



Rocky Flats Environmental Technology Site

PRE-DEMOLITION SURVEY REPORT (PDSR)

Building 445 Closure Project

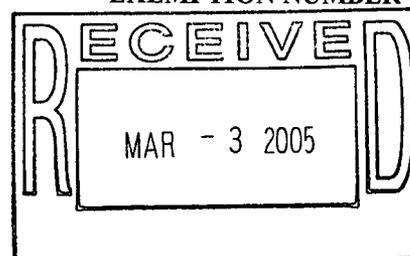
VERSION 0

January 28, 2005

Change Control:

- Rev 1. Revised Survey Unit 445101 Media Sample Results Table - 2/4/05.
- Rev 1. Revised Survey Unit 445101 Radiological Media Sample Map - 2/4/05.

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



ADMIN RECORD

B444-A-000112

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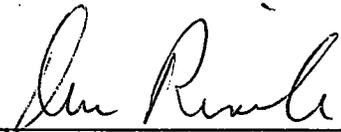
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Building 445 Closure Project

VERSION 0

January 28, 2005

Reviewed by:


Don Risoli, Quality Assurance

Date: 2/2/05

Reviewed by:


D.P. Snyder, RISS ESH&Q Manager

Date: 2/2/05

Approved by:


Mike Swartz,
K-H/D&D Project Manager

Date: 2.1.05

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- A Facility Location Map
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- B-2 445 Confirmatory Survey
- C Beryllium Sample Results Table and Location Maps
- D Data Quality Assessment (DQA) Detail

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
RSA	Removable Surface Activity
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 Building 445. Because this Type 2 facility will be decommissioned, the characterization was performed in accordance with the Pre-Demolition Survey Plan (MAN-127-PDSP) to supplement the Reconnaissance Level Characterization of this Type 2 facility. Building surfaces characterized as part of this PDS included the floors, walls, and ceilings. Environmental media beneath and surrounding the facility was 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 the 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 Report and Reconnaissance Level Characterization Report.

Results indicate that no radiological, beryllium or chemical contamination exists in excess of the PDSP unrestricted release limits. All PCB ballasts, and 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) have been removed and disposed of in compliance with Environmental Protection Agency (EPA) and Colorado Department of Public Health and Environment (CDPHE) regulations. Asbestos abatement was conducted in Building 445 prior to the PDS. Friable and non-friable asbestos containing building materials were removed per CDPHE, Regulation No. 8, Part B, *Emission Standards for Asbestos*. PCBs in paint meet the unrestricted release criteria of the RSOP for Facility Disposition (specific to 40CFR 761.62c).

Based upon this PDSR, Building 445 can be demolished. To ensure the facility remains free of contamination and PDS data remain valid, Level 2 Isolation Controls have been established and the areas posted accordingly.

1 INTRODUCTION

A Pre-Demolition Survey (PDS) was performed to enable compliant disposition and waste management of Building 445. Because this Type 2 facility will be decommissioned, the characterization was performed in accordance with the Pre-Demolition Survey Plan (MAN-127-PDSP) to supplement the Reconnaissance Level Characterization of this Type 2 facility. Building surfaces characterized as a part of this PDS included floors, walls and ceilings. The Building 445 exterior was characterized in accordance with Pre-Demolition Survey Plan (MAN-127-PDSP) requirements as part of the Building 444 Cluster RLCR, completed September 5, 2002. Environmental media beneath and surrounding the facility was 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 is Building 445. The location of this facility is shown in Attachment A, *Facility Location Map*. This facility no longer support the RFETS mission and will be decommissioned to reduce Site infrastructure, risks and/or operating costs.

Before this Type 2 facility can be decommissioned, the Data Quality Objectives (DQOs) for a Pre-Demolition Survey (PDS) must be satisfied; this document presents the PDS results for Building 445. 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 Report and Reconnaissance Level Characterization Report.

1.1 Purpose

The purpose of this report is to communicate and document the results of the Building 445 PDS effort. A PDS is performed prior to 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 Building 445. Environmental media beneath and surrounding the facility is not within the scope of this PDSR and will be addressed using the Soil Disturbance Permit process and in compliance with RFCA.

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

A Facility-specific Historical Site Assessment (HSA) and a Reconnaissance Level Characterization (RLC) was conducted to understand the facility history and related hazards. The HSA consisted of facility walk-downs, interviews, and document review, including review of the Historical Release Report, and were used to design the RLC. The RLC for Building 445 was performed in FY 2002 as part of the Building 444 Cluster RLCR (refer to *Reconnaissance Level Characterization Report for the Building 444 Cluster*, dated September 5, 2002, Revision 0). Based on the RLC results, Building 445 was classified as a Type 2 facility, therefore, PDS characterization was required before decommissioning of the facility. The HSA, RLC and in-process results were used to identify PDS data gaps and needs, and to develop radiological and chemical PDS characterization packages. HSA and RLC documentation are located in the RISS Characterization Project files.

3 RADIOLOGICAL CHARACTERIZATION AND HAZARDS

Building 445 was characterized for radiological hazards per the PDSP. Radiological characterization was performed to define the nature and extent of radioactive materials that may be present in or 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, Radiological Characterization Plans were developed during the planning phases that describe the minimum survey requirements (refer to the RISS Characterization Project files).

Radiological survey package 445101 was developed for the interior of Building 445. The survey package was developed in accordance with Radiological Safety Practices (RSP) 16.01, *Radiological Survey/Sampling Package Design, Preparation, Control, Implementation and Closure*. Survey Unit 445101 is a MARSSIM Class 3 area due to the low potential for radiological contamination in Building 445. 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*. The radiological survey unit package is maintained in the RISS Characterization Project files.

Twenty-two (22) TSA measurements (15 random, 5 biased and 2 QC), twenty (20) RSA measurements (15 random and 5 biased) were performed, eight media samples and eight pre and post TSA/RSAs were taken; and a minimum 10% scan of the interior surfaces were scanned. The PDS data confirmed that this facility does not contain radiological contamination above the surface contamination guidelines provided in the PDSP. Radiological survey data, statistical analysis results, and survey locations are presented in Attachment B-1, *Radiological Data Summary and Survey Maps*. Level 2 Isolation Control postings are displayed on the building to ensure no radioactive materials are inadvertently introduced.

The Building 445 exterior was characterized in accordance with Pre-Demolition Survey Plan (MAN-127-PDSP) requirements as part of the Building 444 Cluster RLCR, completed November 6, 2001. Exterior radiological survey data, statistical analysis results, and survey map locations for the Building 445 exterior survey unit are maintained in the RISS Characterization Project files. Additional random confirmatory surveys of exterior surfaces were performed during the PDS survey, and all results were less than the PDS unrestricted release levels. Refer to Attachment B-2, *445 Confirmatory Survey* for the building exterior confirmatory radiological survey.

4 CHEMICAL CHARACTERIZATION AND HAZARDS

Building 445 was 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 the facility. 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. The contaminants of concern were asbestos, beryllium, and RCRA 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

A survey of building materials suspected of containing asbestos was conducted during in-process stripout of the facility. 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. Prior to the PDS, friable and non-friable asbestos abatement and satisfactory clearance sampling was conducted per CDPHE, Regulation No. 8, Part B, *Emission Standards for Asbestos*. On this basis, no additional asbestos sampling was required or performed as part of this PDS.

4.2 Beryllium (Be)

During the in-process stripout and decontamination phase of the Building 445 project, all areas containing loose beryllium contamination were decontaminated to below the unrestricted release limit of $0.2 \mu\text{g}/100\text{cm}^2$. The use of fixatives was necessary to decontaminate some areas below the unrestricted release limit. Levels up to $0.129 \mu\text{g}/100\text{cm}^2$ were immobilized using fixative. Since Building 445 was on the list of Known Beryllium Areas, both random and biased PDS sampling was required. Once the areas were isolated from adjacent work areas, random and biased beryllium PDS swipes were collected and analyzed.

Random and biased beryllium smear samples were collected in Building 445 in accordance with the PDSP and the *Beryllium Characterization Procedure*, PRO-536-BCPR, Revision 0, September 9, 1999. The table in Attachment C summarizes the "as left" PDS beryllium swipe data for Building 445. All final "as left" beryllium PDS swipe results were less than the action levels of $0.2 \mu\text{g}/100\text{cm}^2$ and investigative levels of $0.1 \mu\text{g}/100\text{cm}^2$. Detailed PDS beryllium laboratory swipe data and location maps are contained in Attachment C, *Beryllium Results Table and Sample Location Maps*.

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

Based on a review of the HSAR, RLCR, interviews, and facility walk-downs, Building 445 functioned as a shipping and receiving area for beryllium and uranium parts. There is no record of RCRA/CERCLA products being used in the facility, and no evidence of RCRA/CERCLA contamination exists, therefore, sampling was not performed as part of this PDSR.

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

4.4 Polychlorinated Biphenyls (PCBs)

Based on the HSAR, RLCR, interviews, and facility walk-downs of Building 445, no PCB-containing equipment was ever used or stored in the buildings, making the potential for PCB contamination resulting from spills highly unlikely. Therefore, PCB sampling was not performed as part of the PDS.

Based on the age of Building 445 (constructed prior to 1980), paint used in the facility may contain PCBs, therefore, painted surfaces will be managed as PCB Bulk Product Waste. The facility may have contained PCB fluorescent light ballasts, however, all leaking PCB ballasts, and those greater than 9 pounds have been removed from the facility and managed appropriately.

