	Purchase Order/Charge Code: EFD50320
Project Title: B663, B666, & [illegible] METAL ROOF COUPONS	Logbook No.	Ice Chest No. Temp.
To (Lab): Canberra Mobile Lab Services	Method of Shipment:	Bill of Lading/Air Bill No.
Protocol	Related COC (if any)	FRE

POSSIBLE SAMPLE HAZARDS/REMARKS	SCREENING REQUIRED	SPECIAL INSTRUCTIONS Hold Time
Are solid prepared samples DOT hazardous per 49 CFR Part 1542 Table 1? YES (NO) SDU Are other known hazardous substances present? YES (NO) SDU ** ** **	☐	PLEASE PERFORM A 4 HOUR COUNT ON EACH SAMPLE

Bottle No.	Customer Number	Matrix	Date/ Time	Location	Container (size/type)	Sample Analysis [Field-Filtered] LIC (Method Title) [TAT]/(Parameter List)	Preservative Packing
02D1015 -001.001		SOLID		B663	1-SAMPLE N/A	RC10B019 (GS-I-N/S-Lab-Nstd ISOCS-Solid) [24hrR] (AM241, U235, U238)	None None
02D1015 -002.001		SOLID		B666	1-SAMPLE N/A	RC10B019 (GS-I-N/S-Lab-Nstd ISOCS-Solid) [24hrR] (AM241, U235, U238)	None None
02D1015 -003.001		SOLID		B664	1-SAMPLE N/A	RC10B019 (GS-I-N/S-Lab-Nstd ISOCS-Solid) [24hrR] (AM241, U235, U238)	None None

Sample #3 not found!

JSB 3/20/02

Relinquished By:	Date/Time	Received By:	Date/Time	Relinquished By:	Date/Time	Received By:	Date/Time
[illegible]	3/20/02 [illegible]	[illegible]	3/20/02 0950	[illegible]	3/20/02 0840	[illegible]	3-20-02 0840
Relinquished By:	Date/Time	Received By:	Date/Time	Relinquished By:	Date/Time	Received By:	Date/Time
Relinquished By:	Date/Time	Received By:	Date/Time	Relinquished By:	Date/Time	Received By	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method (e.g. returned to customer, disposal of packaging, used in analytical process)			Disposed By		Date/Time COC printed: 03/19/02 15:37	

CANBERRA

CANBERRA

****
***** GAMMA SPECTRUM ANALYSIS *****
** Canberra Mobile Laboratory Services **
****

Report Generated On 3/20/2002 12 18 55 PM

RIN Number 02D1015
Analytical Batch ID 0203204732
Line Item Code RC10B019

Filename. A \G1900016 CNF

Sample Number 02D1015-001 001
Lab Sample Number 1022
Sample Receipt Date 3/20/2002
Sample Volume Received . 1 57E+001 GRAMS

Result Identifier N/A

Peak Locate Threshold . 3.00
Peak Locate Range (in channels) : 100 - 8192
Peak Area Range (in channels) : 100 - 8192
Identification Energy Tolerance : 1.500 keV

Sample (Final Aliquot Size) 1 570E+001 GRAMS
Sample Quantity Error 0 000E+000
Systematic Error Applied 0 000E+000

Sample Taken On 3/19/2002 8 00 00 AM
Acquisition Started 3/20/2002 8 49·23 AM

Count Time 14400 0 seconds
Real Time 14411.1 seconds
Dead Time 0.08 %

Energy Calibration Used Done On · 2/07/02
Energy = -0 259 + 0 250*ch + -1 22E-008*ch^2 + 8 54E-013*ch^3

Corrections Applied·
None

Efficiency Calibration Used Done On 3/20/02
Efficiency Geometry ID 02D1015-001.001

Analyzed By: Brian Anderson Date 3/20/02

Reviewed By Daniel Remington Date 3/20/02

CANBERRA

****
***** Sample and QC Sample Results Summary *****
****

Site Sample ID 02D1015-001 001

Analytical Batch ID 0203204732

Sample Type (Result Identifier) G19

Lab Sample Number 1022

Geometry ID 02D1015-001 001

Filename· A \G1900016 CNF

Detector Name· BEGE4732

MDA = Curie method as specified in Genie-2000 Customization Tools Manual Appendix B; Basic Algorithms

Analyte	Activity (pCi/GRAMS)	2-Sigma Uncertainty (pCi/GRAMS)	MDA (pCi/GRAMS)
K-40	2 69E+001	3.96E+000	4.33E+000
CS-137	0.00E+000	0.00E+000	3.73E-001
TL-208	2.60E-001	1.98E-001	3.23E-001
PO-210	0 00E+000	0.00E+000	3.44E+004
BI-212	0 00E+000	0.00E+000	5 17E+000
PB-212	3 74E-001	1.92E-001	2.92E-001
BI-214	4 53E-001	3.17E-001	5.12E-001
PB-214	0 00E+000	0 00E+000	5 92E-001
RA-226	5 43E+000	2.52E+000	3 78E+000
AC-228	0 00E+000	0.00E+000	1.47E+000
TH-230	0.00E+000	0 00E+000	3 55E+001
Th-231	0 00E+000	0.00E+000	1.56E+000
PA-234	0 00E+000	0.00E+000	3.71E-001
PA-234M	0 00E+000	0 00E+000	4.82E+001
U-235	3 36E-001	1.55E-001	2 34E-001
U238/234	3 11E+000	2 40E+000	1 65E+000
AM-241	0 00E+000	0.00E+000	3 50E-001

