



Rocky Flats Environmental Technology Site

PRE-DEMOLITION SURVEY REPORT (PDSR)

Building 374, Room 3813 (Dock) and Building 374 Exterior

REVISION 1

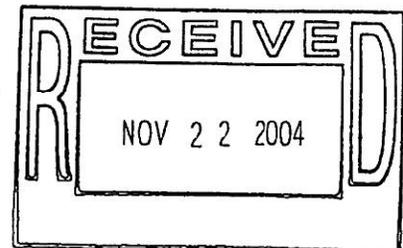
October 26, 2004

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

Confirmed unclass. & not UCONF
**DOES NOT CONTAIN
OFFICIAL USE ONLY INFORMATION.**

Name/Org: J.A. NESHEIM Date 07-02-08
EMCBC CLASSN OFFICE

OK for public release



ADMIN RECORD

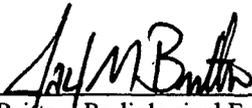
B371-A-000244

PRE-DEMOLITION SURVEY REPORT (PDSR)

Building 374, Room 3813 (Dock) and Building 374 Exterior

REVISION 1

October 26, 2004

Prepared by: 
Jay Britten, Radiological Engineer

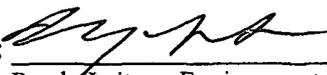
Date: 10/26/04

Reviewed by: 
Steve McNitt, Radiological Safety Manager

Date: 10/28/04

Reviewed by: R. McCafferty for Ken McFadden
Kenny McFadden, Industrial Safety Manager

Date: 10/28/04

Reviewed by: 
Randy Leitner, Environmental Manager

Date: 10-28-04

Approved by: M. E. Ryan for T. Dieter
Tom Dieter, B371/374 Project Manager

Date: 10-28-04

TABLE OF CONTENTS

ABBREVIATIONS/ACRONYMS	IV
EXECUTIVE SUMMARY	V
1 INTRODUCTION	1
1.1 PURPOSE	2
1.2 SCOPE	2
1.3 DATA QUALITY OBJECTIVES	2
1.3.1 <i>The Problem</i>	2
1.3.2 <i>The Decision</i>	2
1.3.3 <i>Inputs to the Decision</i>	2
1.3.4 <i>Decision Boundaries</i>	2
1.3.5 <i>Decision Rules</i>	3
1.3.5.1 Radionuclides	3
1.3.5.2 Hazardous Waste	3
1.3.5.3 Hazardous Substances	3
1.3.5.4 Beryllium	3
1.3.5.5 PCBs	3
1.3.5.6 Asbestos	4
1.3.6 <i>Tolerable Limits on Decision Error</i>	4
1.3.7 <i>Optimization of Plan Design</i>	4
2 HISTORICAL SITE ASSESSMENT	4
3 RADIOLOGICAL CHARACTERIZATION AND HAZARDS	5
4 CHEMICAL CHARACTERIZATION AND HAZARDS	8
4.1 ABESTOS	8
4.2 BERYLLIUM (BE)	8
4.3 RCRA/CERCLA CONSTITUENTS [INCLUDING METALS AND VOLATILE ORGANIC COMPOUNDS (VOCs)]	8
4.4 POLYCHLORINATED BIPHENYLS (PCBs)	8
5 PHYSICAL HAZARDS	9
6 DATA QUALITY ASSESSMENT	9
7 DECOMMISSIONING WASTE TYPES	10
8 FACILITY CLASSIFICATION AND CONCLUSIONS	10
9 REFERENCES	12

ATTACHMENTS

- A Survey Unit Overview Map
- B Survey Unit 374020 Radiological Data Summary and Survey Map
- C Survey Unit 374016 Radiological Data Summary and Survey Map
- D Chemical Data Summaries and Sample Maps
- E Data Quality Assessment Details
- F Historical Review

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
PDSR	Pre-demolition survey report
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
RSOP	RFCA Standard Operating Protocol
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 was performed to enable compliant disposition and waste management of the Building 374, Room 3813 Dock Area and the exterior surfaces of B374. Because this area 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 include the interior surfaces of Room 3813 and the exterior surfaces of B374. The only portion of B374 that will be demolished as a part of this Pre-Demolition Survey Report (PDSR) is the Room 3813 Dock area of B374. This PDSR encompasses all exterior surfaces of B374; however, no other parts of the facility will be demolished until the interior surfaces undergo Pre-Demolition Surveys. These additional areas on the interior of Building 374 will be covered in a separate PDSR.

The Room 3813 Dock area has no history of being posted as an Airborne Radioactivity Area or a Contamination Area. There is no history of spills in this area; however, according to interviews, liquid waste storage tanks were routinely discharged into process drain trenches located in the slab to go into Tank D852, in Room 2804. These discharges were always controlled and no spills ever occurred on adjacent building surfaces, with the exception of incidental liquids in rare cases. This incidental liquid was always immediately cleaned and followed with radiological surveys to ensure no contamination was present.

The PDS encompassed both chemical and radiological characterization. The characterization was built upon physical, chemical and radiological hazards identified in the facility-specific *Reconnaissance Level Characterization Report for the 371/374 Building Cluster*, dated August 28, 2000, Revision 0.

Based upon the results of this PDSR, affected areas meet the unrestricted release limits specified in the site Pre-Demolition Survey Plan. This structure can be demolished and the waste managed as PCB Bulk Product waste or as sanitary waste, and the concrete can be used for backfill on-site per the RFCA RSOP for Recycling Concrete, with the exception of the process drain piping located in the slab of Room 3813. This piping will be removed as Surface Contaminated Object Waste during demolition. Building surfaces adjacent to the process drain piping will be removed prior to piping removal to prevent the possible spread of contamination during demolition. The process piping will then be removed using standard D&D techniques (e.g., sleeving, air sampling, etc).

To ensure that the facility remains free of contamination and PDS data remain valid, isolation controls have been established.

1 INTRODUCTION

A Pre-Demolition Survey was performed to enable compliant disposition and waste management of the Building 374, Room 3813 Dock Area and the exterior surfaces of B374. Because this Type 3 building will be demolished, the characterization was performed in accordance with the Pre-Demolition Survey Plan (MAN-127-PDSP). The results of this survey demonstrate that affected areas meet the unrestricted release limits specified in the site Pre-Demolition Survey Plan. Building surfaces characterized as part of this PDS include the interior surfaces, remaining equipment/systems in Room 3813 and the exterior surfaces of B374.

As part of the Rocky Flats Environmental Technology Site (RFETS) Closure Project, numerous facilities will be removed. Among these is B374, Room 3813. This facility no longer supports the RFETS mission and will be removed to reduce Site infrastructure, risks and/or operating costs. The only portion of B374 that will be demolished as a part of this Pre-Demolition Survey Report (PDSR) is the Room 3813 Dock area of B374. This PDSR encompasses all exterior surfaces of B374; however, no other parts of the facility will be demolished until the interior surfaces undergo Pre-Demolition Surveys. These additional areas on the interior of Building 374 will be covered in a separate PDSR.

The Room 3813 Dock area was added on to B374 after original construction and was utilized as a dock area for the shipment/receipt of miscellaneous waste and equipment. Two process drain trenches located in B374, Room 3813 are lined with a stainless steel covering and are located in the floor of Room 3813. One trench is longer (approximately 8 feet) and contained no process drain piping. The second trench is smaller (approximately 2 feet), and contained a process drain vent and pipe leading to the concrete foundation and continuing through the concrete slab to Room 2804 tank farm. There is no history of spills in this area; however, according to interviews, liquid waste storage tanks were routinely discharged into process drain trenches located in the slab to go into Tank D852, in Room 2804. These discharges were always controlled and no spills ever occurred on adjacent building surfaces, with the exception of incidental liquids in rare cases. This incidental liquid was always immediately cleaned and followed with radiological surveys to ensure no contamination was present.

The remaining process drain piping located in the slab of Room 3813 will be removed as Surface Contaminated Object waste during demolition. Building surfaces adjacent to the process drain piping will be removed prior to piping removal to prevent the possible spread of contamination during demolition. The process piping will then be removed using standard D&D techniques (e.g., sleeving, air sampling, etc).