5 PHYSICAL HAZARDS

Physical hazards associated with Building 445 are those common to standard industrial environments, and include hazards associated with energized systems, utilities, and trips and falls. Building 445 is attached to Building 444, therefore, care shall be taken in order not disturb Building 444 during demolition if they are demolished separately. There are no other unique hazards associated with the facility. The facility has been relatively well maintained and is in good physical condition, therefore, does 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 the decommissioning of Building 445, 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 project DQOs.

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 decommissioning of Building 445 will generate sanitary PCB Bulk Product Waste suitable for disposal at an RFETS-approved sanitary waste landfill. Estimated waste volumes are presented below. All ballasts and hazardous waste items have been removed and managed pursuant to Site PCB and waste management procedures.

WASTE TYPES AND VOLUME ESTIMATES							
Facility	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)
445	9,500	0	21,200	4,000	0	0	4,000 - insulation

8 FACILITY CLASSIFICATION AND CONCLUSIONS

Based on the analysis of radiological, chemical and physical hazards, Building 445 is ready for demolition. Building 445 does not possess radiological, beryllium or chemical contamination in excess of the PDSP unrestricted release limits. All PCB ballasts and 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) have been removed and disposed of in compliance with Environmental Protection Agency (EPA) and Colorado Department of Public Health and Environment (CDPHE) regulations. Asbestos abatement was conducted in Building 445 prior to the PDS. Friable and non-friable asbestos containing building materials were removed per CDPHE, Regulation No. 8, Part B, *Emission Standards for Asbestos*.

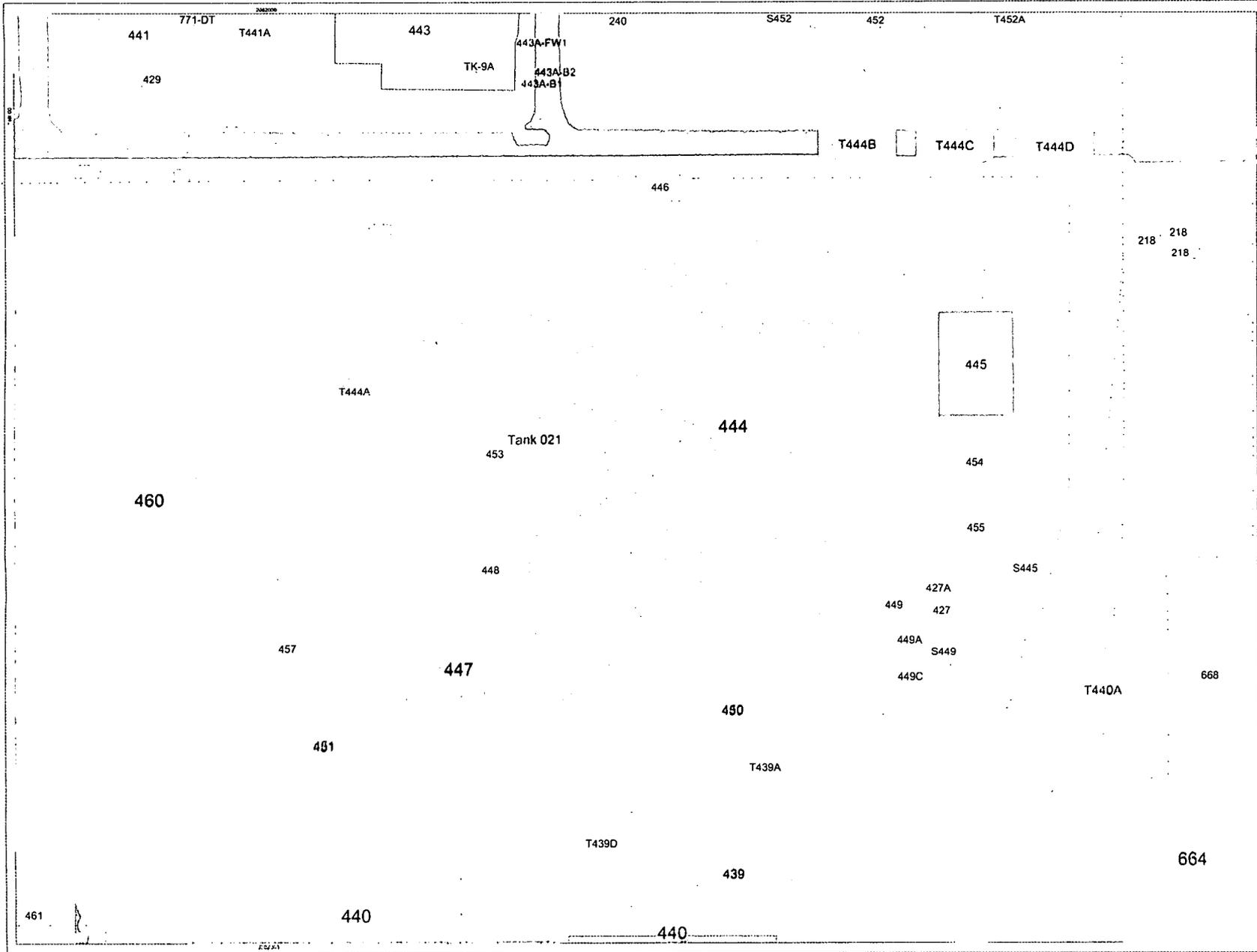
The PDS for Building 445 was performed in accordance with the DDCP and PDSP, all PDSP DQOs were met, and all data satisfied the PDSP DQA criteria. Environmental media beneath and surrounding the facility will be addressed at a future date using the Soil Disturbance Permit process and in compliance with RFCA. To ensure Building 445 remains free of contamination and PDS data remain valid, Level 2 Isolation Controls have been established and the facility posted accordingly.

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. 4, July 15, 2002.
- MAN-127-PDSP, *Pre-Demolition Survey Plan for D&D Facilities*, Rev. 1, July 15, 2002.
- 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.*
- RFETS, *RFCA RSOP for Recycling Concrete*, September 28, 1999
- Reconnaissance Level Characterization Report for the Building 444 Cluster*, dated September 5, 2002, Revision 0

ATTACHMENT A
Facility Location Map

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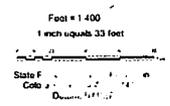


Rocky Flats Environmental Technology Site

Building 445 Location Map

Map Features

- D&D Facility
- Paved Roads
- Dirt Roads
- Buildings Remaining
- 445
- Railroad Removed
- Railroad Remaining
- Fence Removed
- Fence Remaining
- Streams



U.S. Department of Energy
Rocky Flats Environmental Technology Site

Prepared by
CH2MHILL

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ATTACHMENT B-1

Radiological Data Summary and Survey Maps

Survey Area: VIA 1

Survey Unit: 445101

Building: 445

Description: Building 445 VIA # 1, all surfaces, Rooms 700, 700A, 700B, 700C, and 700D

Rocky Flats Environmental Technology Site Final Radiological Survey Summary Results

Total Surface Activity Measurements

Nbr Random Measurements Required: 15
Nbr Random Measurements Performed: 15

Nbr Biased Measurements Required: 5
Nbr Biased Measurements Performed: 5

Nbr QC Required: 2
Nbr QC Performed: 2

Beta

Maximum:	2,252.7 dpm/100cm ²
Minimum:	-1,369.1 dpm/100cm ²
Mean:	719.8 dpm/100cm ²
Standard Deviation:	1,088.7
QC Maximum:	1,638.6 dpm/100cm ²
QC Minimum:	1,434.1 dpm/100cm ²
QC Mean:	1,536.3 dpm/100cm ²
Uranium DCGL _w :	5,000.0 dpm/100cm ²
Uranium DCGL _{EMC} :	15,000.0 dpm/100cm ²

Removable Surface Activity Measurements

Nbr Random Measurements Required: 15
Nbr Random Measurements Performed: 15

Nbr Biased Measurements Required: 5
Nbr Biased Measurements Performed: 5

Beta

Maximum:	107.8 dpm/100cm ²
Minimum:	-112.2 dpm/100cm ²
Mean:	-12.8 dpm/100cm ²
Standard Deviation:	60.5
Uranium DCGL _w :	1,000.0

Media Sample Results

Nbr Random Required: 0
Nbr Random Collected: 3

Nbr Biased Required: 5
Nbr Biased Collected: 5

Uranium

Maximum:	102 dpm/100cm ²
Minimum:	0 dpm/100cm ²
Mean:	62 dpm/100cm ²
Standard Deviation:	44
Uranium DCGL _w :	5,000 dpm/100cm ²
Uranium DCGL _{EMC} :	15,000 dpm/100cm ²

Transuranic

Maximum:	NA dpm/100cm ²
Minimum:	NA dpm/100cm ²
Mean:	NA dpm/100cm ²
Standard Deviation:	NA
Transuranic DCGL _w :	100 dpm/100cm ²
Transuranic DCGL _{EMC} :	300 dpm/100cm ²

Conclusion - A comparison of the random, biased and QC measurement results against the PDSP Table 7-1 Surface Contamination Guideline limits was conducted; the comparison demonstrates that this survey unit passes the criterion specified in the PDSP.