ATTACHMENT C

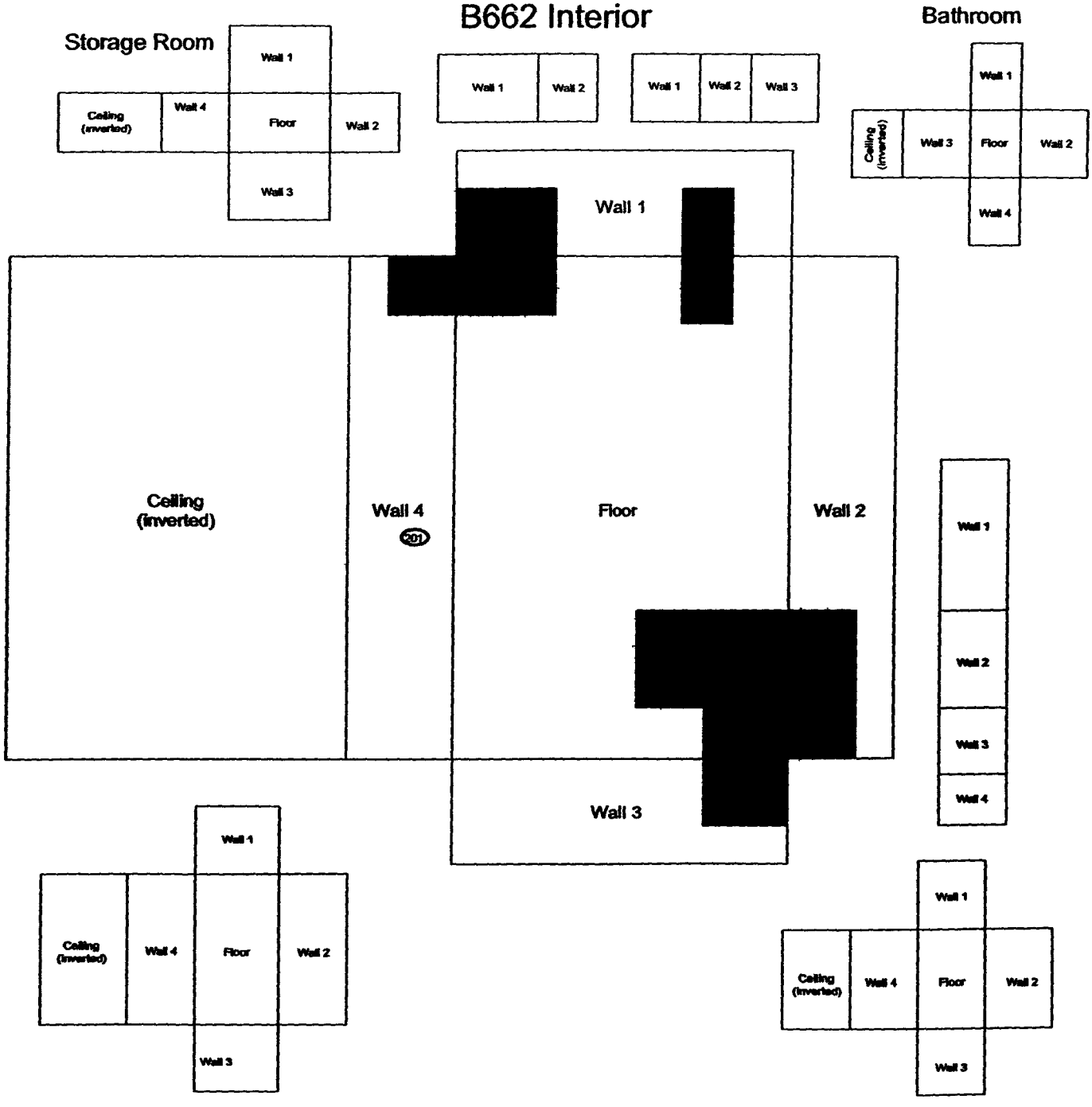
Chemical Data Summaries and Sample Maps

Asbestos Data Summary

Sample Number	Map Survey Point Location	Material Sampled & Location	Analytical Results
Building 662			
662-04022002-315-201	201	Gray window caulking, east wall middle window	None Detected

CHEMICAL SAMPLE MAP

Asbestos Sample Locations



SURVEY MAP LEGEND

- Asbestos Sample Location
- Beryllium Sample Location
- Lead Sample Location
- RCRA/CERCLA Sample Location
- PCB Sample Location
- Open/Inaccessible Area
- Area in Another Survey Unit

N

0 FEET 25

0 METERS 8

1 inch = 18 feet 1 grid sq. = 1 sq. m.

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Prepared for:

DynCorp
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MAP ID: 02-0509/662-IN-ASB

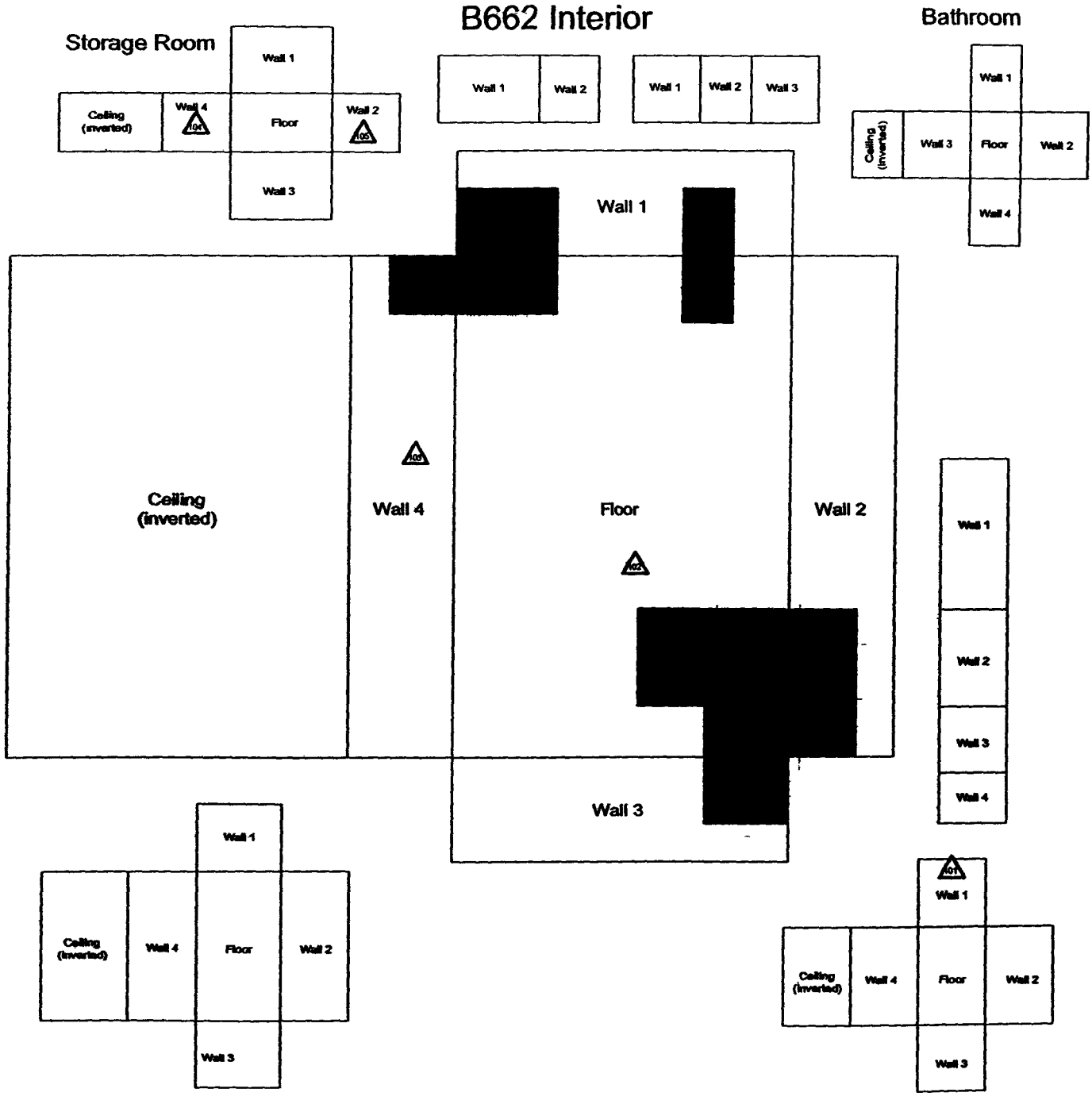
April 16, 2002

Beryllium Data Summary

Sample Number	Map Survey Point Location	Sample Location	Result ($ug/100\ cm^2$)
Building 662			
662-04022002-315-101	101	Top of northwest office wall	< 0 1
662-04022002-315-102	102	Middle of floor on 12" x 12" white floor tiles	< 0 1
662-04022002-315-103	103	Middle window east wall	< 0 1
662-04022002-315-104	104	East window shelf in southeast office	< 0 1
662-04022002-315-105	105	Window ledge between southeast and south central offices	< 0 1

CHEMICAL SAMPLE MAP

Beryllium Sample Locations



SURVEY MAP LEGEND

- Asbestos Sample Location
- Beryllium Sample Location
- Lead Sample Location
- RCRA/CERCLA Sample Location
- PCB Sample Location
- Open/Inaccessible Area
- Area in Another Survey Unit