Before this Type 3 facility can be demolished, the Data Quality Objectives (DQOs) for a Pre-Demolition Survey (PDS) must be satisfied; this document presents the PDS results for the indicated areas. 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 *Reconnaissance Level Characterization Report for the 371/374 Building Cluster*, dated August 28, 2000, Revision 0.

6

1.1 PURPOSE

The purpose of this report is to communicate and document the results of B374, Room 3813 Dock Area and exterior surfaces of B374. A PDS is performed prior to building demolition to define the pre-demolition radiological and chemical conditions of a facility. The pre-demolition 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 pre-demolition radiological and chemical conditions of the indicated building surfaces and remaining systems/equipment (i.e., fire suppression system piping, HVAC ductwork, metal siding) that will be free-released and disposed of as sanitary waste, or used as backfill per the requirements of the *RFETS, RFCA RSOP for Recycling Concrete*.

1.3 DATA QUALITY OBJECTIVES

The Data Quality Objectives (DQOs) used in designing this PDS meet the minimum requirements specified in Section 2.0 of the Pre-Demolition Survey Plan for D&D Facilities (MAN-127-PDSP). Refer to section 2.0 of MAN-127-PDSP for these DQOs.

1.3.1 The Problem

The problem involves determining whether or not the survey unit is suitable for unrestricted release in accordance with this plan.

1.3.2 The Decision

The decision is verification that objectives specified in the decommissioning decision document have been met (e.g., certain materials meet unrestricted release criteria for radiological and non-radiological constituents).

1.3.3 Inputs to the Decision

Inputs to the decision include the magnitude and location of data from preceding characterizations, including RLC and In-Process Characterization (IPC), PDS results, decision document action levels, and unrestricted release criteria.

1.3.4 Decision Boundaries

The decision boundaries are the spatial confines of the facility, including rooms and sets of rooms, in two and three dimensions. Interior surfaces are included, including those below grade. Boundaries may be further defined in RFCA decision documents.

1.3.5 Decision Rules

The following are decision rules to be used during PDS:

1.3.5.1 Radionuclides

If all radiological survey and scan measurements (and sample measurements, where sample activity is translated to surface activity as described in Section 7.2.3 of the Pre-Demolition Survey Plan for D&D Facilities (MAN-127-PDSP)) are below the surface contamination guidelines specified in the Site PDSP, then the related areas and/or volume are considered not radiologically contaminated. The media sample result is calculated by converting volumetric activity (typically reported in pCi/g) to surface activity (dpm/100 cm²). The volumetric result (pCi/g) is multiplied by the weight of the sample (grams) and by 2.22 (conversion from pCi to dpm).

If any radiological survey or scan measurement exceeds the surface contamination guidelines provided in the Pre-Demolition Survey Plan for D&D Facilities (MAN-127-PDSP), the related survey unit must be evaluated per the statistical tests described in section 7.0, Data Analysis and Quality Assessment, of this plan. If any radiological sample measurement (or disposal unit volume) exceeds 100 nanocuries per gram of transuranic material, the related volume of material is considered transuranic (TRU) waste.

1.3.5.2 Hazardous Waste

If decommissioning waste is mixed with or contains a listed hazardous waste, or if the waste exhibits a characteristic of a hazardous waste, then the waste is considered RCRA-regulated hazardous waste in accordance with 6 CCR 1007-3, Parts 261 and 268.

1.3.5.3 Hazardous Substances

If material contains a listed hazardous substance above a decision document action level (e.g., RFCAs) and/or the CERCLA reportable quantity (40 CFR 302.4), the material is subject to CERCLA regulation (i.e., remediation and/or notification requirements).

1.3.5.4 Beryllium

If surface concentrations of beryllium are equal to or greater than 0.2 µg/100 cm², the material is considered beryllium contaminated per 10 CFR 850.

1.3.5.5 PCBs

If material contains PCBs, in a non-liquid state, from the manufacturing process at concentrations ≥50 ppm, the material is considered PCB Bulk Product Waste and subject to the requirements of 40 CFR 761.

If PCB contamination from a past spill/release is suspected, or if a PCB spill is discovered that has not been cleaned up, the associated material is considered PCB Remediation Waste and subject to the requirements of 40 CFR 761. PCB remediation waste includes: materials disposed of prior to April 18, 1978, that are currently at concentrations ≥50 ppm PCBs, regardless of the concentration of the original spill;

materials which are currently at any volume or concentration where the original source was ≥ 500 ppm PCBs beginning on April 18, 1978, or ≥ 50 ppm PCBs beginning on July 2, 1979; and materials which are currently at any concentration if the PCBs are spilled or released from a source not authorized for use under 40 CFR 761.

If a waste or item contains PCBs in regulated concentrations, the waste or item is classified as PCB-regulated material and subject to the requirements of 40 CFR 761.

1.3.5.6 Asbestos

If any one sample of a sample set representing a homogeneous medium results in a positive detection (i.e., $>1\%$ by volume), then material is considered ACM (40 CFR 763 and 5 CCR 1001-10).

1.3.6 Tolerable Limits on Decision Error

Acceptable false negative (α) errors for calculating the number of samples generally range from 1% to 10%. The default value specified by the Site PDSP is 5%, which was assumed for the survey design in this report.

1.3.7 Optimization of Plan Design

Statistically based radiological surveying and sampling will be conducted per the guidance in Appendix B of the RFETS Pre-Demolition Survey Plan for D&D Facilities (MAN-127-PDSP). Refer to Section 4.0 of the PDSP for direction of characterization of non-radiological, chemical constituents. For this report, the minimum number of measurement locations is fifteen per survey unit, as calculated based on the guidance in MAN-127-PDSP. The DCGL_w is 100 dpm/100 cm² for TSA and media measurements/samples, and 20 dpm/100 cm² for RSA measurements. The LBGR was adjusted to obtain a relative shift of two. The estimated standard deviation for each measurement type was calculated based on an assumed coefficient of variation of 30%.

The scan requirements for specific survey unit classifications are as follows:

- Class 1: No Class I survey units are included in the scope of this report.
- Class 2: 10-100% floors/lower walls
10-50% upper walls/ceilings
- Class 3: 1-10% of all surfaces

2 HISTORICAL SITE ASSESSMENT

A facility-specific Reconnaissance Level Characterization Report (RLCR) was conducted to understand the facility history and related hazards. The Building 371/374 Building Cluster RLCR was performed in August 2000 (Refer to the *B371/374 Reconnaissance Level Characterization Report*, dated August 28, 2000, Revision 0). The areas included in the scope of this PDSR are referred to herein as Room 3813 Dock area, and the exterior surfaces of B374. Based on the characterization results, no radiological

contamination was identified in Room 3813 Dock area. Characterization results did indicate detectable activity on metal surfaces of the exterior of B374, but no investigation was completed to determine if this activity was due to DOE material. This investigation was completed as a part of the Pre-Demolition Survey. All of Building 374 is considered a Type 3 facility based on its process history and proximity to Building 371.

The Room 3813 Dock area was added on to B374 after original construction and was utilized as a dock area for the shipment/receipt of miscellaneous waste and equipment. Two process drain trenches located in B374, Room 3813 are lined with a stainless steel covering and are located in the floor of Room 3813. One trench is longer (approximately 8 feet) and contained no process drain piping. The second trench is smaller (approximately 2 feet), and contained a process drain vent and pipe leading to the concrete foundation and continuing through the concrete slab to Room 2804 tank farm. This area has no history of being posted as an Airborne Radioactivity Area or a Contamination Area. There is no history of spills in this area; however, according to interviews, liquid waste storage tanks were routinely discharged into process drain trenches located in the slab to go into Tank D852, in Room 2804. These discharges were always controlled and no spills ever occurred on adjacent building surfaces, with the exception of incidental liquids in rare cases. This incidental liquid was always immediately cleaned and followed with radiological surveys to ensure no contamination was present.

The maximum initial level of contamination in trench locations was 720 dpm/100 cm², removable, and 4500 dpm/100 cm², direct. After a thorough wipe down, removable contamination was reduced to less than 20 dpm/100 cm², with all direct readings less than 100 dpm/100 cm². Inspections of the stainless steel did not reveal any penetrations existed. Therefore, no contamination is expected below this stainless steel. During demolition, confirmation radiological surveys will be conducted on facility surfaces between the stainless steel liner and the underlying concrete, as they become accessible. The remaining process drain piping in the slab/foundation will be removed during demolition as Surface Contaminated Object waste.