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Survey Area: VIA 1

Survey Unit: 445101

Building: 445

Description: Building 445 VIA # 1, all surfaces, Rooms 700, 700A, 700B, 700C, and 700D

Instrument Data Sheet

Inst/RCT Number	RCT ID	Analysis Date	Instr Model	Instru S/N	Probe Type	Calibration Due Dt	Instru Efficiency		A-Priori MDA (dpm/100cm ²)		Survey Type
							Alpha	Beta	Alpha	Beta	
3	510646	09/18/03	Electra	3105	DP-6	01/15/04	NA	0.220	NA	745.0	T
4	511390	09/18/03	BC-4	772	NA	06/24/04	NA	0.140	NA	258.0	R
5	510646	09/23/03	Electra	1255	DP-6	11/22/03	NA	0.220	NA	745.0	T
6	511390	09/23/03	BC-4	772	NA	06/24/04	NA	0.140	NA	258.0	R
7	512590	09/23/03	Electra	3115	DP-6	02/27/04	NA	0.220	NA	745.0	T
8	700831	01/11/05	Electra	3370	DP-6	02/16/05	NA	0.220	NA	745.0	T/S
9	711447	01/11/05	Electra	3254	DP-6	07/04/05	NA	0.220	NA	745.0	Q/S
10	712467	01/11/05	BC-4	843	NA	10/04/05	NA	0.140	NA	258.0	R
11	712467	01/11/05	Electra	661	DP-8	03/08/05	NA	0.160	NA	745.0	S

Survey Types: T = Total Surface Activity, Q = TSA QC, S = Scan, R = Removable Surface Activity, I = Investigation

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Survey Area: VIA 1**Survey Unit:** 445101**Building:** 445**Description:** Building 445 VIA # 1, all surfaces, Rooms 700, 700A, 700B, 700C, and 700D**Random Removable Surface Activity Data Sheet**

Random Measurement Location	Pre Media Sample Data			Post Media Sample Data		
	Inst / RCT Nbr	Net Alpha (dpm/100cm ²)	Net Beta (dpm/100cm ²)	Inst / RCT Nbr	Net Alpha (dpm/100cm ²)	Net Beta (dpm/100cm ²)
445101PRP-N006	10	N/A	-62.2		N/A	N/A
445101PRP-N007	10	N/A	-19.3		N/A	N/A
445101PRP-N008	10	N/A	-55.0		N/A	N/A
445101PRP-N009	10	N/A	-33.6		N/A	N/A
445101PRP-N010	10	N/A	80.7		N/A	N/A
445101PRP-N011	10	N/A	-76.4		N/A	N/A
445101PRP-N012	10	N/A	23.6		N/A	N/A
445101PRP-N013	10	N/A	-69.3		N/A	N/A
445101PRP-N014	10	N/A	30.7		N/A	N/A
445101PRP-N015	10	N/A	-19.3		N/A	N/A
445101PRP-N016	10	N/A	-69.3		N/A	N/A
445101PRP-N017	10	N/A	-12.2		N/A	N/A
445101PRP-N018	10	N/A	30.7	10	N/A	9.3
445101PRP-N019	10	N/A	80.7	10	N/A	-19.3
445101PRP-N020	10	N/A	-112.2	10	N/A	-83.6

Survey Area: VIA 1

Survey Unit: 445101

Building: 445

Description: Building 445 VIA # 1, all surfaces, Rooms 700, 700A, 700B, 700C, and 700D

Biased Removable Surface Activity Data Sheet

Biased Measurement Location	Pre Media Sample Data			Post Media Sample Data		
	Inst / RCT Nbr	Net Alpha (dpm/100cm ²)	Net Beta (dpm/100cm ²)	Inst / RCT Nbr	Net Alpha (dpm/100cm ²)	Net Beta (dpm/100cm ²)
445101PBP-N001	4	N/A	-77.1	4	N/A	15.7
445101PBP-N002	4	N/A	72.9	4	N/A	72.9
445101PBP-N003	6	N/A	29.3	6	N/A	107.8
445101PBP-N004	6	N/A	-63.6	6	N/A	107.8
445101PBP-N005	6	N/A	65.0	6	N/A	-42.2

Comments: Media samples were taken at survey locations 1-5, 18, 19, & 20.

Survey Area: VIA 1**Survey Unit:** 445101**Building:** 445**Description:** Building 445 VIA # 1, all surfaces, Rooms 700, 700A, 700B, 700C, and 700D**Random/QC Total Surface Activity Data Sheet**

Random Measurement Location	Pre Media Sample Data			Post Media Sample Data		
	Inst / RCT Nbr	Net Alpha (dpm/100cm ²)	Net Beta (dpm/100cm ²)	Inst / RCT Nbr	Net Alpha (dpm/100cm ²)	Net Beta (dpm/100cm ²)
445101PRP-N006	8	N/A	-421.8		N/A	N/A
445101PRP-N007	8	N/A	1,541.8		N/A	N/A
445101PRP-N008	8	N/A	1,282.7		N/A	N/A
445101PRP-N009	8	N/A	1,323.6		N/A	N/A
445101PRP-N010	8	N/A	-80.9		N/A	N/A
445101PRP-N011	8	N/A	1,600.9		N/A	N/A
445101QRP-N011	9	N/A	1,434.1		N/A	N/A
445101PRP-N012	8	N/A	1,860.0		N/A	N/A
445101PRP-N013	8	N/A	-17.3		N/A	N/A
445101PRP-N014	8	N/A	-17.3		N/A	N/A
445101PRP-N015	8	N/A	-635.5		N/A	N/A
445101PRP-N016	8	N/A	-140.0		N/A	N/A
445101PRP-N017	8	N/A	1,941.8		N/A	N/A
445101PRP-N018	8	N/A	864.5	8	N/A	524.2
445101QRP-N018	9	N/A	1,638.6		N/A	N/A
445101PRP-N019	8	N/A	1,691.8	8	N/A	810.6
445101PRP-N020	8	N/A	687.3	8	N/A	1,056.1

Survey Area: VIA 1

Survey Unit: 445101

Building: 445

Description: Building 445 VIA # 1, all surfaces, Rooms 700, 700A, 700B, 700C, and 700D

Biased Total Surface Activity Data Sheet

Biased Measurement Location	Pre Media Sample Data			Post Media Sample Data		
	Inst / RCT Nbr	Net Alpha (dpm/100cm ²)	Net Beta (dpm/100cm ²)	Inst / RCT Nbr	Net Alpha (dpm/100cm ²)	Net Beta (dpm/100cm ²)
445101PBP-N001	3	N/A	-1,369.1	3	N/A	-1,083.6
445101PBP-N002	3	N/A	-1,073.6	3	N/A	-1,224.5
445101PBP-N003	5	N/A	1,930.9	5	N/A	2,252.7
445101PBP-N004	5	N/A	1,730.9	5	N/A	1,434.5
445101PBP-N005	7	N/A	1,694.5	7	N/A	2,102.7

Comments: Media samples were taken at survey locations 1-5, 18, 19, & 20.

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**Survey Unit 445101
Media Sample Results Table**

Rev 1.

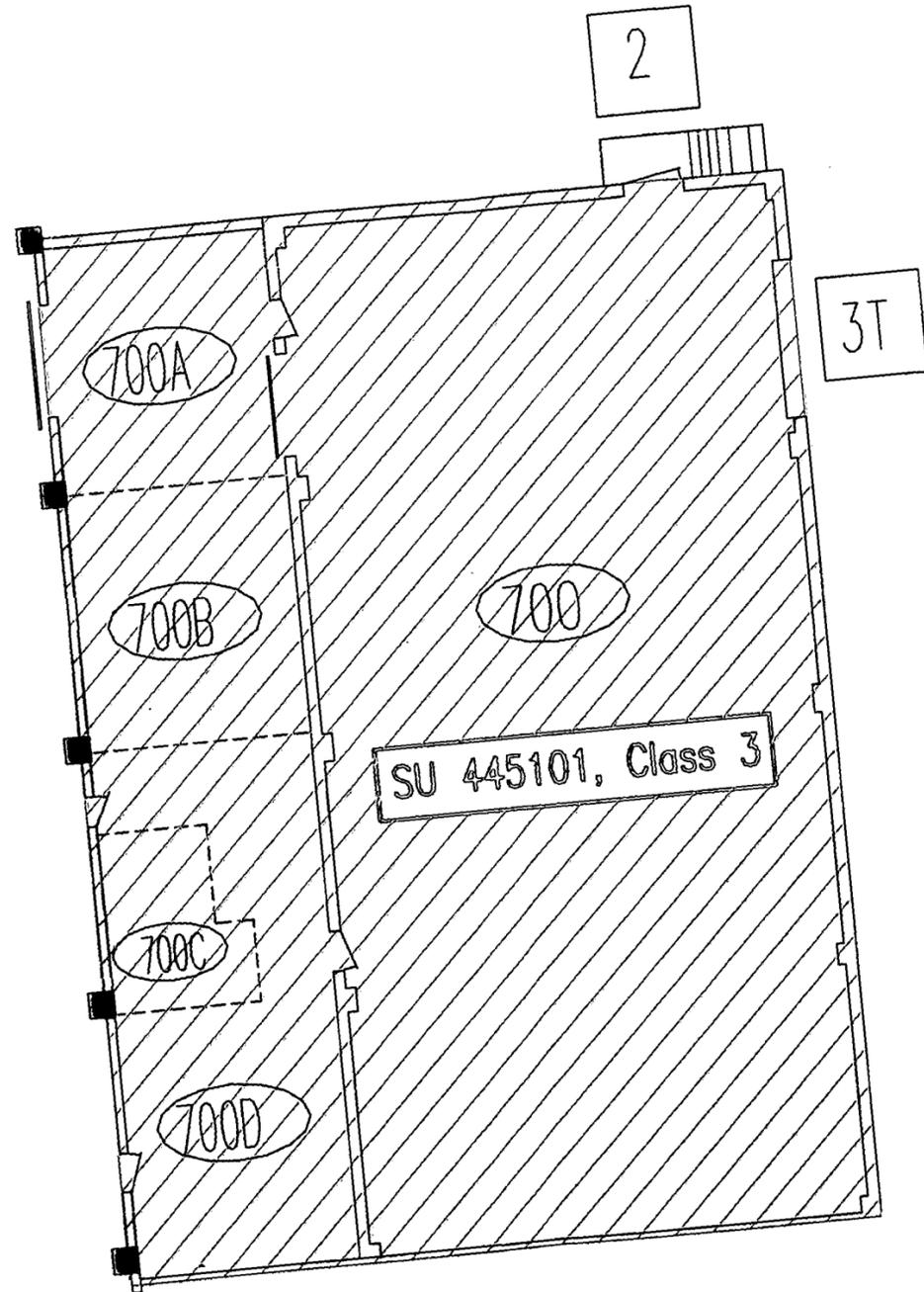
Map Loc	BLDG	VIA	Room	Sample Location Description	Media Type	Random or Biased	Survey Unit Package #	Sample RIN#	Uranium Sample Result (dpm/100cm2)	
1	445	1	700	Floor	Paint Chips	Biased	445101	03S0349-051-001	102.0	
2	445	1	700	Floor	Paint Chips	Biased	445101	03S0349-051-001	102.0	
3	445	1	700	Floor	Paint Chips	Biased	445101	03S0349-051-001	102.0	
4	445	1	700A	Floor	Paint Chips	Biased	445101	03S0349-051-001	102.0	
5	445	1	700D	Wall	Paint Chips	Biased	445101	03S0349-052-001	37.0	
18	445	1	700D	Wall	Paint Chips	Random	445101	NA	25.0	
19	445	1	700B	Wall	Paint Chips	Random	445101	NA	0.0	
20	445	1	700B	Wall	Paint Chips	Random	445101	NA	28.8	
									MIN	0.0
									MAX	102.0
									MEAN	62.4
									SD	43.7
									DCGLW =	5000.0