N

0 FEET 25

0 METERS 8

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Prepared for:

MAP ID 02-0509/662-IN-BE

April 16, 2002

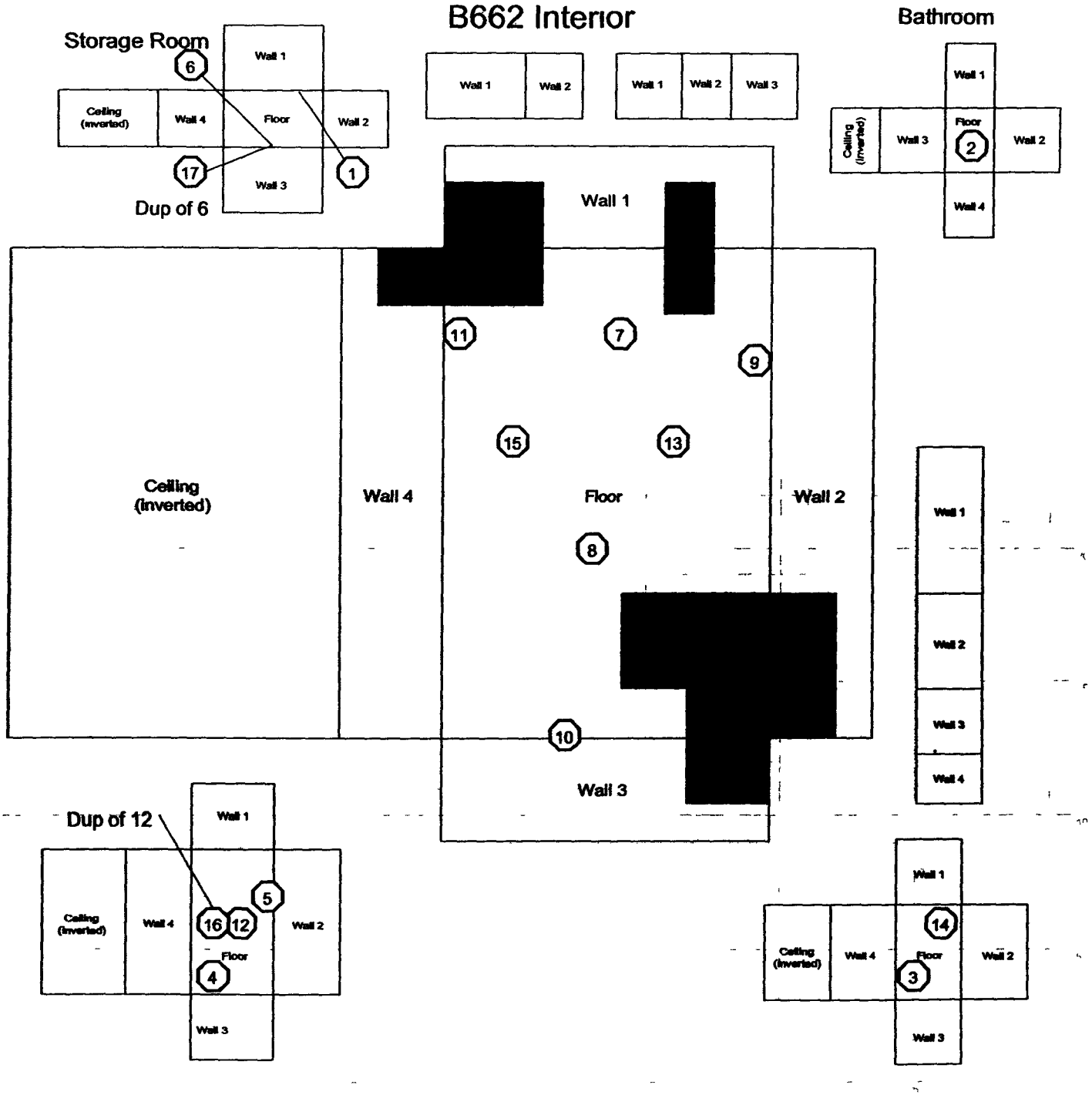
PCB Data Summary

Sample Number	Sample Location	Arcolor	Results (ug/kg)
02S0162-**001** 001 thru 02S0162-**017** 001	Bldg 662,Slab, as indicated on map, Locations #1 – 17	All	Below Regulatory Levels
02S0070-**001** 001 thru 02S0070-**017** 001	Bldg 663, Slab, as indicated on map, l Locations #1 – 17	All	Below Regulatory Levels

Regulatory Level for PCB's: 50ppm

CHEMICAL SAMPLE MAP

Building: 662



SURVEY MAP LEGEND

- Asbestos Sample Location
- Beryllium Sample Location
- Lead Sample Location
- RCRA/CERCLA Sample Location
- PCB Sample Location
- Open/Inaccessible Area
- Area in Another Survey Unit

N

0 FEET 25

0 METERS 8

1 inch = 18 feet 1 grid sq. = 1 sq. m.

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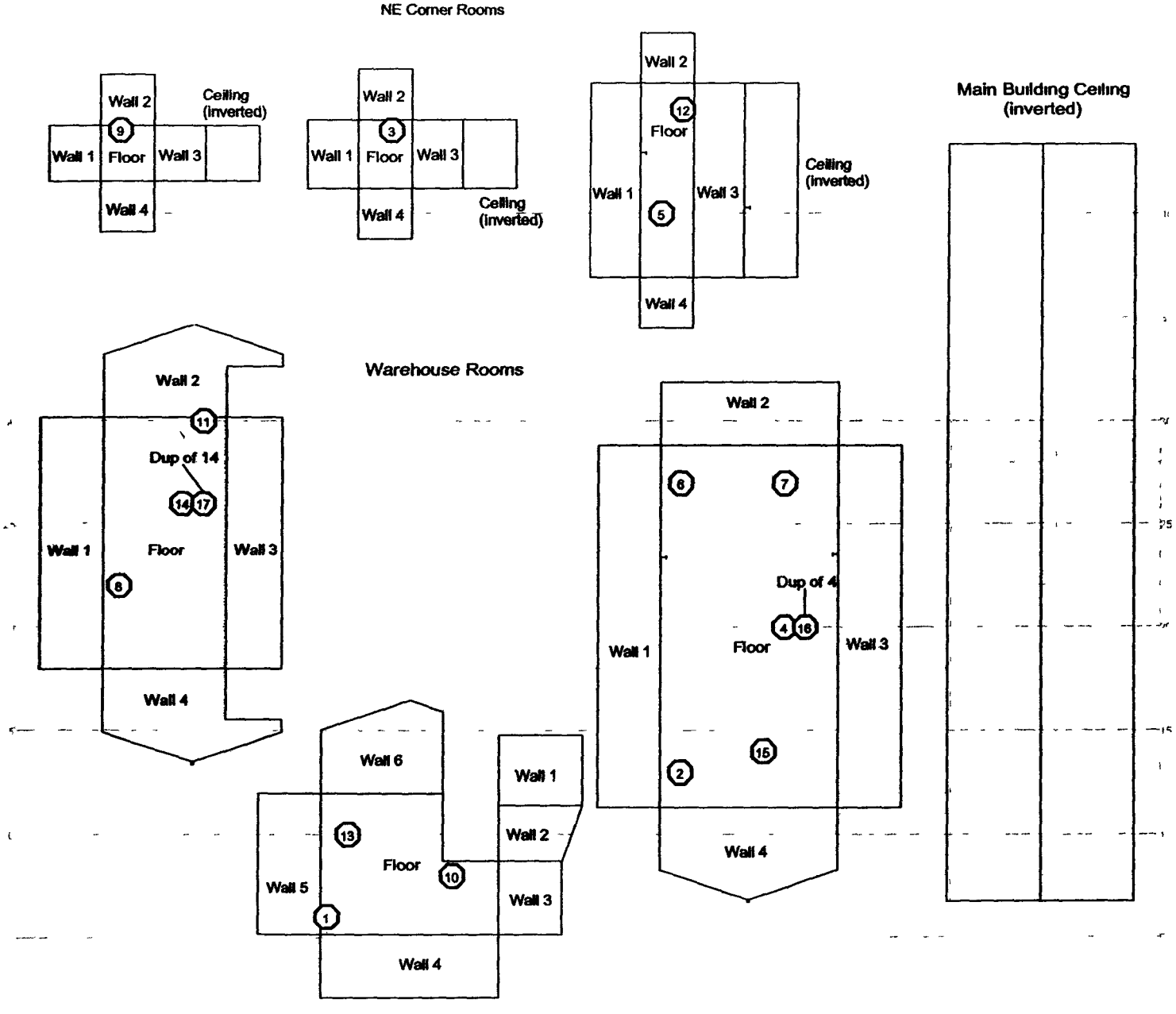
MAP ID: 02-0509/662-PCB