PDS areas consist of two survey units: 374020 (Class II) and 374016 (Class III) based the contamination potential, per Section 3.0 of the PDSP. The hazards characterization results and historical review (refer to Attachment F) were used to identify PDS data gaps and needs, and to develop radiological and chemical PDS characterization packages. Characterization documentation is located in the Building 371 Characterization Project files.

3 RADIOLICAL CHARACTERIZATION AND HAZARDS

Building 374, Room 3813 Dock area and the exterior surfaces of Building 374 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 (weapons-grade plutonium isotopes). Based upon a review of the characterization data, historical and process knowledge, in-process survey data, building

walk-downs, and the Site Pre-Demolition Survey Plan (MAN-127-PDSP), a Radiological Characterization Plan was developed during the planning phase that describes the minimum survey requirements (refer to survey packages 374020 and 374016). A Survey Unit Overview Map is presented in Attachment A. Based on hazard characterization data and historical and process knowledge, transuranic isotopes are the primary contaminants of concern in Buildings 371/374. Therefore, the PDS was performed to the transuranic PDS unrestricted release criteria. Individual radiological survey unit packages are maintained in the Building 371/374 Characterization Project files.

The Building 374, Room 3813 Dock area and the exterior surfaces of Building 374 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) and removable surface activity (RSA) 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*.

Per the reference procedures, the required number of measurement locations is fifteen (15) per 1,000 square-meters of floor area for Class 2 survey units, and fifteen (15) per 1,000 square-meters of floor area for Class 3 survey units. Scans were required on 100% of the floors surfaces, 25% on lower wall surfaces less than two meters, and 10% on upper wall surfaces greater than two meters and ceiling in the Class II survey unit; and 3% all surfaces for the Class 3 survey unit. Required scan surveys were completed and exceeded these requirements (actual scan survey percentages are delineated on associated scan maps). Radiological survey data, statistical analysis results, survey locations, and radiological scan maps are presented in Attachments B and C, *Radiological Data Summary and Survey Maps*.

Room 3813 Interior – (Survey Unit 374020)

The Room 3813 interior is a Class II survey unit based on process history. This area includes the floors, walls, and ceiling of Room 3813. Process history of this area indicates it was primarily utilized as a shipment/receipt dock for miscellaneous waste and equipment. Two process drain trenches located in B374, Room 3813 are lined with a stainless steel covering and are located in the floor of Room 3813. One trench is longer (approximately 8 feet) and contained no process drain piping. The second trench is smaller (approximately 2 feet), and contained a process drain vent and pipe leading through the concrete foundation and continuing through the concrete slab to Room 2804 tank farm. For purposes of Pre-Demolition Survey, the process drain vent was removed from the smaller trench, and the open end of the process drain piping located in the slab was grouted shut. The stainless steel lined trenches were cleaned appropriately and received a 100% scan. No contamination was detected above unrestricted release criteria. Since these trenches were lined with stainless steel as a part of original construction, no surveys were conducted below the stainless steel. Inspections of the stainless steel ensured no penetrations existed in the stainless steel liner. Therefore, no contamination is expected below this stainless steel. During demolition, confirmation radiological surveys will be conducted on facility surfaces between the stainless steel liner and the underlying

concrete, as they become accessible. The remaining process drain piping in the slab/foundation will be removed during demolition as Surface Contaminated Object (SCO) waste. Building surfaces adjacent to the process drain piping will be removed prior to piping removal to prevent the possible spread of contamination during demolition. The process piping will then be removed using standard D&D techniques.

All major equipment (roll-up door, metal dock ramp, process drain trench grating) has been removed. The only items that remain are fire suppression system piping and room HVAC ductwork. As such, all remaining piping and ductwork received detailed radiological surveys in accordance with established procedures for unrestricted release. All surveys results were less than applicable unrestricted release limits.

A total of 16 systematic TSA and RSA measurements were collected. Surface scans of 421 m² (53% of all surfaces) were performed. This included a 100% scan of all floor surfaces, 37% of wall surfaces less than two meters, and 31% of upper wall surfaces greater than two meters and the ceiling. No paint was present on area surfaces; therefore, no media samples were collected for this survey unit.

All scans and surveys in survey unit 374020 were less than the applicable PDS transuranic DCGL values. Radiological survey data, statistical analysis results, survey locations, and radiological scan maps for survey unit 374020 are presented in Attachment B, *Survey Unit 374020 Radiological Data Summary and Survey Map*.

Building 374 Exterior – (Survey Unit 374016)

This survey unit includes the exterior walls of Building 374. This classification was based on the low potential for contamination based on process history and characterization data. The roofing material for the exterior of Building 374 was removed and disposed of prior to Pre-Demolition Survey due to asbestos-containing materials (ACM). Since the underlying concrete has been completely covered with the roofing material, the roof portion of Building 374 is classified as "Non-Impacted." "Non-Impacted" is defined in Section 3.0 of the Pre-Demolition Plan for D&D Facilities as "areas that have no reasonable potential for residual contamination." Level 2 isolation controls are posted at roof access points as ACM is removed.

A total of 23 random TSA and RSA measurements and 2 metal coupon samples were collected. Metal coupons were collected on exterior metal surfaces to determine if detectable activity was due to DOE-enhanced materials. These metal coupons were analyzed using gamma spectroscopy to ensure no activity associated with Americium-241 was present. Surface scans of 162 m² of exterior surfaces (11% of exterior walls) were performed. Scan measurements were targeted on lower walls. Process history does not indicate a high potential for contamination; however, scans were concentrated on lower wall locations due to a higher potential that may have resulted from outside operations. All scans, surveys, and metal gamma spectroscopy results in survey unit 374016 were less than the applicable PDS transuranic DCGL values. Radiological survey data, statistical analysis results, survey locations, metal coupon gamma spectroscopy results, and radiological scan maps for survey unit 374016 are presented in Attachment C, *Survey Unit 374016 Radiological Data Summary and Survey Map*.

4 CHEMICAL CHARACTERIZATION AND HAZARDS

Based on a thorough review of historical and process knowledge, visual inspections, and personnel interviews, no additional chemical hazard sampling requirements were identified.

4.1 Asbestos

Asbestos containing building material is not present in or on affected areas scheduled for demolition under this PDSR (previously removed). Roofing material (containing ACM) located on the remaining portions of Building 374 will be removed prior to demolition and will be addressed in a separate PDSR.

4.2 Beryllium (Be)

These areas are not and have never been a beryllium-controlled area. Per the Beryllium Sampling Decision Tree in the PDSP, ten (10) random and two (2) biased beryllium smear samples were collected in Room 3813, in accordance with the PDSP and the *Beryllium Characterization Procedure*, PRO-536-BCPR, Revision 0, September 9, 1999.

All beryllium smear sample results were less than the investigative limit of 0.1 $\mu\text{g}/100\text{cm}^2$. PDS beryllium laboratory sample data and location maps are contained in Attachment C, *Chemical Data Summaries and Sample Maps*.

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

Based on the RCRA permit and WEMS room 3813 was used as a permitted hazardous and mixed waste storage area. A review of the RCRA operating record for Unit 374.1, Room 3813 and the building files indicates that no hazardous or mixed waste was spilled in Room 3813. A visual inspection of the building by 371/374 Environmental Compliance personnel verified the absence of hazardous waste residuals and/or stains on the floor/concrete slab, walls, or ceiling. Based on these actions Unit 374.1 Room 3813 has met the Clean Closure criteria set forth in the RSOP for Facility Component Removal, Size Reduction, and Decontamination Activities. Therefore, it has been determined that no sampling for RCRA/CERCLA constituents is required. The concrete generated from the demolition of the areas included in the scope of this report can be used for onsite recycling in accordance with the Concrete Recycling RSOP.

4.4 Polychlorinated Biphenyls (PCBs)

Based on historical knowledge, personnel interviews, and 371/374 Environmental Compliance personnel walk-downs, these areas never used/transferred free flowing/exposed PCB's. At one time the facility may have used PCB ballasts in its fluorescent light fixtures, however, all of these have been removed, and compliantly disposed of, resulting in no impact on demolition activities in this area.