Note ** If N/A is listed for 'Sample RIN#' then the samples were counted on the BC-4 instead of Gamma Spectroscopy.

Rev. 1

During the in-process stripout process, media sampling took place in the 444 complex - the MARSSIM classification of Building 445 had not been determined yet. Therefore, five samples were collected on painted surfaces during in-process characterization. Once PDS started, the building was classified as a Class 3 area - therefore no paint samples were required per the PDSP. However, the RCTs were accustomed to collecting samples from any painted surface in the B444 complex, therefore three more samples were collected during PDS at painted TSA/RSA locations. Although not required, the results were available and therefore reported.

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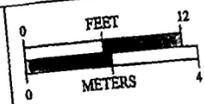


PRE-DEMOLITION SURVEY MAP

BLDG: 445 Survey Area: 445101
 Survey Area/Unit Description: VIA-1 Radiological Key Map

SURVEY POINT LEGEND

- ⊕ Radiological RSA & TSA Location
- ⊕ Radiological RSA, TSA & Sample Location
- ⚠ Beryllium Sample Location
- Ⓛ RCRA/CERCLA Sample Location
- Wall Removed
- Radiological Scan Area
- Open/Inaccessible Area
- Area in Another Survey Unit



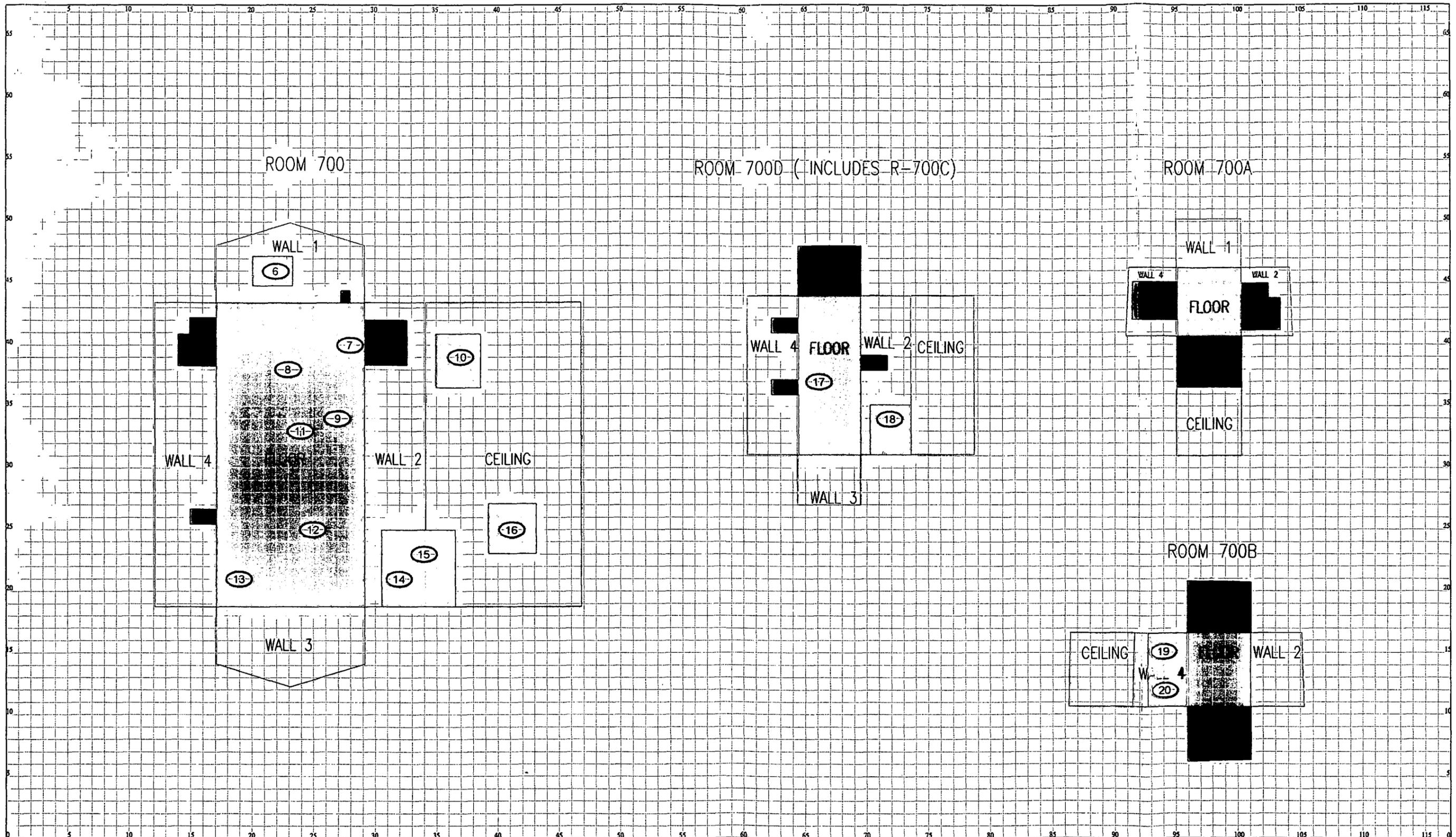
1 inch = 12 feet
 1 grid sq. = 1 sq. m.

U.S. Department of Energy
 Rocky Flats Environmental Technology Site

Prepared by: Kaiser Hill Environmental Services, Inc.

Prepared for: KAISER HILL

File Name: PDS 445101 KEY MAP.DWG Sheet: 1 of 1 Rev: 0

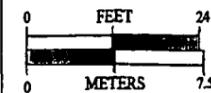


PRE-DEMOLITION SURVEY MAP

BLDG: 445 Survey Area: VIA-1 Survey Unit: 445101 Classification: 3
 Survey Area/Unit Description: Building 445 VIA #1, All Surfaces, Rooms 700, 700A, 700B, 700C, & 700D
 Floor Area: 438 sq.m Total Area: 1,080 sq.m Grid Spacing for Survey Area: N/A

SURVEY POINT LEGEND

- ① Radiological RSA & TSA Location
- ② Radiological RSA, TSA & Sample Location
- ⚠ Beryllium Sample Location
- Ⓜ RCRA/CERCLA Sample Location
- Ⓧ PCB Sample Location
- Radiological Scan Area
- Open/Inaccessible Area
- Area in Another Survey Unit



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

U.S. Department of Energy
 Rocky Flats Environmental Technology Site

Prepared by:



Prepared for:

KAISER HILL

File Name: PDS 445101_SHT 01.DWG

Sheet: 1 of 1

Rev: 0

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PRE-DEMOLITION MEDIA SAMPLING MAP