May 29, 2002

CHEMICAL SAMPLE MAP

Building: 663

Building 663
(interior)



SURVEY MAP LEGEND

- Asbestos Sample Location
- Beryllium Sample Location
- Lead Sample Location
- RCRA/CERCLA Sample Location
- PCB Sample Location
- Open/Inaccessible Area
- Area in Another Survey Unit

N

0 FEET 30

0 METERS 10

1 inch = 24 feet 1 grid sq = 1 sq m.

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Prepared for: [redacted]

MAP ID: 02-0509/663-PCB

May 29, 2002

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RCRA/CERCLA Constituents Data Summary

Sample Location / Media	Sample Number. Analysis	Result (*ug/L*)
Bldg 662 Slab, as indicated on map, Location #1 – 17	02S0162-**001** 001 thru 02S0162-**017** 001	RCRA Toxicity Characteristic substances less than regulatory limits, RCRA Listed substances not applicable
Bldg 663 Slab, as indicated on map, Locations #1 – 17	02S0070-**001** 001 thru 02S0070-**017** 001	RCRA Toxicity Characteristic substances less than regulatory limits, RCRA Listed substances not applicable

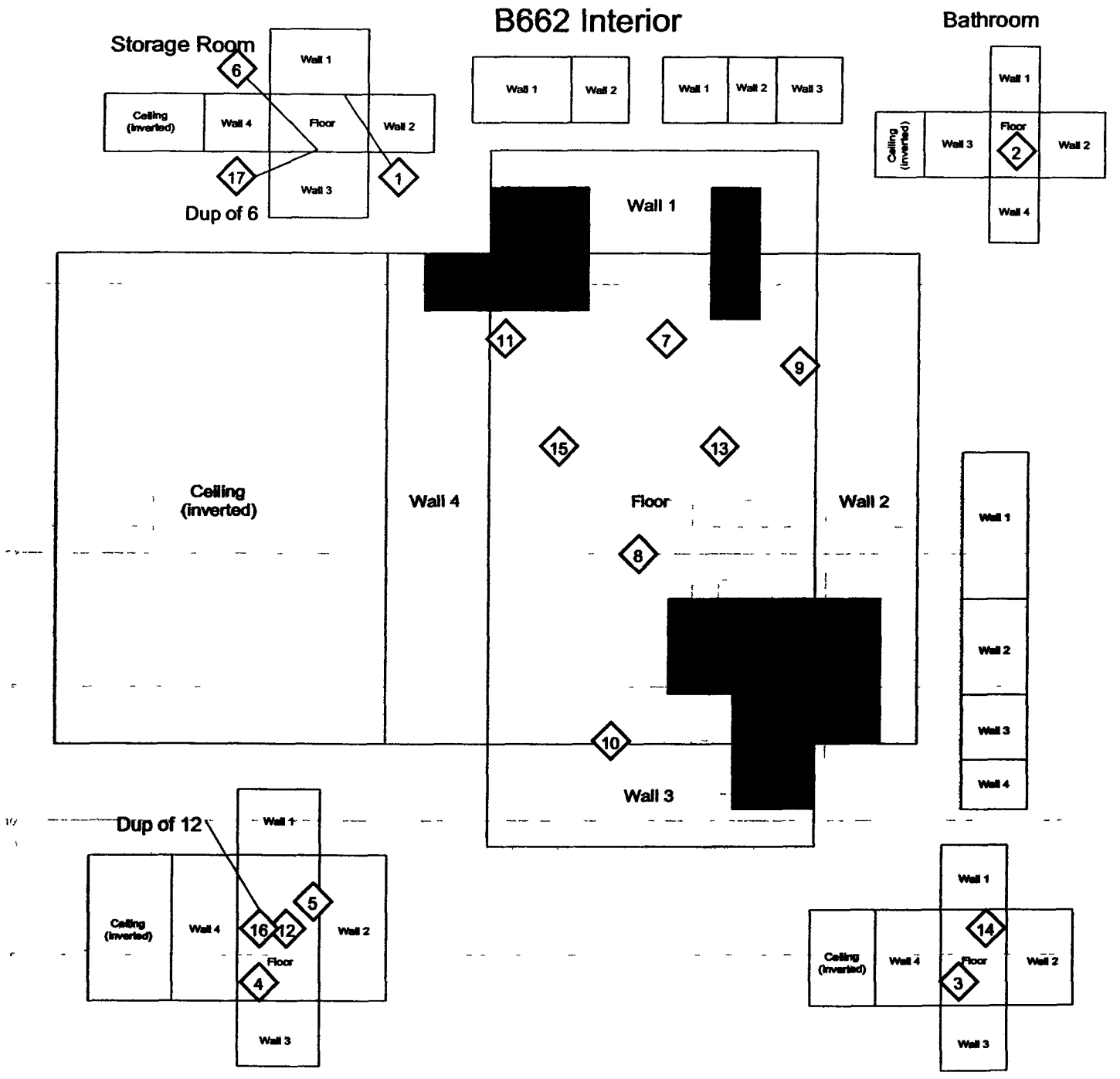
RCRA Toxicity Characteristic Limits

Analyte	Regulatory limit (mg/L)
Arsenic (D004)	5 0
Barium (D005)	100 0
Benzene (D018)	0 5
Cadmium (D006)	1 0
Carbon tetrachloride (D019)	0 5
Chlordane (D020)	0 03
Chlorobenzene (D021)	100 0
Chloroform (D022)	6 0
Chromium (D007)	5 0
o-Cresol (D023)	200 0 (a)
m-Cresol (D024)	200 0 (a)
p-Cresol (D025)	200 0 (a)
Cresol (D026)	200 0 (a)
2,4 –D (D016)	10 0
1,4 Dichlorobenzene (D027)	7 5
1,2 Dichloroethane (D028)	0 5
1,1 Dichlorethylene (D029)	0 7
2,4 Dinitrotoluene (D030)	0 13 (b)
Endrin (D012)	0 02
Heptachlor – and its epoxide (D031)	0 008
Hexachlorobenzene (D032)	0 13 (b)
Hexachlorobutadiene (D033)	0 5
Hexachloroethane (D034)	3 0
Lead (D008)	5 0
Lindane (D013)	0 4
Mercury (D009)	0.2
Methoxychlor (D014)	10 0
MEK (D035)	200 0
Nitrobenzene (D036)	2 0
Pentachlorophenol (D037)	100 0
Pyridine (DD038)	5 0 (b)
Selenium (D010)	1 0
Silver (D011)	5 0
Tetrachloroethylene (D039)	0 7
Toxaphene (D015)	0 5
Trichloroethylene (D040)	0 5
2,4,5-Trichlorophenol (D041)	400 0
2,4,6-Trichlorophenol (D042)	2 0
2,4,5-TP (Silvex) (D017)	1 0
Vinyl Chloride (D043)	0 2