Per the *Reconnaissance Level Characterization Report for the 371/374 Building Cluster*, Revision 0, dated August 28, 2004, PCBs are present in some applied paints. Additional paint sampling was not performed in these areas due to no paint being present on building

surfaces. However, if any painted debris is generated during demolition that is not recycled on-site will be disposed of a PCB Bulk Product waste.

5 PHYSICAL HAZARDS

Physical hazards associated with these areas are common to standard industrial environments, and include hazards associated with utilities. 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 decommissioning of the indicated areas, and consequent waste management, is of adequate quality to support the decisions documented in this report. The data presented in this report (Attachments B, C, & D) were verified and validated relative to MAN-127-PDSP, Pre-Demolition Survey Plan for D&D Facilities, 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 presented in Attachment E. The DQA Checklists are provided in the individual survey unit packages (located in the Building 371 Characterization Files).

The Minimum Detectable Activity (MDA) for each PDS instrument was determined *a priori* based on typical parameters (background, efficiency, and count time). A list of radiological field instrumentation and associated sensitivities is presented in Table 1.

Table 1
PDS Radiological Field Instrumentation and Minimum Detectable Activities

Model	Measurement Type	MDA (dpm/100 cm ²)
NE Electra DP6	TSA	48
Eberline SAC-4	Removable (Smears)	10
NE Electra AP6	Scans	300

7 DECOMMISSIONING WASTE TYPES

The demolition and disposal of Building 374, Room 3813 Dock area, and the B374 exterior will generate a variety of wastes. Concrete can be used as backfill onsite in accordance with the RFCA RSOP for Recycling Concrete. Estimated waste types and waste volumes are presented below. All wastes can be disposed of as sanitary waste, except for the process drain piping in the slab (SCO).

Waste Volume Estimates and Material Types, B374 Room 3813 Demolition							
Facility	Concrete (ft ³)	Wood (ft ³)	Metal (ft ³)	Corrugated Sheet Metal (ft ³)	Wall Board (ft ³)	ACM (ft ³)	Other Waste (ft ³)
374 Room 3813 Dock	4752	712	238	475	N/A	N/A	Insulation - 713

8 FACILITY CLASSIFICATION AND CONCLUSIONS

Based on the analysis of radiological, chemical and physical hazards, Building 374, Room 3813, and the B374 exterior are classified as an RFCA Type 3 areas pursuant to the RFETS Decommissioning Program Plan (DPP; K-H, 1999). Based upon the results of this PDSR, these areas meet the unrestricted release limits specified in the site Pre-Demolition Survey Plan and are ready for demolition. The PDS for these areas were performed in accordance with the DDCP and PDSP, all PDSP DQOs were met, and all data satisfied the PDSP DQA criteria. The only portion of B374 that will be demolished as a part of this Pre-Demolition Survey Report (PDSR) is the Room 3813 Dock area of B374. This PDSR encompasses all exterior surfaces of B374; however, no other parts of the facility will be demolished until the interior surfaces undergo Pre-Demolition Surveys. These additional areas on the interior of Building 374 will be covered in a separate PDSR.

The process drain piping located in the slab of Room 3813 has been grouted shut and will be removed from the slab during demolition. To prevent any potential cross contamination during demolition, adjacent building surfaces will be demolished and removed. Afterward, the remaining process drain line in the slab will be removed as SCO waste using standard D&D techniques (i.e., sleeving, point source ventilation, air sampling, etc.)

A facility walkdown and historical review indicates that no RCRA/CERCLA constituents exist in these areas (refer to Attachment F, Historical Review). Any painted debris that may be generated during demolition that is not recycled on-site will be disposed of as PCB Bulk Product waste.

Radiological contamination in excess of the PDSP Table 7-1 limits was not detected in areas covered in this Pre-Demolition Survey Report. The applicable limits are as follows:

Table 2
PDSP Table 7-1 Surface Contamination Limits

Radionuclides	Total Average (dpm/100 cm ²) ⁽¹⁾ (DCGL _w)	Total Maximum (dpm/100 cm ²) ⁽²⁾ (DCGL _{EMC})	Removable (dpm/100 cm ²) (DCGL _w)
Transuranics	100	300	20

- (1) Measurements of average contamination should not be averaged over an area of more than 1 m².
(2) The maximum contamination level applies to an area of not more than 100 cm².

Based upon this PDSR, these areas can be demolished and the waste managed as sanitary and the concrete can be used for backfill on-site per the RFCA RSOP for Recycling Concrete.

To ensure that the facility remains free of contamination and that PDS data remain valid, isolation controls have been established for Room 3813 and for the roof of Building 374.

9 REFERENCES

Reconnaissance Level Characterization Report for the 371/374 Building Cluster, dated August 28, 2000, Revision 0.

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. 2, March 10, 2003.

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.

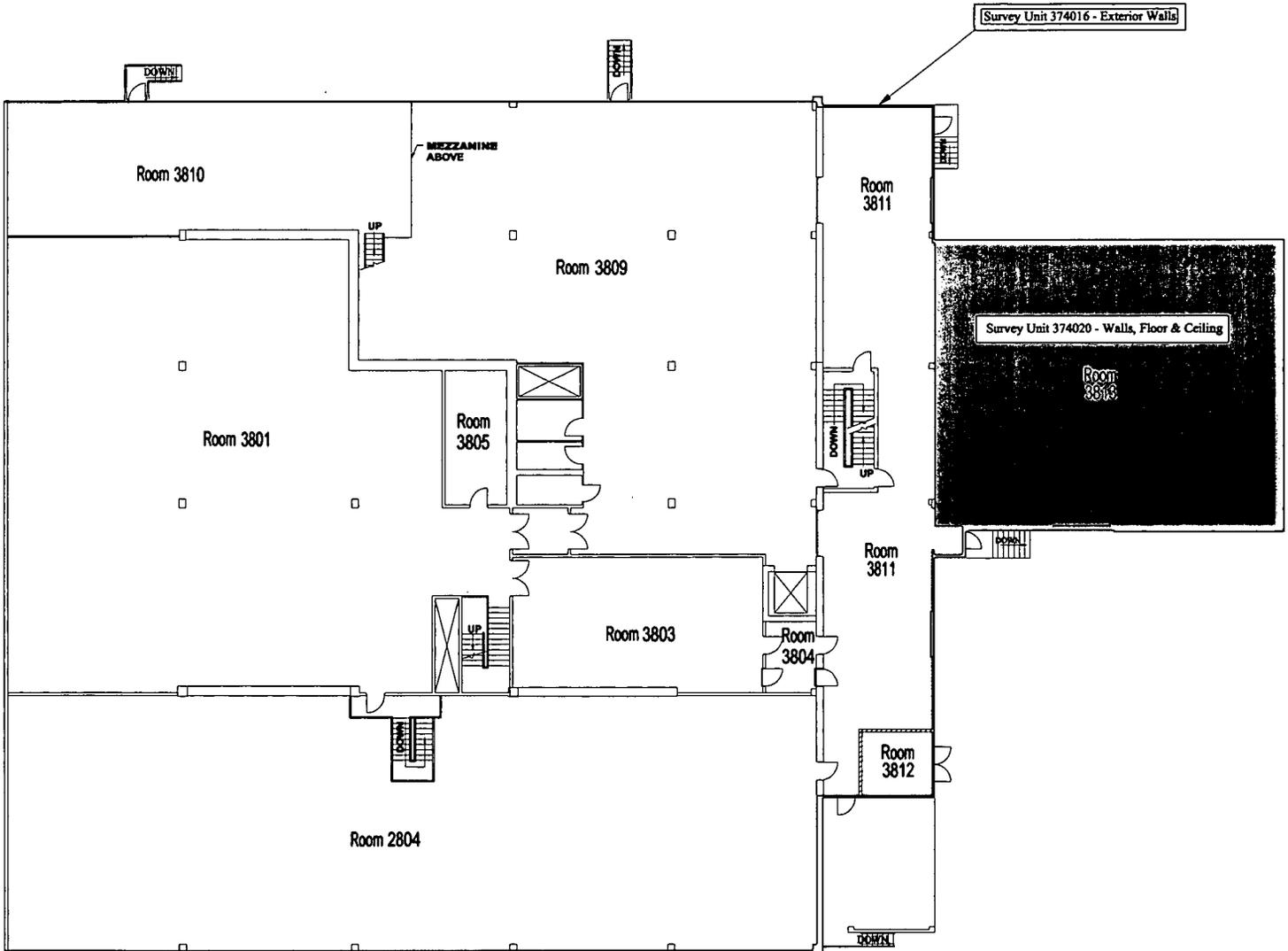
RFETS, Environmental Waste Compliance Guidance #27, Lead-Based Paint (LBP) and Lead-Based Paint Debris Disposal.