BLDG: 445

Survey Area: VIA-1

Survey Unit: 445101

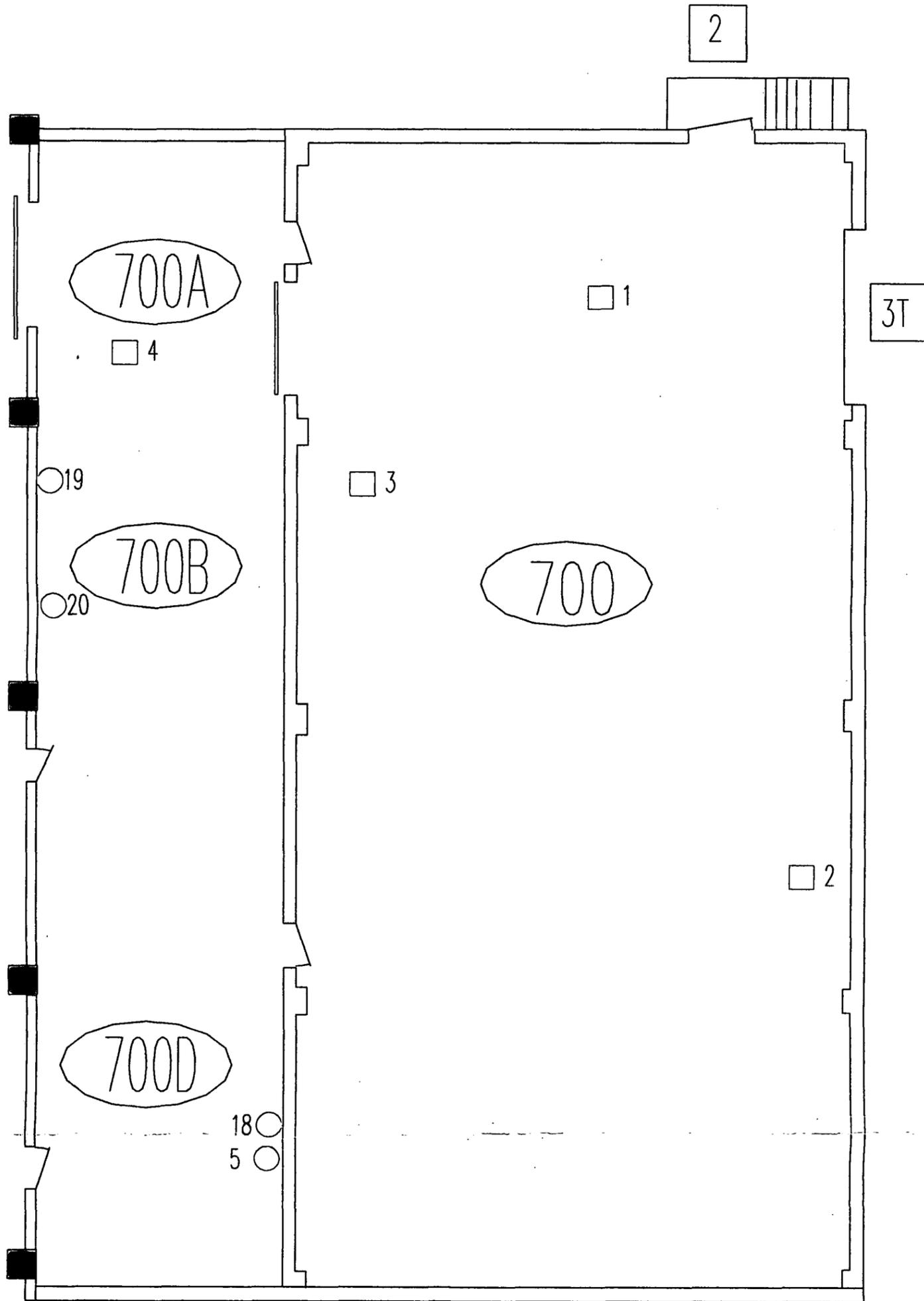
Classification: 3

Survey Area/Unit Description: Building 445 VIA #1, All Surfaces, Rooms 700, 700A, 700B, 700C, & 700D

Floor or Ceiling Area: 438 sq.m

Total Area: 1,080

Scale: 1 inch = 8 feet



SURVEY POINT LEGEND

- # Wall Sample Location
- # Floor Sample Location
- ⊕ Ceiling Sample Location



U.S. Department of Energy
Rocky Flats Environmental Technology Site

Prepared by:



Prepared for:

KAISER HILL

File Name: MEDIA445101 D.DWG

Sheet: 1 of 1

Rev: 1

ATTACHMENT B-2

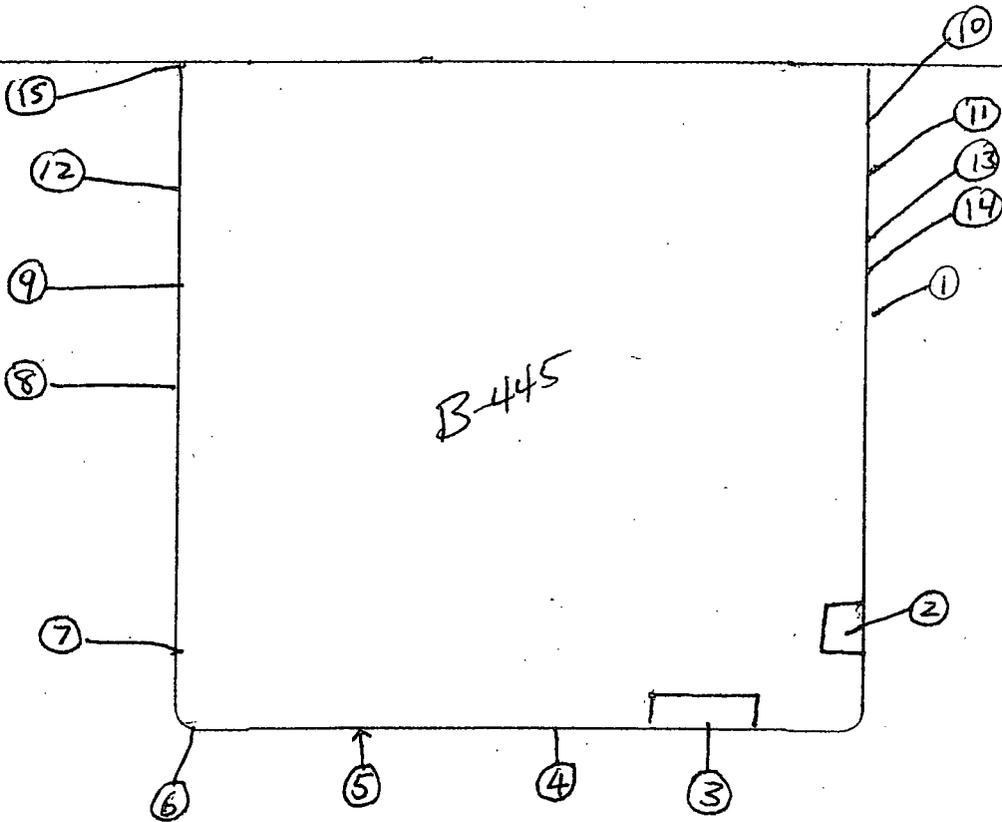
Building 445 Confirmatory Survey

ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE

Drawing Showing Survey Points

B-444

B-445



COPY

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ATTACHMENT C

Beryllium Results Table and Sample Location Maps

Table C-1
VIA 1 Beryllium Data Summary

Sample Map Location #	VIA	Room	RIN	Sample Number	Sample Location	Result (ug/100 cm ²)
1	B445 - 1	700A	05D0305	444-12152004-01-201	B445 VIA1 - PDS CHARACTERIZATION POINT, FLOOR, RANDOM	<0.1
2	B445 - 1	700	05D0299	444-12132004-01-201	B445 VIA1 - PDS CHARACTERIZATION POINT, FLOOR - RANDOM	<0.1
3	B445 - 1	700	05D0299	444-12132004-01-202	B445 VIA1 - PDS CHARACTERIZATION POINT, FLOOR - RANDOM	<0.1
4	B445 - 1	700	05D0299	444-12132004-01-203	B445 VIA1 - PDS CHARACTERIZATION POINT, FLOOR - RANDOM	<0.1
5	B445 - 1	700A	05D0305	444-12152004-01-202	B445 VIA1 - PDS CHARACTERIZATION POINT, FLOOR, RANDOM	<0.1
6	B445 - 1	700A	05D0305	444-12152004-01-203	B445 VIA1 - PDS CHARACTERIZATION POINT, FLOOR, RANDOM	<0.1
7	B445 - 1	700	05D0299	444-12132004-01-204	B445 VIA1 - PDS CHARACTERIZATION POINT, FLOOR - RANDOM	<0.1
8	B445 - 1	700A	05D0305	444-12152004-01-204	B445 VIA1 - PDS CHARACTERIZATION POINT, FLOOR, RANDOM	<0.1
9	B445 - 1	700A	05D0305	444-12152004-01-205	B445 VIA1 - PDS CHARACTERIZATION POINT, FLOOR, RANDOM	<0.1
10	B445 - 1	700A	05D0305	444-12152004-01-206	B445 VIA1 - PDS CHARACTERIZATION POINT, FLOOR, RANDOM	<0.1
11	B445 - 1	700A	05D0305	444-12152004-01-207	B445 VIA1 - PDS CHARACTERIZATION POINT, FLOOR, RANDOM	<0.1
12	B445 - 1	700A	05D0305	444-12152004-01-208	B445 VIA1 - PDS CHARACTERIZATION POINT, FLOOR, RANDOM	<0.1
13	B445 - 1	700	05D0299	444-12132004-01-205	B445 VIA1 - PDS CHARACTERIZATION POINT, FLOOR - RANDOM	<0.1
14	B445 - 1	700	05D0299	444-12132004-01-206	B445 VIA1 - PDS CHARACTERIZATION POINT, FLOOR - RANDOM	<0.1
15	B445 - 1	700A	05D0305	444-12152004-01-209	B445 VIA1 - PDS CHARACTERIZATION POINT, FLOOR, RANDOM	<0.1
16	B445 - 1	700A	05D0305	444-12152004-01-210	B445 VIA1 - PDS CHARACTERIZATION POINT, FLOOR, RANDOM	<0.1
17	B445 - 1	700	05D0299	444-12132004-01-207	B445 VIA1 - PDS CHARACTERIZATION POINT, FLOOR - RANDOM	<0.1
18	B445 - 1	700	05D0299	444-12132004-01-208	B445 VIA1 - PDS CHARACTERIZATION POINT, FLOOR - RANDOM	<0.1
19	B445 - 1	700A	05D0305	444-12152004-01-211	B445 VIA1 - PDS CHARACTERIZATION POINT, FLOOR, RANDOM	<0.1
20	B445 - 1	700	05D0299	444-12132004-01-209	B445 VIA1 - PDS CHARACTERIZATION POINT, FLOOR - RANDOM	<0.1
21	B445 - 1	700A	05D0305	444-12152004-01-212	B445 VIA1 - PDS CHARACTERIZATION POINT, FLOOR, RANDOM	<0.1
22	B445 - 1	700	05D0299	444-12132004-01-210	B445 VIA1 - PDS CHARACTERIZATION POINT, FLOOR - RANDOM	<0.1
23	B445 - 1	700	05D0299	444-12132004-01-211	B445 VIA1 - PDS CHARACTERIZATION POINT, FLOOR - RANDOM	<0.1
24	B445 - 1	700	05D0299	444-12132004-01-212	B445 VIA1 - PDS CHARACTERIZATION POINT, FLOOR - RANDOM	<0.1
25	B445 - 1	700	05D0299	444-12132004-01-213	B445 VIA1 - PDS CHARACTERIZATION POINT, FLOOR - RANDOM	<0.1
26	B445 - 1	700	05D0299	444-12132004-01-214	B445 VIA1 - PDS CHARACTERIZATION POINT, FLOOR - RANDOM	<0.1
27	B445 - 1	700A	05D0305	444-12152004-01-213	B445 VIA1 - PDS CHARACTERIZATION POINT, FLOOR, RANDOM	<0.1