(a) Quantitation Limit is greater than the calculated regulatory level The quantitation limit therefore becomes the regulatory level
(b) If o-, m-, and p-Cresol concentrations cannot be differentiated, the total Cresol (D026) concentration (200mg/l) is used

CHEMICAL SAMPLE MAP

Building: 662



SURVEY MAP LEGEND

- Asbestos Sample Location
- Beryllium Sample Location
- Lead Sample Location
- RCRA/CERCLA Sample Location
- PCB Sample Location
- Open/Inaccessible Area
- Area in Another Survey Unit

N

0 FEET 25

0 METERS 8

1 inch = 18 feet 1 grid sq. = 1 sq. m

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Prepared for: [redacted]

MAP ID: 02-0509/662-RCRA

May 29, 2002

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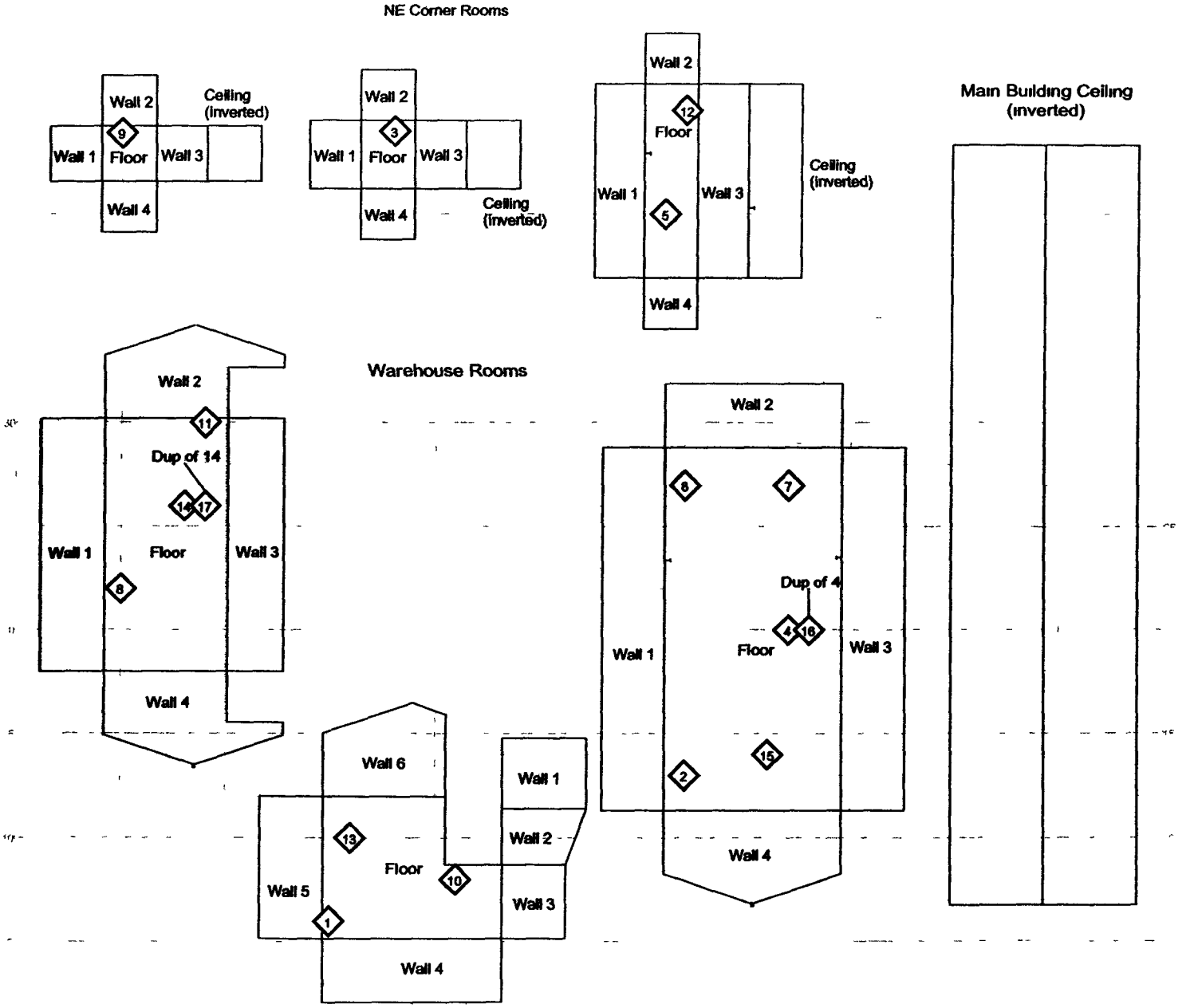
CHEMICAL SAMPLE MAP

Building: 663

Building 663 (interior)



SURVEY MAP LEGEND

- Asbestos Sample Location
- Beryllium Sample Location
- Lead Sample Location
- RCRA/CERCLA Sample Location
- PCB Sample Location
- Open/Inaccessible Area
- Area in Another Survey Unit

N

0 FEET 30

0 METERS 10

1 inch = 24 feet 1 grid sq = 1 sq m.

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Prepared for: [redacted]

MAP ID: 02-0509/663-RCRA

May 29, 2002

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ATTACHMENT D

Data Quality Assessment (DQA) Detail

DATA QUALITY ASSESSMENT (DQA)

VERIFICATION & VALIDATION (V&V) OF RESULTS

V&V of the data confirm that appropriate quality controls are implemented throughout the sampling and analysis process, and that any substandard controls result in qualification or rejection of the data in question The required quality controls and their implementation are summarized in a tabular, checklist format for each category of data – radiological surveys and chemical analyses (specifically asbestos, beryllium, metals, volatile organic compounds, semi-volatile organic compounds and PCBs)

DQA criteria and results are provided in a tabular format for each suite of surveys or chemical analyses performed The radiological survey assessment is provided in Table D-1, asbestos in Table D-2, beryllium in Table D-3, metals in Table D-4, volatile organic compounds in Table D-5, semi-volatile organic compounds in Table D-6 and PCBs in Table D-7 A data completeness summary for all results is given in Table D-8

All relevant Quality records supporting this report are maintained in the RISS Characterization Project File The report will be submitted to the CERCLA Administrative Record for permanent storage within 30 days of approval by the Regulators All radiological data are organized into Survey Packages, which correlate to unique (MARSSIM) Survey Units Chemical data are organized by RIN (Report Identification Number) and are traceable to the sample number and corresponding sample location

No beta/gamma survey designs were implemented for Buildings 662 and 663 based on the conservatism of the transuranic limits used as DCGLs in the unrestricted release decision process Stated differently, based on the well-established suite of actinides historically used at the RFETS, all of these actinides would emit alpha radiation in exceedance of the applicable transuranic DCGLs before other DCGLs would be exceeded for their respective Uranium species – Technical Basis Document 00162, Rev. 0, *Technical Justification for Types of Surveys Performed During Reconnaissance Level Characterization Surveys and Pre-Demolition Surveys in RISS Facilities,* corroborates the use of this approach