RFETS, RFCA RSOP for Recycling Concrete, September 28, 1999

ATTACHMENT A

Survey Unit Overview Map

Overview for Building 374



<p>SURVEY MAP LEGEND</p> <p>□ Exterior Walls of Building 374</p> <p>■ Walls, floor & ceiling of Room 3813</p>	<p>Neither the United States Government nor Kaiser Hill Co., nor any agency thereof, nor any of their employees, makes any warranty, express or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of any information, apparatus, product, or process disclosed, or represents that its use would not infringe privately owned rights.</p> <p>Notes:</p>	<p>N</p> <p>↑</p>	<p>0 FEET 25</p> <p>0 METERS 8</p> <p>1 inch = 18 feet 1 grid sq. = 1 sq. m.</p>	<p>U.S. Department of Energy Rocky Flats Environmental Technology Site</p> <p>Prepared by: J. Jimenez 303.968.2269</p> <p>Prepared for:</p> <p>FINAL</p> <p>MAP ID: 371 - 374 Survey Units 374016-374020</p> <p>October 14, 2004</p> 
--	---	--------------------------	--	---

19

ATTACHMENT B

Survey Unit 374020 Radiological Data Summary and Survey Map

Survey Area: AN

Survey Unit: 374020

Building: 371

Description: B374, Room 3813 (ALL SURFACES)

Rocky Flats Environmental Technology Site Final Radiological Survey Summary Results

Total Surface Activity Measurements

Nbr Random Measurements Required: 15
Nbr Random Measurements Performed: 16

Nbr Biased Measurements Required: 0
Nbr Biased Measurements Performed: 0

Nbr QC Required: 2
Nbr QC Performed: 2

Alpha

Maximum: 35.8 dpm/100cm²
Minimum: -19.9 dpm/100cm²
Mean: 11.9 dpm/100cm²
Standard Deviation: 15.1
QC Maximum: 9.1 dpm/100cm²
QC Minimum: 5.9 dpm/100cm²
QC Mean: 7.5 dpm/100cm²
Transuranic DCGL_w: 100.0 dpm/100cm²
Transuranic DCGL_{EMC}: 300.0 dpm/100cm²

Removable Surface Activity Measurements

Nbr Random Measurements Required: 15
Nbr Random Measurements Performed: 16

Nbr Biased Measurements Required: 0
Nbr Biased Measurements Performed: 0

Alpha

Maximum: 5.8 dpm/100cm²
Minimum: -0.3 dpm/100cm²
Mean: 1.0 dpm/100cm²
Standard Deviation: 1.7
Transuranic DCGL_w: 20.0 dpm/100cm²

Media Sample Results

Nbr Random Required: 0
Nbr Random Collected: 0

Nbr Biased Required: 0
Nbr Biased Collected: 0

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.

Survey Area: AN

Survey Unit: 374020

Building: 371

Description: B374, Room 3813 (ALL SURFACES)

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	
1	511654	10/11/04	Electra	1144	DP-6	11/25/04	0.221	NA	48.0	NA	T
2	518346	10/11/04	Electra	247	AP-6	02/18/05	0.193	NA	48.0	NA	S
3	712563	10/11/04	Electra	676	AP-6	01/28/05	0.172	NA	48.0	NA	S
4	516747	10/11/04	Electra	1438	DP-6	03/28/05	0.220	NA	48.0	NA	Q
5	516747	10/11/04	Electra	632	AP-6	01/20/05	0.175	NA	48.0	NA	S
6	518346	10/11/04	Electra	125	AP-6	02/18/05	0.166	NA	48.0	NA	S
7	518346	10/12/04	Electra	125	AP-6	02/18/05	0.166	NA	48.0	NA	S
8	511654	10/12/04	Electra	261	AP-6	02/05/05	0.155	NA	48.0	NA	S
9	712563	10/12/04	Electra	137	AP-6	02/25/05	0.179	NA	48.0	NA	S
10	511654	10/12/04	SAC-4	856	NA	01/27/05	0.330	NA	10.0	NA	R

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

22

Survey Area: AN

Survey Unit: 374020

Building: 371

Description: B374 Room 3813 (ALL SURFACES)

Random Removable Surface Activity Data Sheet

Random Measurement Location	Inst / RCT Nbr	Net Alpha (dpm/100cm ²)	Net Beta (dpm/100cm ²)	
374020PRP-N001	10	-0.3	N/A	
374020PRP-N002	10	1.2	N/A	
374020PRP-N003	10	-0.3	N/A	
374020PRP-N004	10	1.2	N/A	
374020PRP-N005	10	2.7	N/A	
374020PRP-N006	10	2.7	N/A	
374020PRP-N007	10	1.2	N/A	
374020PRP-N008	10	1.2	N/A	
374020PRP-N009	10	-0.3	N/A	
374020PRP-N010	10	5.8	N/A	
374020PRP-N011	10	-0.3	N/A	
374020PRP-N012	10	1.2	N/A	
374020PRP-N013	10	-0.3	N/A	
374020PRP-N014	10	-0.3	N/A	
374020PRP-N015	10	1.2	N/A	
374020PRP-N016	10	-0.3	N/A	

Comments: 2-minute count time required

Survey Area: AN

Survey Unit: 374020

Building: 371

Description: B374, Room 3813 (ALL SURFACES)

Random/QC Total Surface Activity Data Sheet

Random Measurement Location	Inst / RCT Nbr	Net Alpha (dpm/100cm ²)	Net Beta (dpm/100cm ²)	
374020PRP-N001	1	0.9	N/A	
374020QRP-N001	4	5.9	N/A	
374020PRP-N002	1	13.1	N/A	
374020PRP-N003	1	13.1	N/A	
374020PRP-N004	1	0.9	N/A	
374020PRP-N005	1	22.2	N/A	
374020PRP-N006	1	22.2	N/A	
374020PRP-N007	1	22.2	N/A	
374020PRP-N008	1	-19.9	N/A	
374020PRP-N009	1	-1.8	N/A	
374020PRP-N010	1	7.3	N/A	
374020PRP-N011	1	-1.8	N/A	
374020QRP-N011	4	9.1	N/A	
374020PRP-N012	1	13.1	N/A	
374020PRP-N013	1	0.9	N/A	
374020PRP-N014	1	35.8	N/A	
374020PRP-N015	1	34.4	N/A	
374020PRP-N016	1	28.1	N/A	