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Table C-1
VIA 1 Beryllium Data Summary

Sample Map Location #	VIA	Room	RIN	Sample Number	Sample Location	Result (ug/100 cm ²)
28	B445 - 1	700	05D0299	444-12132004-01-215	B445 VIA1 - PDS CHARACTERIZATION POINT, FLOOR - RANDOM	<0.1
29	B445 - 1	700	05D0299	444-12132004-01-216	B445 VIA1 - PDS CHARACTERIZATION POINT; FLOOR - RANDOM	<0.1
30	B445 - 1	700	05D0299	444-12132004-01-217	B445 VIA1 - PDS CHARACTERIZATION POINT, FLOOR - RANDOM	<0.1
31	B445 - 1	700A	05D0305	444-12152004-01-214	B445 VIA1 - BIAS SAMPLE - FLOOR, NW SECTION OF ROOM	<0.1
32	B445 - 1	700A	05D0305	444-12152004-01-215	B445 VIA1 - BIAS SAMPLE - FLOOR, NE SECTION OF ROOM	<0.1
33	B445 - 1	700A	05D0305	444-12152004-01-216	B445 VIA1 - BIAS SAMPLE - FLOOR, W SECTION OF ROOM	<0.1
34	B445 - 1	700A	05D0305	444-12152004-01-217	B445 VIA1 - BIAS SAMPLE - FLOOR, SW SECTION OF ROOM	<0.1
35	B445 - 1	700A	05D0305	444-12152004-01-218	B445 VIA1 - BIAS SAMPLE - FLOOR, SE SECTION OF ROOM	<0.1
36	B445 - 1	700A	05D0305	444-12152004-01-219	B445 VIA1 - BIAS SAMLE - PIPE PASSTHRU	<0.1
37	B445 - 1	700A	05D0305	444-12152004-01-220	B445 VIA1 - BIAS SAMLE - WINDOW LEDGE	<0.1
38	B445 - 1	700A	05D0305	444-12152004-01-221	B445 VIA1 - BIAS SAMLE - PIPE PASSTHRU	<0.1
39	B445 - 1	700A	05D0305	444-12152004-01-222	B445 VIA1 - BIAS SAMLE - DOOR AND DOOR FRAME	<0.1
40	B445 - 1	700A	05D0305	444-12152004-01-223	B445 VIA1 - BIAS SAMLE - OVERHEAD BEAM	<0.1
41	B445 - 1	700A	05D0305	444-12152004-01-224	B445 VIA1 - BIAS SAMLE - WALL PASSTHRU	<0.1
42	B445 - 1	700A	05D0305	444-12152004-01-225	B445 VIA1 - BIAS SAMLE - OVERHEAD BEAM	<0.1
43	B445 - 1	700A	05D0305	444-12152004-01-226	B445 VIA1 - BIAS SAMLE - PIPE PASSTHRU	<0.1
44	B445 - 1	700A	05D0305	444-12152004-01-227	B445 VIA1 - BIAS SAMLE - CEILING	<0.1
45	B445 - 1	700A	05D0305	444-12152004-01-228	B445 VIA1 - BIAS SAMLE - OVERHEAD BEAM	<0.1
46	B445 - 1	700A	05D0305	444-12152004-01-229	B445 VIA1 - BIAS SAMLE - OVERHEAD BEAM	<0.1
47	B445 - 1	700A	05D0305	444-12152004-01-230	B445 VIA1 - BIAS SAMLE - PIPE PASSTHRU	<0.1
48	B445 - 1	700A	05D0305	444-12152004-01-231	B445 VIA1 - BIAS SAMLE - COMPOSIT OF WALL AND CEILING	<0.1
49	B445 - 1	700A	05D0305	444-12152004-01-232	B445 VIA1 - BIAS SAMLE - OVERHEAD BEAM	<0.1
50	B445 - 1	700	05D0299	444-12132004-01-218	B445 VIA1 - BIAS SAMPLE - CONCRETE LEDGE, E WALL, S SECTION	<0.1
51	B445 - 1	700	05D0299	444-12132004-01-219	B445 VIA1 - BIAS SAMPLE - FLOOR, SE SECTION OF ROOM	<0.1
52	B445 - 1	700	05D0299	444-12132004-01-220	B445 VIA1 - BIAS SAMPLE - FLOOR, SE SECTION OF ROOM	<0.1
53	B445 - 1	700	05D0299	444-12132004-01-225	B445 VIA1 - BIAS SAMPLE - CONCRETE LEDGE, S WALL, E SECTION	<0.1
54	B445 - 1	700	05D0299	444-12132004-01-228	B445 VIA1 - BIAS SAMPLE - FLOOR, BY DOCK DOOR OPENING	<0.1
55	B445 - 1	700	05D0299	444-12132004-01-229	B445 VIA1 - BIAS SAMPLE - FLOOR, SW SECTION OF ROOM	<0.1
56	B445 - 1	700	05D0299	444-12132004-01-230	B445 VIA1 - BIAS SAMPLE - S EQUIPMENT PAD ALONG W WALL	<0.1
57	B445 - 1	700	05Z0668	444-12312004-213-057	B445 BIAS OVERHEAD SAMPLE W CRANE RAIL NEAR A5, VIA 1	<0.1

Table C-1
VIA 1 Beryllium Data Summary

Sample Map Location #	VIA	Room	RIN	Sample Number	Sample Location	Result (ug/100 cm2)
58	B445 - 1	700	05Z0668	444-12312004-213-058	B445 BIAS OVERHEAD SAMPLE:W METAL LEDGE@A5, VIA 1	<0.1
59	B445 - 1	700	05Z0668	444-12312004-213-059	B445 BIAS OVERHEAD SAMPLE:CRANE,W END@ RAIL AREA, VIA 1	<0.1
60	B445 - 1	700	05Z0668	444-12312004-213-060	B445 BIAS OVERHEAD SAMPLE:W CRANE RAIL NEAR A7, VIA 1	<0.1
61	B445 - 1	700	05Z0668	444-12312004-213-061	B445 BIAS OVERHEAD SAMPLE:W METAL LEDGE@A7, VIA 1	<0.1
62	B445 - 1	700	05Z0668	444-12312004-213-062	B445 BIAS OVERHEAD SAMPLE:TOP S VENT NEAR CEILING, VIA 1	<0.1
63	B445 - 1	700	05Z0668	444-12312004-213-063	B445 BIAS OVERHEAD SAMPLE:S WALL BEAM,2ND FROM TOP, VIA 1	<0.1
64	B445 - 1	700	05Z0668	444-12312004-213-064	B445 BIAS OVERHEAD SAMPLE:SE LIGHT FIXTURE, VIA 1	<0.1
65	B445 - 1	700	05Z0668	444-12312004-213-065	B445 BIAS OVERHEAD SAMPLE:E CRANERAIL,SE END OF RM, VIA 1	0.129
65	B445 - 1	700	05Z0787	444-01142005-213-065	B445 VIA1 POST FIXITIVE,PT 65-CRANE RAIL,SE END (REWIPE OF #65)	<0.1
66	B445 - 1	700	05Z0668	444-12312004-213-066	B445 BIAS OVERHEAD SAMPLE:CRANE, MIDDLE/TOP, VIA 1	<0.1
67	B445 - 1	700	05Z0668	444-12312004-213-067	B445 BIAS OVERHEAD SAMPLE:A5 CROSSBEAM,MIDDLE/TOP, VIA 1	<0.1
68	B445 - 1	700	05Z0668	444-12312004-213-068	B445 BIAS OVERHEAD SAMPLE:A5 CRANERAIL/BEAM:NE END, VIA 1	<0.1
71	B445 - 1	700	05Z0787	444-01142005-213-071	B445 VIA1 POST FIXITIVE,FLOOR@NW SLIDING DOOR	<0.1
72	B445 - 1	700	05Z0787	444-01142005-213-072	B445 VIA1 POST FIXITIVE,STEP OFF PAD TENT FLOOR	<0.1
73	B445 - 1	700	05Z0787	444-01142005-213-073	B445 VIA1 POST FIXITIVE,STEP OFF PAD TENT ROOF	<0.1
74	B445 - 1	700	05Z0787	444-01142005-213-074	B445 VIA1 POST FIXITIVE,FLOOR NEAR W ROLLUP DOOR	<0.1
75	B445 - 1	700	05Z0787	444-01142005-213-075	B445 VIA1 POST FIXITIVE,FLOOR@SW END@OLD BE CONTAM	<0.1
76	B445 - 1	700	05Z0787	444-01142005-213-076	B445 VIA1 POST FIXITIVE,FLOOR@SE END OF ROOM	<0.1
77	B445 - 1	700	05Z0787	444-01142005-213-077	B445 VIA1 POST FIXITIVE,FLOOR@SE END OF ROOM	<0.1
78	B445 - 1	700	05Z0787	444-01142005-213-078	B445 VIA1 POST FIXITIVE,FLOOR@SE END OF ROOM	<0.1
79	B445 - 1	700	05Z0787	444-01142005-213-079	B445 VIA1 POST FIXITIVE,FLOOR@CENTER/S END OF	<0.1
80	B445 - 1	700	05Z0787	444-01142005-213-080	B445 VIA1 POST FIXITIVE,FLOOR@CENTER/N END OF RM	<0.1
81	B445 - 1	700	05Z0787	444-01142005-213-081	B445 VIA1 POST FIXITIVE,FLOOR@W SIDE@CEMENT PADS	<0.1
82	B445 - 1	700	05Z0787	444-01142005-213-082	B445 VIA1 POST FIXITIVE,LOWER BEAM,N WALL	<0.1
83	B445 - 1	700	05Z0787	444-01142005-213-083	B445 VIA1 POST FIXITIVE,LOWER BEAM,W WALL	<0.1
84	B445 - 1	700	05Z0787	444-01142005-213-084	B445 VIA1 POST FIXITIVE,LOWER BEAM,S WALL	<0.1
85	B445 - 1	700	05Z0787	444-01142005-213-085	B445 VIA1 POST FIXITIVE,A6 CROSS BEAM, CENTER	<0.1