Consistent with EPA's G-4 DQO process, the radiological survey design for each survey unit performed per PDS requirements was optimized by checking actual measurement results acquired during pre-demolition surveys against model output with original estimates Use of actual sample/survey (result) variances in the MARSSIM DQO model confirms that an adequate number of surveys were acquired

DQA SUMMARY

In summary, the data presented in this report have been verified and validated relative to the quality requirements and project decisions as stated in the original DQOs All data are useable based on the qualifications stated herein and are considered satisfactory without qualification All media surveyed and sampled per PDS requirements yielded results less than their associated action levels and with acceptable certainties with the following exceptions

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- Biased asbestos sampling of suspected asbestos containing materials were conducted during the Group A RLCR for Building 662, dated June 14, 2000, and as part of the Group 13 RLCR for Building 663, dated March 25, 2002 All bulk samples of suspected friable and non-friable building materials were negative in both buildings for asbestos However, window caulking in building 662 was not sampled for asbestos during either of the above RLCRs As a result, one additional biased asbestos bulk sample was taken during this PDSR to adequately characterize the window caulking in Building 662 The PLM result for this sample was "None Detected" for asbestos Asbestos laboratory sample data and location maps for building 662 interior (one sample) and building 663 interior (3 samples) are contained in Attachment C, "Chemical Data Summaries and Sample Maps" of this PDSR All remaining asbestos sample data and maps for building 662 (interior and exterior) and building 663 (interior and exterior) are maintained in the Group A and Group 13 RLCR RISS Characterization Project Files, respectively All asbestos results for Buildings 662 and 663 were less than associated action levels and are acceptable for unrestricted release

- Beryllium surveys were conducted for Building 662 during the Group A facilities RLCR, dated June 14, 2000, and for Building 663 during the Group 13 facilities RLCR, dated March 25, 2002 However, per PDSP requirements, an insufficient number of smears were taken for Building 662 interior Therefore, five additional biased beryllium samples were collected for building 662 during this PDSR to satisfy the PDSP and the *Beryllium Characterization Procedure, PRO-536-BCPR, Revision 0, September 9, 1999* Beryllium sample data and maps for the five biased samples were collected for building 662 during this PDSR and are found in Attachment C Copies of sample data results and maps for building 663 interior (collected during Group 13 RLCR) are located in the RISS Characterization Project File for this PDSR (B662/B663.) All remaining Beryllium sample data and maps for building 662 (interior) and building 663 (interior) are maintained in the Group A and Group 13 RLCR RISS Characterization Project Files, respectively All beryllium smear sample results from Buildings 662 and 663 were less than 0 1 $\mu g/100cm^2$ and are below associated action levels.

- Survey unit G13-B-004, building 663 exterior, was performed to PDS requirements during the Group 13 RLC and was classified as a MARSSIM Class 3 Survey Unit The survey data, statistical analysis results, survey locations, and radiological scan maps for this survey unit are located in Attachment B-4 of this PDSR

- One building 662 roof sample at location #6 had initial elevated alpha activity of 314 6 $dpm/100cm^2$, which is greater than the $DCGL_w$ (100 $dpm/100cm^2$) One coupon sample was collected and analyzed by Canberra ISOCS gamma spectroscopy and confirmed no DOE Added radioactive material Therefore, the net activity for this sample location was reported as 0 $dpm/100cm^2$, confirming all radiological results meet unrestricted release criteria

- The presence of Butyl Benzyl Phthalate was detected at numerous sample locations on the slab of building 662 This compound is a plastisizer for polyvinyl and cellulose resins Because this compound was detected throughout the slab of building 662, it would be logical to assume the presence of this compound was from the floor tile mastic covering the entire slab To a much lesser degree, there was also the presence of other compounds in building 663 that are suspected of originating in the paint Some of the positive results in the semi-VOC analysis for buildings 662 and 663 are attributed to compounds identified as listed (U

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Code) wastes in 40CFR 261 33 However, historical knowledge of operations in the facilities does not support assignment of the U Codes Being a component of mastic or paint does not meet the definition of a listed hazardous waste as defined in 40CFR 261 33, therefore, the positive results are not considered applicable to RCRA Standards

- Based on the Group A and Group 13 (buildings 662 and 663 respectively) RLCR radiological survey data, the building slaps for 662 and 663 are radiologically contaminated and will be managed and disposed as low level waste

Chain of Custody was intact, documentation was complete, hold times were acceptable (where applicable) and packaging integrity/custody seals were maintained throughout the sampling/analysis process Completion of this PDSR confirmed that PDS contamination release guidelines were met Level 2 Isolation Control postings are displayed in affected areas to ensure PDSR integrity In summary, Buildings 662 and 663 meet the unrestricted release criteria with the confidences stated herein

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Table D-1 V&V of Radiological Surveys For Buildings 662 and 663

V&V CRITERIA, RADIOLGICAL SURVEYS		K-H RSP 16 00 Series MARSSIM (NUREG-1575)		
QUALITY REQUIREMENTS				
	Parameters	**Measure**	**Frequency**	**COMMENTS**
ACCURACY	Initial calibrations	90%<x<110%	≥1	Multi-point calibration through the measurement range encountered in the field, programmatic records
	Daily source checks	80%<x<120%	≥1/day	Performed daily/within range
	Local area background Field	typically < 10 dpm	≥1/day	All local area backgrounds were within expected ranges (i e , no elevated anomalies)
PRECISION	Field duplicate measurements for TSA	≥5% of real survey points	≥10% of reals	N/A
REPRESENTATIVENESS	MARSSIM gridding methodology Survey Units 662-A-001, 662-B-002, 663-A-003 and G13-B-004	statistical and biased	NA	Random w/ statistical confidence
	Survey Maps	NA	NA	Random and biased measurement locations controlled/mapped to ±1m
	Controlling Documents (Characterization Pkg, RSPs)	qualitative	NA	Refer to the Characterization Package (planning document) for field/sampling procedures (located in Project files), thorough documentation of the planning, sampling/analysis process, and data reduction into formats
COMPARABILITY	Units of measure	dpm/100cm^2	NA	Use of standardized engineering units in the reporting of measurement results
COMPLETENESS	Plan vs Actual surveys Usable results vs unusable	>95% >95%	NA	See Table D-8 for details
SENSITIVITY	Detection limits	TSA ≤50 dpm/100cm^2 RA ≤10 dpm/100cm^2	all measures	PDS MDAs ≤ 50% $DCGL_w$