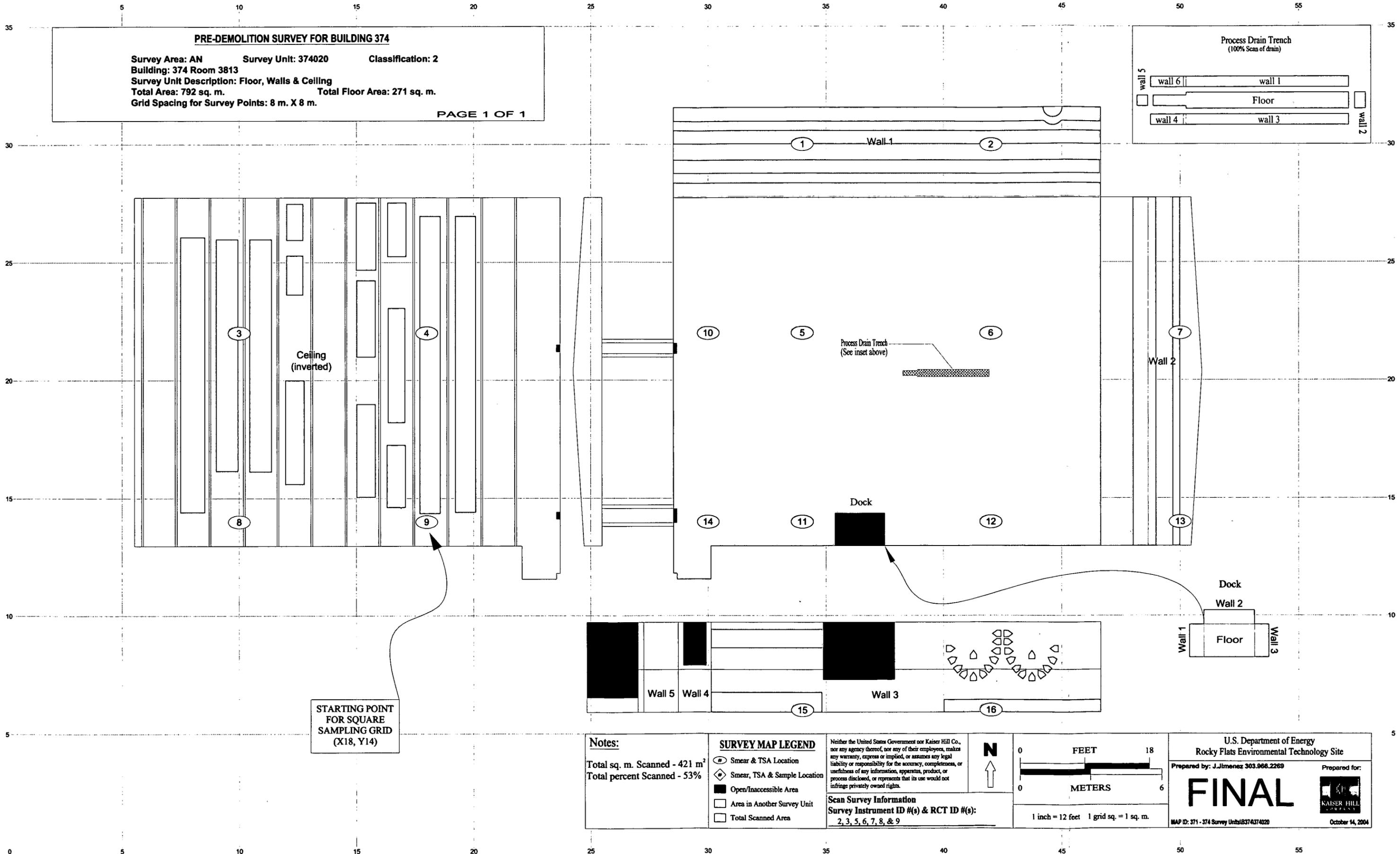
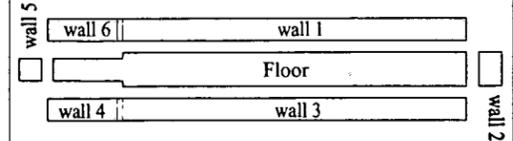
Comments: 90-second count time required.

PRE-DEMOLITION SURVEY FOR BUILDING 374

Survey Area: AN Survey Unit: 374020 Classification: 2
 Building: 374 Room 3813
 Survey Unit Description: Floor, Walls & Ceiling
 Total Area: 792 sq. m. Total Floor Area: 271 sq. m.
 Grid Spacing for Survey Points: 8 m. X 8 m.

PAGE 1 OF 1

**Process Drain Trench
(100% Scan of drain)**



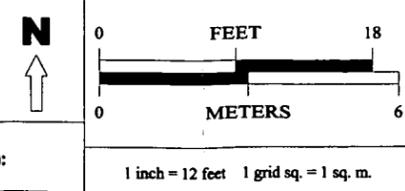
STARTING POINT
FOR SQUARE
SAMPLING GRID
(X18, Y14)

Notes:
 Total sq. m. Scanned - 421 m²
 Total percent Scanned - 53%

- SURVEY MAP LEGEND**
- ⊙ Smear & TSA Location
 - ⬠ Smear, TSA & Sample Location
 - Open/Inaccessible Area
 - Area in Another Survey Unit
 - ▭ Total Scanned Area

Neither the United States Government nor Kaiser Hill Co., nor any agency thereof, nor any of their employees, makes any warranty, express or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of any information, apparatus, product, or process disclosed, or represents that its use would not infringe privately owned rights.

Scan Survey Information
 Survey Instrument ID #(s) & RCT ID #(s):
 2, 3, 5, 6, 7, 8, & 9



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

Prepared by: J.Jimenez 303.968.2269 Prepared for: KAISER HILL CORP.

FINAL

MAP ID: 371 - 374 Survey Units 374020 October 14, 2004

25

ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE

INSTRUMENT DATA

Mfg. <u>Eberline</u>	Mfg. <u>Eberline</u>	Mfg. <u>Eberline</u>
Model <u>SAC-4</u>	Model <u>SAC-4</u>	Model <u>SAC-4</u>
Serial # <u>820</u>	Serial # <u>856</u>	Serial # <u>1068</u>
Cal Due <u>022405</u>	Cal Due <u>012705</u>	Cal Due <u>122104</u>
Bkg. <u>0.4cpm</u>	Bkg. <u>0.1cpm</u>	Bkg. <u>0.5cpm</u>
Efficiency <u>33%</u>	Efficiency <u>33%</u>	Efficiency <u>33%</u>
MDA <u>20dpm</u>	MDA <u>20dpm</u>	MDA <u>20dpm</u>
Mfg. <u>NETech</u>	Mfg. <u>/</u>	Mfg. <u>/</u>
Model <u>Electra</u>	Model <u>/</u>	Model <u>/</u>
Serial # <u>1144</u>	Serial # <u>N</u>	Serial # <u>N</u>
Cal Due <u>112504</u>	Cal Due <u>A</u>	Cal Due <u>A</u>
Bkg. <u>2.0cpm</u>	Bkg. <u>/</u>	Bkg. <u>/</u>
Efficiency <u>22.1%</u>	Efficiency <u>/</u>	Efficiency <u>/</u>
MDA <u>94dpm/100cm²</u>	MDA <u>/</u>	MDA <u>/</u>

Survey Type: CONTAMINATION

Building: 371 B37A
 Location: 3813
 Purpose: Free Release

RWP #: N/A

Date: 10-12-04 Time: 1800

RCT: Clausen | Clausen
 Print name | Signature

RCT: Bjorn | Bjorn
 Print name | Signature

PRN/REN #: N/A

Comments: Part of final Survey package # 374020-B37A, RM 3813
Fire Suppression and building HVAC

Survey Tracking No: 371-04-S N/A

SURVEY RESULTS

A/S Tracking No: 371-04-A N/A

	dpm WIPE	dpm/100cm ² SWIPE	dpm/100cm ² DIRECT		dpm WIPE	dpm/100cm ² SWIPE	dpm/100cm ² DIRECT
1.	<u>N/A</u>	<u><20</u>	<u><94</u>	21.	<u>N/A</u>	<u><20</u>	<u><94</u>
2.	<u>/</u>	<u><20</u>	<u><94</u>	22.	<u>/</u>	<u><20</u>	<u><94</u>
3.	<u>/</u>	<u><20</u>	<u><94</u>	23.	<u>/</u>	<u><20</u>	<u><94</u>
4.	<u>/</u>	<u><20</u>	<u><94</u>	24.	<u>/</u>	<u><20</u>	<u><94</u>
5.	<u>/</u>	<u><20</u>	<u><94</u>	25.	<u>/</u>	<u><20</u>	<u><94</u>
6.	<u>/</u>	<u><20</u>	<u><94</u>	26.	<u>/</u>	<u><20</u>	<u><94</u>
7.	<u>/</u>	<u><20</u>	<u><94</u>	27.	<u>/</u>	<u><20</u>	<u><94</u>
8.	<u>/</u>	<u><20</u>	<u><94</u>	28.	<u>/</u>	<u><20</u>	<u><94</u>
9.	<u>/</u>	<u><20</u>	<u><94</u>	29.	<u>/</u>	<u><20</u>	<u><94</u>
10.	<u>/</u>	<u><20</u>	<u><94</u>	30.	<u>/</u>	<u><20</u>	<u><94</u>
11.	<u>/</u>	<u><20</u>	<u><94</u>	31.	<u>/</u>	<u><20</u>	<u><94</u>
12.	<u>/</u>	<u><20</u>	<u><94</u>	32.	<u>/</u>	<u><20</u>	<u><94</u>
13.	<u>/</u>	<u><20</u>	<u><94</u>	33.	<u>/</u>	<u><20</u>	<u><94</u>
14.	<u>/</u>	<u><20</u>	<u><94</u>	34.	<u>/</u>	<u><20</u>	<u><94</u>
15.	<u>/</u>	<u><20</u>	<u><94</u>	35.	<u>/</u>	<u><20</u>	<u><94</u>
16.	<u>/</u>	<u><20</u>	<u><94</u>	36.	<u>/</u>	<u><20</u>	<u><94</u>
17.	<u>/</u>	<u><20</u>	<u><94</u>	37.	<u>/</u>	<u><20</u>	<u><94</u>
18.	<u>/</u>	<u><20</u>	<u><94</u>	38.	<u>/</u>	<u><20</u>	<u><94</u>
19.	<u>/</u>	<u><20</u>	<u><94</u>	39.	<u>/</u>	<u><20</u>	<u><94</u>
20.	<u>N/A</u>	<u><20</u>	<u><94</u>	40.	<u>N/A</u>	<u><20</u>	<u><94</u>