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Table C-1
VIA 1 Beryllium Data Summary

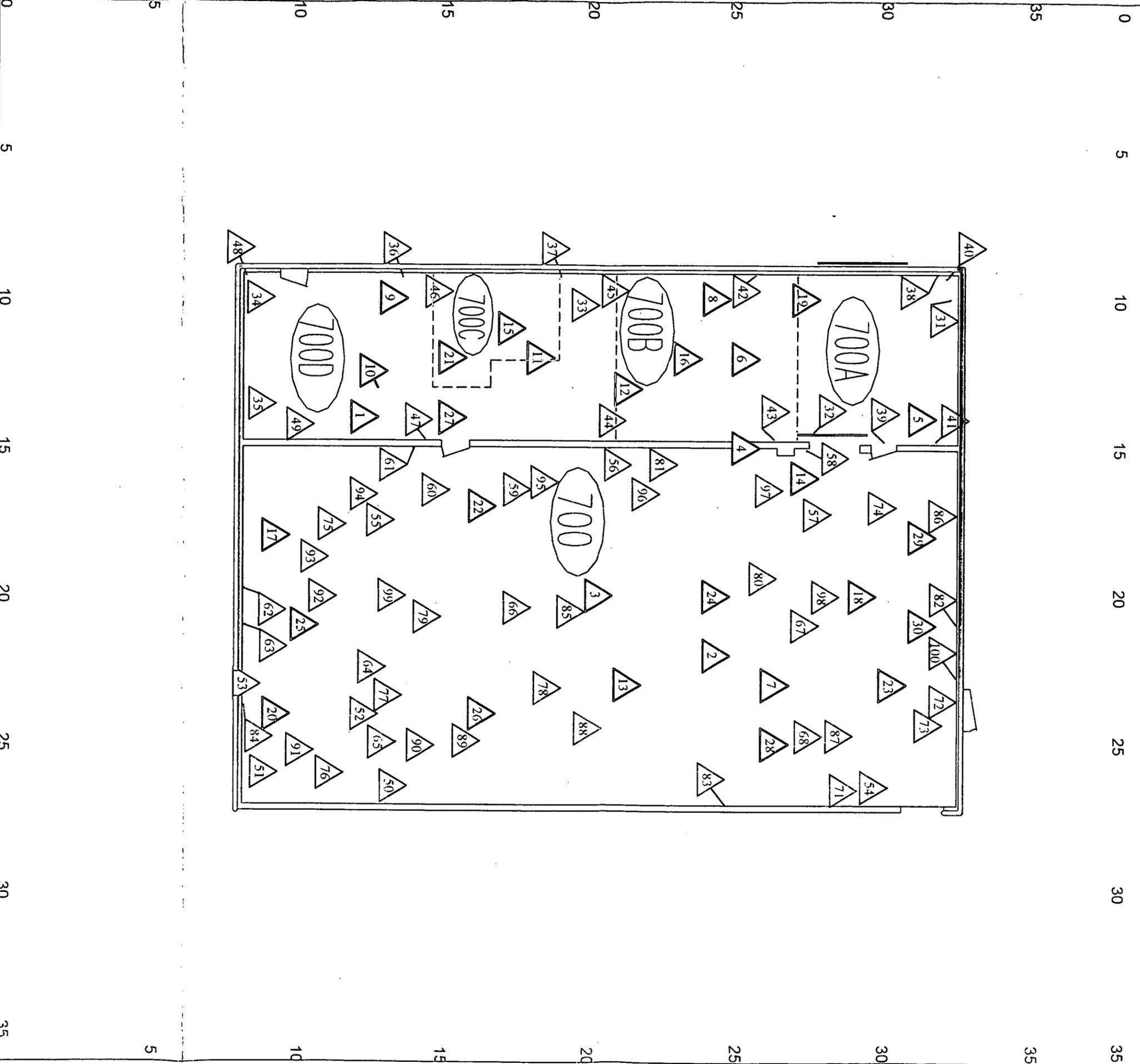
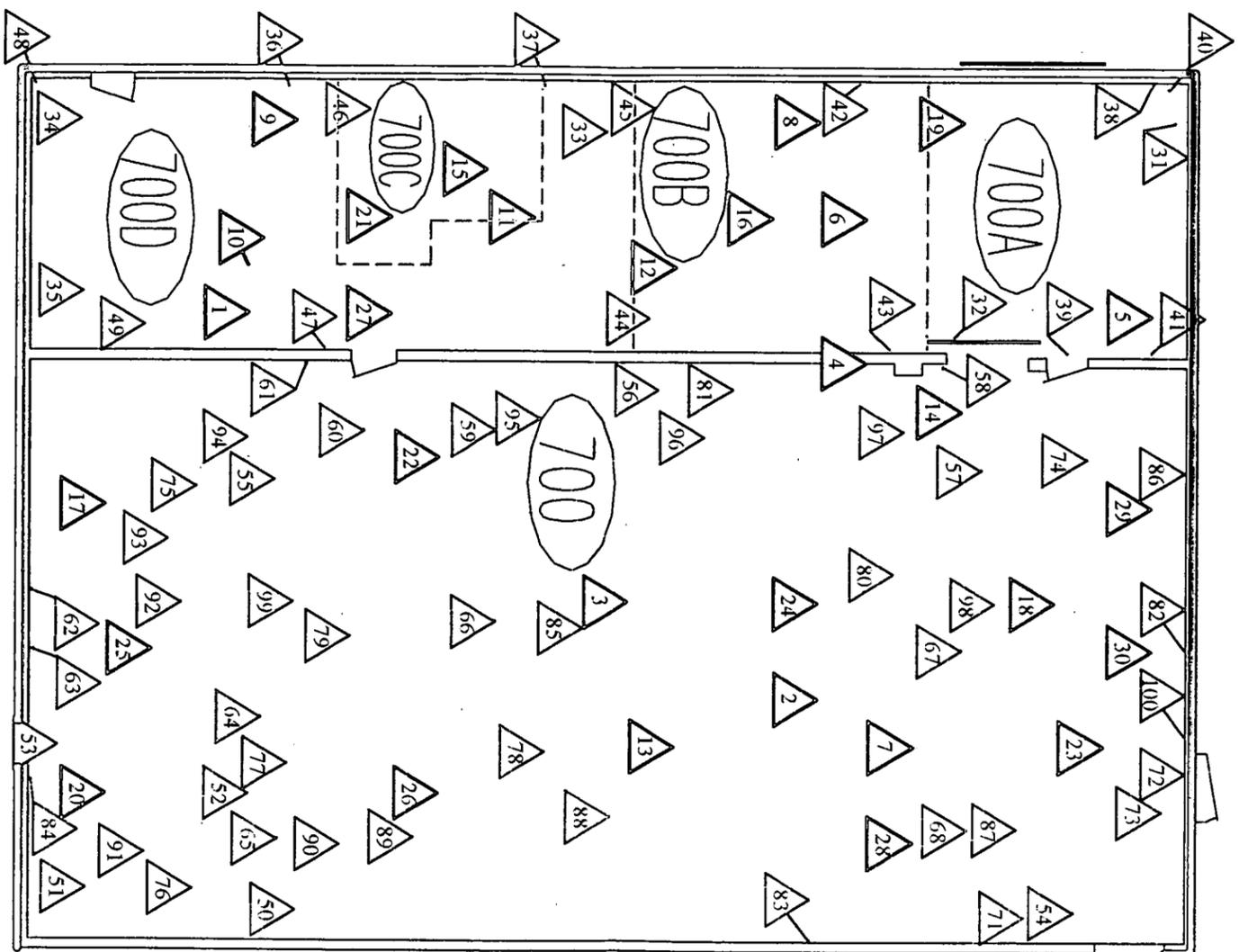
Sample Map Location #	VIA	Room	RIN	Sample Number	Sample Location	Result (ug/100 cm2)
86	B445 - 1	700	05Z0787	444-01142005-213-086	B445 VIA1 POST FIXITIVE,A4 MIDDLE CROSS BEAM@N WALL	<0.1
87	B445 - 1	700	05Z0787	444-01142005-213-087	B445 VIA1 POST FIXITIVE,A5/E CRANE RAIL	<0.1
88	B445 - 1	700	05Z0787	444-01142005-213-088	B445 VIA1 POST FIXITIVE,A6/E CRANE RAIL	<0.1
89	B445 - 1	700	05Z0787	444-01142005-213-089	B445 VIA1 POST FIXITIVE,A7/W RAIL,N OF PT 65	<0.1
90	B445 - 1	700	05Z0787	444-01142005-213-090	B445 VIA1 POST FIXITIVE,N OF PT 65 ON CRANE RAIL	<0.1
91	B445 - 1	700	05Z0787	444-01142005-213-091	B445 VIA1 POST FIXITIVE,S OF PT 65 ON CRANE RAIL	<0.1
92	B445 - 1	700	05Z0787	444-01142005-213-092	B445 VIA1 POST FIXITIVE,S BEAM NEAR S WALL	<0.1
93	B445 - 1	700	05Z0787	444-01142005-213-093	B445 VIA1 POST FIXITIVE,S TOP BEAM NEAR S WALL	<0.1
94	B445 - 1	700	05Z0787	444-01142005-213-094	B445 VIA1 POST FIXITIVE,W CRANE RAIL@ A7	<0.1
95	B445 - 1	700	05Z0787	444-01142005-213-095	B445 VIA1 POST FIXITIVE,W CRANE RAIL S OF A6	<0.1
96	B445 - 1	700	05Z0787	444-01142005-213-096	B445 VIA1 POST FIXITIVE,W CRANE RAIL S OF A5	<0.1
97	B445 - 1	700	05Z0787	444-01142005-213-097	B445 VIA1 POST FIXITIVE,W CRANE RAIL N OF A5	<0.1
98	B445 - 1	700	05Z0787	444-01142005-213-098	B445 VIA1 POST FIXITIVE, TOP ROOF DUCT NEAR A5 BEAM	<0.1
99	B445 - 1	700	05Z0787	444-01142005-213-099	B445 VIA1 POST FIXITIVE, TOP ROOF DUCT NEAR A7 BEAM	<0.1
100	B445 - 1	700	05Z0787	444-01142005-213-100	B445 VIA1 POST FIXITIVE, TOP BEAM, N END OF ROOM-A4	<0.1