Table D-2 V&V of Chemical Results-Asbestos-For Buildings 662 and 663

V&V CRITERIA, CHEMICAL ANALYSES		DATA PACKAGE		
ASBESTOS	METHOD EPA 600/R-93/116	LAB ---->	Reservoirs Environmental, Inc	
QUALITY REQUIREMENT		RIN ---->	02D1109 (B662) 02D0948 (B663)	
		Measure	Frequency	COMMENTS
ACCURACY	Calibrations Initial/continuing	below detectable amounts	≥1	Semi-quantitative, per (microscopic) visual estimation
PRECISION	Actual Number Of Samples LCSD Lab Duplicates	all below detectable amounts	≥ 1 sample (B662) ≥ 3 samples (B663)	Semi-quantitative, per (microscopic) visual estimation
REPRESENTATIVENESS	COC	Qualitative	NA	Chain-of-Custody intact completed paperwork, containers w/ custody seals
	Hold times/preservation	Qualitative	NA	Not applicable
	Controlling Documents (Plans, Procedures, Maps, etc)	Qualitative	NA	See original Chemical Characterization Package (planning document), for field/sampling procedures, thorough documentation of the planning, sampling/analysis process, and data reduction into formats
COMPARABILITY	Measurement units	% by bulk volume	NA	Use of standardized engineering units in the reporting of measurement results
COMPLETENESS	Plan vs Actual samples Usable results vs unusable	Qualitative	NA	See Table D-8, final number of samples at Certified Inspector's discretion
SENSITIVITY	Detection limits	<1% by volume	all measures	N/A

Table D-3 V&V Of Chemical Results-Beryllium-For Buildings 662 and 663

V&V CRITERIA, CHEMICAL ANALYSES		DATA PACKAGE		
BERYLLIUM	Prep NMAM 7300 METHOD OSHA ID-125G	LAB ---->	Johns Manville, Littleton, Co	
		RIN ---->	02D1108 (B662) 02D0947 (B663)	
QUALITY REQUIREMENTS		Measure	Frequency	COMMENTS
ACCURACY	Calibrations Initial	linear calibration	≥1	No qualifications significant enough to change project decisions, i e classification of a Type 1 Facility confirmed, all results were below associated action levels
	Continuing	80%<%R<120%	≥1	
	LCS/MS	80%<%R<120%	≥1	
	Blanks - lab & field	<MDL	≥1	
	Interference check std (ICP)	NA	NA	
PRECISION	LCSD	80%<%R<120% (RPD<20%)	≥1	
	Field duplicate	all results < RL	≥1	
REPRESENTATIVENESS	COC	Qualitative	NA	
	Hold times/preservation	Qualitative	NA	
	Controlling Documents (Plans, Procedures, maps, etc)	Qualitative	NA	
COMPARABILITY	Measurement units	ug/100cm^2	NA	
COMPLETENESS	Plan vs Actual samples Usable results vs unusable	>95% >95%	NA	
SENSITIVITY	Detection limits	MDL of 0 012 ug/100cm^2	all measures	

Table D-4 V&V of Chemical Results-Metals-For Buildings 662 and 663

V&V CRITERIA, CHEMICAL ANALYSES		DATA PACKAGE		
Metals (total)	METHOD. SW6010/6020	LAB ---->	Severn-Trent, Denver, Co	
		RIN ---->	RIN02S0162 (B662) RIN02S0070 (B663)	
QUALITY REQUIREMENTS		Measure	Frequency	COMMENTS
ACCURACY	Calibrations Initial	linear calibration	≥1/batch	No qualifications significant enough to change project decision, i e , classification of Type 1 areas confirmed, TCLP results well below associated action levels and regulatory limits
	Continuing	80%<%R<120%	≥1/batch	
	LCS	80%<%R<120%	≥1/batch	
	MS	75%<%R<125%	≥1/batch	
	Blanks - lab	mg/kg	≥1/batch	
	Serial dilutions	%D<10%	≥1/batch	
	Interference check std (ICP)	80%<%R<120%	bracket batch	
PRECISION	MSD	RPD<30%	≥1/batch	
	Field duplicate	all results < RL	≥1/batch	
REPRESENTATIVENESS	COC	Qualitative	NA	
	Hold times/preservation	≤180 days	NA	
	Controlling Documents (Plans, Procedures, Maps, etc)	Qualitative	NA	
COMPARABILITY	Measurement units	mg/kg	NA	
COMPLETENESS	Plan vs Actual samples Usable results vs unusable	>95% >95%	NA	
SENSITIVITY	Detection limits	Various	all analytes	

Table D-5 V&V of Chemical Results-Volatile Organic Compounds (VOCs)-For Buildings 662 and 663

V&V CRITERIA, CHEMICAL ANALYSES		DATA PACKAGE		
VOCs	METHOD: SW8260	LAB ---->	Severn-Trent, Denver, Co	
[redacted]		RIN ---->	RIN02S0162 (B662) RIN02S0070 (B663)	
				COMMENTS
QUALITY REQUIREMENTS		Measure	Frequency	No qualifications significant enough to change project decision, i e , classification of Type 1 areas confirmed, all results were below regulatory limits
ACCURACY	Calibrations Initial	± 40%D in Response Factor	≥1/batch	
	Continuing	80%<%R<120%	≥1/batch	
	LCS	80%<%R<120%	≥1/batch	
	MS	75%<%R<125%	≥1 batch	
	Blanks - lab	ug/kg	≥1/batch	
	Internal standards	retention times and area factors	≥1/batch	
	Surrogate	%R (variable)	≥1/batch	
PRECISION	MSD	RPD<30%	≥1/batch	
	Field duplicate	all results < RL	≥1/batch	
REPRESENTATIVENESS	COC	Qualitative	NA	
	Hold times/preservation	≤ 14 days	NA	
	Controlling Documents (Plans, Procedures, maps, etc)	Qualitative	NA	
COMPARABILITY	Measurement units	ug/kg	NA	
COMPLETENESS	Plan vs Actual samples Usable results vs unusable	>95% >95%	NA	
SENSITIVITY	Detection limits	Various	all analytes	

Table D-6 V&V of Chemical Results For Semi-Volatile Organic Compounds (SVOCs)-Buildings 662 and 663

V&V CRITERIA, CHEMICAL ANALYSES		DATA PACKAGE		
SVOCs	METHOD· SW8270	LAB ---->	Severn-Trent, Denver, Co	
		RIN ---->	RIN02S0162 (B662) RIN02S0070 (B663)	
QUALITY REQUIREMENTS		Measure	Frequency	COMMENTS
ACCURACY	Calibrations Initial	± 40%D in Response Factor	≥1/batch	No qualifications significant enough to change project decision, i e , classification of Type 1 areas confirmed, all results were below regulatory limits
	Continuing	80%<%R<120%	≥1/batch	
	LCS	80%<%R<120%	≥1/batch	
	MS	75%<%R<125%	≥1 batch	
	Blanks - Lab	ug/kg	≥1/batch	
	Internal standards	retention times and area factors	≥1/batch	
	Surrogate	%R (variable)	≥1/batch	
PRECISION	MSD	RPD<30%	≥1/batch	
	Field duplicate	all results < RL	≥1/batch	
REPRESENTATIVENESS	COC	Qualitative	NA	
	Hold times/preservation	≤ 14 days	NA	
	Controlling Documents (Plans, Procedures, maps, etc)	Qualitative	NA	
COMPARABILITY	Measurement units	ug/kg	NA	
COMPLETENESS	Plan vs Actual samples Usable results vs unusable	>95% >95%	NA	
SENSITIVITY	Detection limits	Various	all analytes	