Date Reviewed: 10-13-04

RS Supervision: R. Stueckrath | R. Stueckrath
 Print Name | Signature

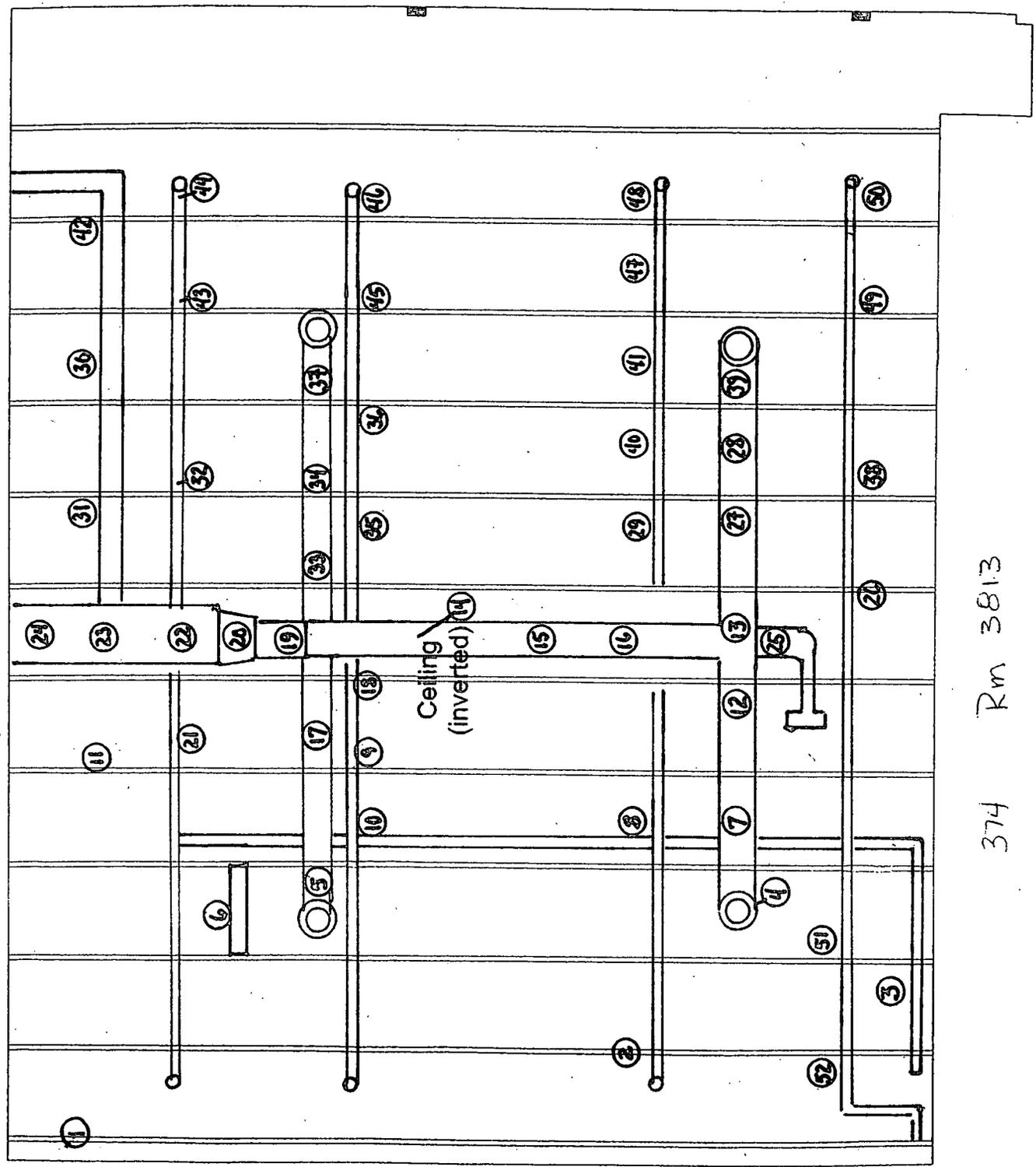
ROCKY PLATS ENVIRONMENTAL TECHNOLOGY SITE

RADIOLOGICAL SAFETY

	dpm WIPE	dpm/100cm ² SWIPE	dpm/100cm ² DIRECT		dpm WIPE	dpm/100cm ² SWIPE	dpm/100cm ² DIRECT
41.	N/A	<20	<94	81.			
42.		<20	<94	82.			
43.		<20	<94	83.			
44.		<20	<94	84.			
45.		<20	<94	85.			
46.		<20	<94	86.			
47.		<20	<94	87.			
48.		<20	<94	88.			
49.		<20	<94	89.			
50.		<20	<94	90.			
51.		<20	<94	91.			
52.		<20	<94	92.			
53.	N/A	N/A	N/A	93.			
54.				94.			
55.				95.			
56.				96.			
57.				97.			
58.				98.		N/A	
59.				99.			
60.				100.			
61.				101.			
62.				102.			
63.				103.			
64.				104.			
65.				105.			
66.				106.			
67.				107.			
68.				108.			
69.				109.			
70.				110.			
71.				111.			
72.				112.			
73.				113.			
74.				114.			
75.				115.			
76.				116.			
77.				117.			
78.				118.			
79.				119.			
80.	N/A	N/A	N/A	120.			

RADIOLOGICAL SAFETY

Drawing Showing Survey Points



374 Rm 3813

ATTACHMENT C

Survey Unit 374016 Radiological Data Summary and Survey Map

Survey Area: AN

Survey Unit: 374016

Building: 374

Description: B374 Exterior Walls

Rocky Flats Environmental Technology Site Final Radiological Survey Summary Results

Total Surface Activity Measurements

Nbr Random Measurements Required: 23

Nbr Biased Measurements Required: 0

Nbr QC Required: 2

Nbr Random Measurements Performed: 23

Nbr Biased Measurements Performed: 0

Nbr QC Performed: 2

Alpha

Maximum: 62.2 dpm/100cm²

Minimum: -10.6 dpm/100cm²

Mean: 22.8 dpm/100cm²

Standard Deviation: 20.0

QC Maximum: 2.5 dpm/100cm²

QC Minimum: -6.6 dpm/100cm²

QC Mean: -2.1 dpm/100cm²

Transuranic DCGL_w: 100.0 dpm/100cm²

Transuranic DCGL_{EMC}: 300.0 dpm/100cm²

Removable Surface Activity Measurements

Nbr Random Measurements Required: 23

Nbr Biased Measurements Required: 0

Nbr Random Measurements Performed: 23

Nbr Biased Measurements Performed: 0

Alpha

Maximum: 5.8 dpm/100cm²

Minimum: -1.5 dpm/100cm²

Mean: 2.3 dpm/100cm²

Standard Deviation: 2.3

Transuranic DCGL_w: 20.0 dpm/100cm²

Media Sample Results

Nbr Random Required: 0

Nbr Biased Required: 0

Nbr Random Collected: 0

Nbr Biased Collected: 0

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.