Footnotes:

- (1) Shaded rows are beryllium results prior to the application of fixative. The unshaded rows are the final "as left" condition sample results. Fixative was applied over all elevated locations as well as extending to the boundaries of clean sample locations surrounding the elevated locations. No further investigation sampling is required. All initial sample locations above 0.1 ug/100cm2 had fixative applied and were then re-sampled. Also, additional biased post-fixative samples were collected in the same general area of the initial elevated sample locations.
- (2) Gaps in the sample numbering sequence are acceptable. Some sample numbers were never used. Some sample numbers were elevated, then decontaminated, and then resampled using the same initial sample number or another sample number.

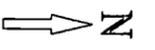
PDS BERYLLIUM SAMPLE MAP

BLDG: B445 Survey Area: VIA-1 Survey Unit: N/A Classification: N/A
 Survey Area/Unit Description: VIA-1
 Floor Area: 452 sq.m Total Area: N/A Grid Spacing for Survey Area: N/A



SURVEY POINT LEGEND

- Radiological RSA & TSA Location
- Radiological RSA, TSA & Sample Location
- Beryllium Sample Location
- RCRA/CERCLA Sample Location
- Wall Removed



3 inch = 32 feet
 1 grid sq. = 1 sq. m.

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Prepared by: Prepared for: **KAISER HILL**

File Name: B445 VIA-1 Be.DWG Sheet 1 of 1 Rev: 3

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 beryllium).

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 and beryllium in Table D-2. A data completeness summary for all results is given in Table D-3.

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.

Media samples were taken and analyzed by ISOCS Canberra gamma spectroscopy. Uranium and/or other naturally occurring isotope activity were evaluated against, and were less than the Uranium DCGL_w (5,000 dpm/100cm²) unrestricted release limits. Media results were converted to dpm/100cm² using media conversion tables, evaluated against the uranium DCGL limits, and are the values reported in Attachment B. Survey designs were implemented for Building 445 based on the uranium limits (DCGLs) in the unrestricted release decision process. Survey results were evaluated against, and were less than the Uranium DCGL_w (5,000 dpm/100cm²) unrestricted release limits. On this basis, all PDS results were less than the PDSP unrestricted release limits.

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 the 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 qualifications stated herein and are considered satisfactory without qualification. All media surveyed and sampled yielded results less than their associated action levels and with acceptable certainties.

Media samples were collected in accordance with the Pre-Demolition Survey Plan for D&D Facilities (MAN-127-PDSP) requirements. The media sample results and sample location maps are located in Attachment B and the RISS Characterization Project files. All final "as left" results for media samples were below the Uranium unrestricted release limits.

After decontamination efforts and prior to application of fixative, location #65 ($0.129 \mu\text{g}/100\text{cm}^2$) was identified as being greater than the Beryllium action levels. All areas containing loose beryllium contamination above $0.1 \mu\text{g}/100\text{cm}^2$ were immobilized using fixatives to below the unrestricted release limit of $0.2 \mu\text{g}/100\text{cm}^2$. Follow up re-wipe of the contaminated area verified all Beryllium results were less than the PDS unrestricted release limits.

Based upon an independent review of the radiological data, it was determined that the original project DQOs satisfied MARSSIM guidance. All facility contamination levels were below applicable PDSP DCGL unrestricted release levels. Minimum survey requirements were met, sampling/survey protocol was performed in accordance with applicable RSPs, survey units were properly designed and bounded, and instrument performance and calibration were within acceptable limits. All results meet the applicable PDS unrestricted release criteria.

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. Level 2 Isolation Controls have been posted to prevent the inadvertent introduction of contamination into Building 445. On this basis, Building 445 meets the PDSP unrestricted release criteria with the confidences stated herein.

Table D-1 V&V of Radiological Results - Building 445

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 methodology: Survey Unit 445101 (interior).	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-4 for details.
SENSITIVITY	Detection limits	TSA: ≤2,500 dpm/100cm ² RA: ≤500 dpm/100cm ²	all measures	PDS MDAs ≤ 50% DCGL _w

Table D-2 V&V of Beryllium Results - Building 445

V&V CRITERIA, CHEMICAL ANALYSES		DATA PACKAGE		COMMENTS
BERYLLIUM	Prep: NMAM 7300 METHOD: OSHA ID-125G	LAB ---->	Johns Manville Littleton, Colorado	
		RIN ---->	RIN05D0299 RIN05D0305 RIN05Z0688 RIN05Z0787	
QUALITY REQUIREMENTS		Measure	Frequency	All final "as left" PDS results were below unrestricted release levels.
ACCURACY	Calibrations		≥1	
	Initial	Linear calibration	≥1	
	Continuing	80%<%R<120%	≥1	
	LCS/MS	80%<%R<120%	≥1	
	Blanks - lab & field	<MDL	≥1	
	Interference check std (ICP)	NA	NA	
PRECISION	LCS/D	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	>95%	NA	
	Usable results vs. unusable	>95%		
SENSITIVITY	Detection limits	MDL of 0.00084 ug/swipe	all measures	

04/04

Table D-3 Data Completeness Summary – Building 445

ANALYTE	Building/Area/Unit	Sample Number Planned (Real & QC) ^A	Sample Number Taken (Real & QC)	Project Decisions (Conclusions) & Uncertainty	Comments (RIN, Analytical Method, Qualifications, etc.)
Beryllium	Building 445 (interior)	99 samples (30 random/69 biased)	99 samples (30 random/69 biased)	Prior to fixative being applied, one location was identified greater than the action levels. After application of fixative, no Be contamination found at any location, all results were below associated action levels	10CFR850; OSHA ID-125G RIN05D0299, RIN05D0305, RIN05Z0668 and RIN05Z0787 After application of fixative, all results were below the action level (0.2 ug/100cm ²) and the investigative level (0.1 ug/100cm ²).
Radiological	Survey Area: 445 VIA1 Survey Unit: 445101 Building 445 – Rooms 700, 700A, 700B, 700C and 700D (All Surfaces – Interior)	20 β TSA (15 random/5biased) 20 β RSA (15 random/5biased) 8 media samples 8 Pre/8 Post TSA and 8 Pre/8 Post RSA 2 QC TSA 10% scan	20 β TSA (15 random/5biased) 20 β RSA (15 random/5biased) 8 media samples 8 Pre/8 Post TSA and 8 Pre/8 Post RSA 2 QC TSA 10% scan	No contamination at any location; all values below unrestricted release levels	Uranium DCGLs used.