Table D-7 V&V of Chemical Results – PCBs – For Buildings 662 and 663

V&V CRITERIA, CHEMICAL ANALYSES		DATA PACKAGE		
PCBs	METHOD· SW8082	LAB ---->	Severn-Trent, Denver, Co	
		RIN ---->	RIN02S0162 (B662) RIN02S0070 (B663)	
				COMMENTS
QUALITY REQUIREMENTS		Measure	Frequency	No qualifications significant enough to change project decision, i e , classification of Type 1 areas confirmed, all PCB concentrations well below associated action levels (< 50 ppm)
ACCURACY	Calibrations Initial	r^2 >0 99	≥1/batch	
	Continuing	80%<%R<120%	≥1/batch	
	LCS	80%<%R<120%	≥1/batch	
	MS	75%<%R<125%	≥1/batch	
	Blanks - Labs	<MDL	≥1/batch	
PRECISION	MSD	75%<%R<125%	≥1/batch	
	Field duplicate	all results < RL	≥1/batch	
REPRESENTATIVENESS	COC	Qualitative	NA	
	Hold times/preservation	≤30 days extract ≤45 days analysis	NA	
	Controlling Documents (Plans, Procedures, maps, etc)	Qualitative	NA	
COMPARABILITY	Measurement units	ug/kg	NA	
COMPLETENESS	Plan vs Actual samples Usable results vs unusable	>95% >95%	NA	
SENSITIVITY	Detection limits	Various	all analytes	

Table D-8 Data Completeness Summary For Buildings 662 and 663

ANALYTE	Building/Area /Unit	Sample Number Planned (Real & QC)	Sample Number Taken (Real & QC)	Project Decisions (Conclusions) & Uncertainty	Comments (RIN, Analytical Method, Qualifications, etc)
Asbestos	B662 (interior)	1 biased (interior)	1 biased (interior)	No ACM present, all results < 1% by volume	40 CFR763 86, 5 CCR 1001-10, EPA 600/R-93/116 RIN02D1109
Asbestos	B663 (interior)	3 biased (interior)	3 biased (interior)	No ACM present, all results < 1% by volume	40 CFR763 86, 5 CCR 1001-10, EPA 600/R-93/116 RIN02D0948 Sampling and analysis performed during of the Group A RLCR Maps and analytical results are included in this PDSR – see Attachment C Chemical Data Summaries and Sample Maps
Beryllium	B662 (interior)	5 biased (interior)	5 biased (interior)	No contamination found at any location	10CFR850, OSHA ID-125G – RIN02D1108 No results above the action level (0 2 ug/100cm^2) or investigative level (0 1 ug/100cm^2)
Beryllium	B663 (interior)	33 biased (interior)	33 biased (interior)	No contamination found at any location	10CFR850, OSHA ID-125G – RIN02D0947 No results above the action level (0 2 ug/100cm^2) or investigative level (0 1 ug/100cm^2) Beryllium Sampling and analysis for this survey area was performed during the Group 13 RLCR. Maps and analytical results are maintained in the RISS Characterization Project File for this PDSR (B662/B663)
Metals (total and TCLP)	B662 (interior)	Dependent on walkdown	15 (solid) 2 duplicates	No metals exceeded the regulatory limits, no metal contamination found	SW846 1311, SW846 6010/6010B – RIN02S0162 All results were below regulatory limits
Metals (total and TCLP)	B663 (interior)	Dependent on walkdown	15 (solid) 2 duplicates	No metals exceeded the regulatory limits, no metal contamination found	SW846 1311, SW846 6010/6010B – RIN02S0070 All results were below regulatory limits

Table D-8 Data Completeness Summary For Buildings 662 and 663

ANALYTE	Building/Area /Unit	Sample Number Planned (Real & QC)	Sample Number Taken (Real & QC)	Project Decisions (Conclusions) & Uncertainty	Comments (RIN, Analytical Method, Qualifications, etc)
VOCs	B662 (interior)	Dependent on walkdown	15 (solid) 2 duplicates	No VOCs exceeded the regulatory limits, no VOC contamination	6 CCR 1007-3, SW846 1311/Method 8260 - RIN02S0162 All results were below regulatory limits
VOCs	B663 (interior)	Dependent on walkdown	15 (solid) 2 duplicates	No VOCs exceeded the regulatory limits, no VOC contamination	6 CCR 1007-3, SW846 1311/Method 8260 - RIN02S0070 All results were below regulatory limits
SVOCs	B662 (interior)	Dependent on walkdown	15 (solid) 2 duplicates	No SVOCs exceeded the regulatory limits, no SVOC contamination	6 CCR 1007-3, SW846 1311/Method 8270/8270C RIN02S0162 All results were below regulatory limits
SVOCs	B663 (interior)	Dependent on walkdown	15 (solid) 2 duplicates	No SVOCs exceeded the regulatory limits, no SVOC contamination	6 CCR 1007-3, SW846 1311/Method 8270/8270C RIN02S0070 All results were below regulatory limits
PCBs	B662 (interior)	Dependent on walkdown	15 (solid) 2 duplicates	No PCB contamination found, all results less than the regulatory limit	40CFR761, SW846/Method 8082 – RIN02S0162 All results less than 50 ppm, no contamination found
PCBs	B663 (interior)	Dependent on walkdown	15 (solid) 2 duplicates	No PCB contamination found, all results less than the regulatory limit	40CFR761, SW846/Method 8082 – RIN02S0070 All results less than 50 ppm, no contamination found
Radiological	Survey Area A Survey Unit 662-A-001 Bldg 662 (interior)	25 á TSA (15 random/10 biased) and 25 α Smears (15 random/10 biased) 2 QC TSA 10% scan	50 real, 2 QC (interior)	No contamination at any location, all values below unrestricted release levels	No results above $DCGL_W$ or $DCGL_{EMC}$ action level (20 dpm/100cm^2 removable, 100 dpm/100cm^2 average, and 300 dpm/100cm^2 maximum)

Table D-8 Data Completeness Summary For Buildings 662 and 663

ANALYTE	Building/Area /Unit	Sample Number Planned (Real & QC)	Sample Number Taken (Real & QC)	Project Decisions (Conclusions) & Uncertainty	Comments (RIN, Analytical Method, Qualifications, etc)
Radiological	Survey Area B Survey Unit 662-B-002 Bldg 662 (exterior)	20 á TSA (15 random/5 biased) and 20 á Smears (15 random/5 biased) 2 QC TSA 5% scan	40 real, 2 QC (interior)	No contamination at any location, all values below unrestricted release levels	No results above $DCGL_W$ or $DCGL_{EMC}$ action level (20 dpm/100cm^2 removable, 100 dpm/100cm^2 average, and 300 dpm/100cm^2 maximum) RIN02D0736 Sample location #6, roof exterior - initial activity > $DCGL_W$ (314 6 dpm/100cm^2) One coupon sample taken and analyzed by gamma spectroscopy confirmed no DOE Added material Net activity for this sample location reported as 0 dpm/100cm^2
Radiological	Survey Area A Survey Unit 663-A-003 Bldg 663 (interior)	25 á TSA (15 random/10 biased) and 25 á Smears (15 random/10 biased) 2 QC TSA 10% scan	50 real, 2 QC (interior)	No contamination at any location, all values below unrestricted release levels	No results above $DCGL_W$ or $DCGL_{EMC}$ action level (20 dpm/100cm^2 removable, 100 dpm/100cm^2 average, and 300 dpm/100cm^2 maximum)
Radiological	Survey Unit G13-B-004 Bldg 663 (exterior)	15 á TSA and 15 á Smears (random) 2 QC TSA 5% scan	30 real, 2 QC (interior)	No contamination at any location, all values below unrestricted release levels	No results above $DCGL_W$ or $DCGL_{EMC}$ action level (20 dpm/100cm^2 removable, 100 dpm/100cm^2 average, and 300 dpm/100cm^2 maximum) The PDS alpha surveys conducted for this survey unit were performed as part of the Group 13 RLCR However, the survey unit data and survey maps are included and reported in this PDSR