Survey Area: AN

Survey Unit: 374016

Building: 374

Description: B374 Exterior Walls

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	
1	711525	08/26/04	Electra	397	DP-6	09/16/04	0.224	NA	48.0	NA	S
2	713312	08/26/04	SAC-4	767	DP-6	01/13/05	0.225	NA	48.0	NA	S
3	711463	08/26/04	SAC-4	1354	DP-6	01/06/05	0.222	NA	48.0	NA	S
4	704000	08/26/04	Electra	4836	DP-6	02/18/05	0.219	NA	48.0	NA	S
5	702379	08/26/04	SAC-4	1072	NA	12/25/04	0.330	NA	10.0	NA	R
6	702350	09/11/04	Electra	397	DP-6	09/16/04	0.224	NA	48.0	NA	S
7	702379	09/11/04	Electra	1234	DP-6	02/02/05	0.223	NA	48.0	NA	S
8	713311	09/11/04	Electra	2146	DP-6	02/24/05	0.220	NA	48.0	NA	T
9	704000	09/11/04	Electra	4379	DP-6	09/24/04	0.216	NA	48.0	NA	S
10	713311	09/11/04	SAC-4	829	NA	02/28/05	0.330	NA	10.0	NA	R
11	713311	09/11/04	SAC-4	1516	NA	02/28/05	0.330	NA	10.0	NA	R
12	712593	09/29/04	Electra	761	DP-6	01/09/05	0.220	NA	48.0	NA	T/Q
13	712593	09/29/04	SAC-4	759	NA	03/20/05	0.330	NA	10.0	NA	R
14	702255	10/07/04	Electra	4822	DP-6	10/26/04	0.225	NA	48.0	NA	S
15	702350	10/07/04	Electra	1358	DP-6	03/13/05	0.218	NA	48.0	NA	S

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

Survey Area: AN

Survey Unit: 374016

Building: 374

Description: B374 Exterior Walls

Random Removable Surface Activity Data Sheet

Random Measurement Location	Inst / RCT Nbr	Net Alpha (dpm/100cm ²)	Net Beta (dpm/100cm ²)	
374016PRP-N001	10	2.7	N/A	
374016PRP-N002	11	5.2	N/A	
374016PRP-N003	10	5.8	N/A	
374016PRP-N004	13	1.5	N/A	
374016PRP-N005	5	1.5	N/A	
374016PRP-N006	5	-1.5	N/A	
374016PRP-N007	13	1.5	N/A	
374016PRP-N008	11	2.1	N/A	
374016PRP-N009	13	1.5	N/A	
374016PRP-N010	13	4.6	N/A	
374016PRP-N011	10	2.7	N/A	
374016PRP-N012	11	-0.9	N/A	
374016PRP-N013	10	2.7	N/A	
374016PRP-N014	11	-0.9	N/A	
374016PRP-N015	10	5.8	N/A	
374016PRP-N016	11	2.1	N/A	
374016PRP-N017	10	2.7	N/A	
374016PRP-N018	13	-1.5	N/A	
374016PRP-N019	11	5.2	N/A	
374016PRP-N020	10	2.7	N/A	
374016PRP-N021	11	5.2	N/A	
374016PRP-N022	10	-0.3	N/A	
374016PRP-N023	11	2.1	N/A	

Comments: 2-minute count time required.

Survey Area: AN

Survey Unit: 374016

Building: 374

Description: B374 Exterior Walls

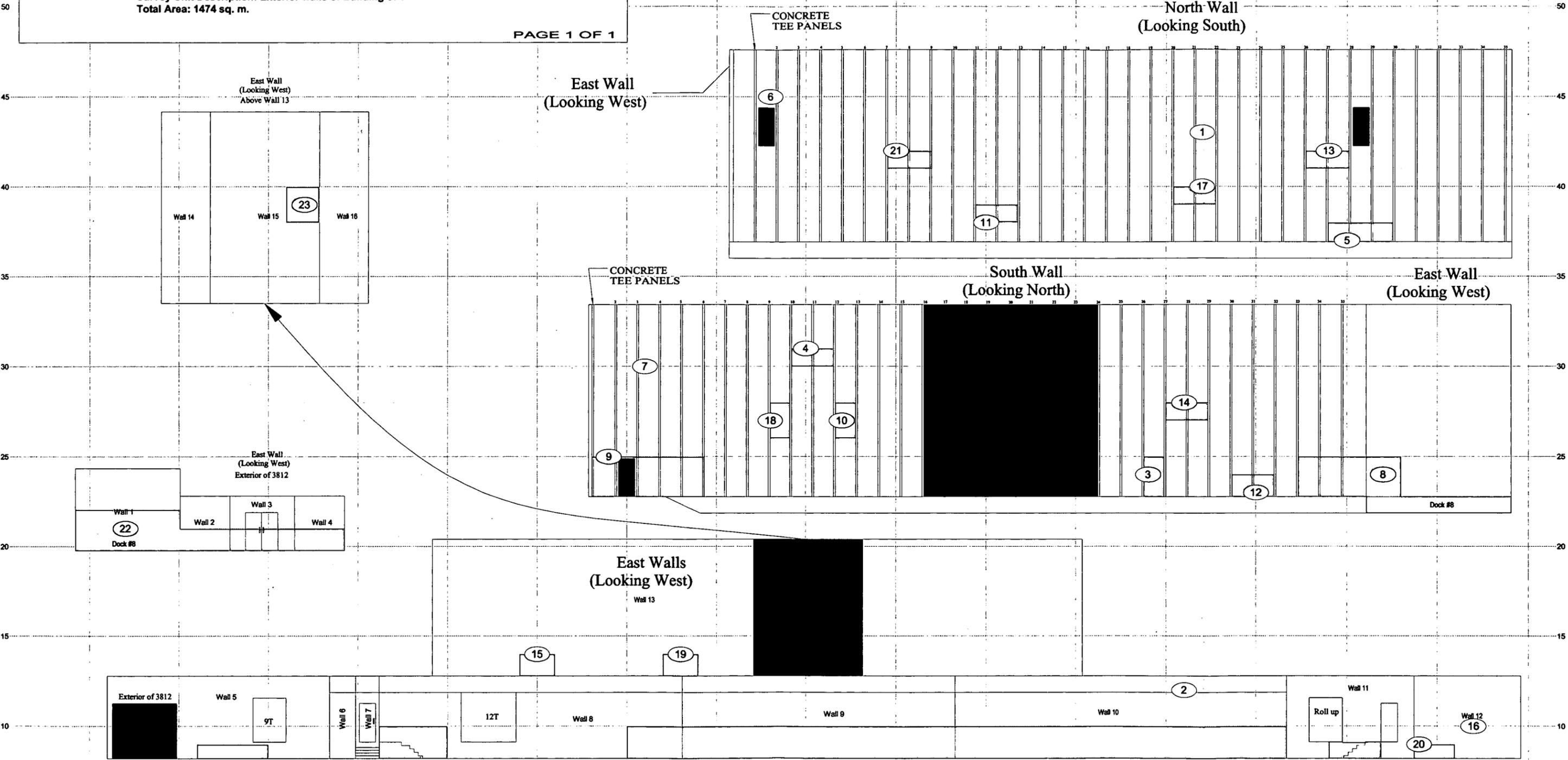
Random/QC Total Surface Activity Data Sheet

Random Measurement Location	Inst / RCT Nbr	Net Alpha (dpm/100cm ²)	Net Beta (dpm/100cm ²)	
374016PRP-N001	8	62.2	N/A	
374016PRP-N002	8	3.1	N/A	
374016PRP-N003	8	12.2	N/A	
374016QRP-N003	12	2.5	N/A	
374016PRP-N004	12	12.2	N/A	
374016PRP-N005	8	-10.6	N/A	
374016PRP-N006	8	48.5	N/A	
374016PRP-N007	12	12.2	N/A	
374016PRP-N008	8	-2.8	N/A	
374016PRP-N009	12	24.4	N/A	
374016PRP-N010	12	15.3	N/A	
374016PRP-N011	8	-1.5	N/A	
374016PRP-N012	8	30.3	N/A	
374016QRP-N012	12	-6.6	N/A	
374016PRP-N013	8	48.5	N/A	
374016PRP-N014	8	44.0	N/A	
374016PRP-N015	8	12.2	N/A	
374016PRP-N016	8	12.2	N/A	
374016PRP-N017	8	48.5	N/A	
374016PRP-N018	12	15.3	N/A	
374016PRP-N019	8	16.7	N/A	
374016PRP-N020	8	9.0	N/A	
374016PRP-N021	8	34.9	N/A	
374016PRP-N022	8	24.4	N/A	
374016PRP-N023	8	53.1	N/A	

Comments: 1.5 minute count time required.

5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85

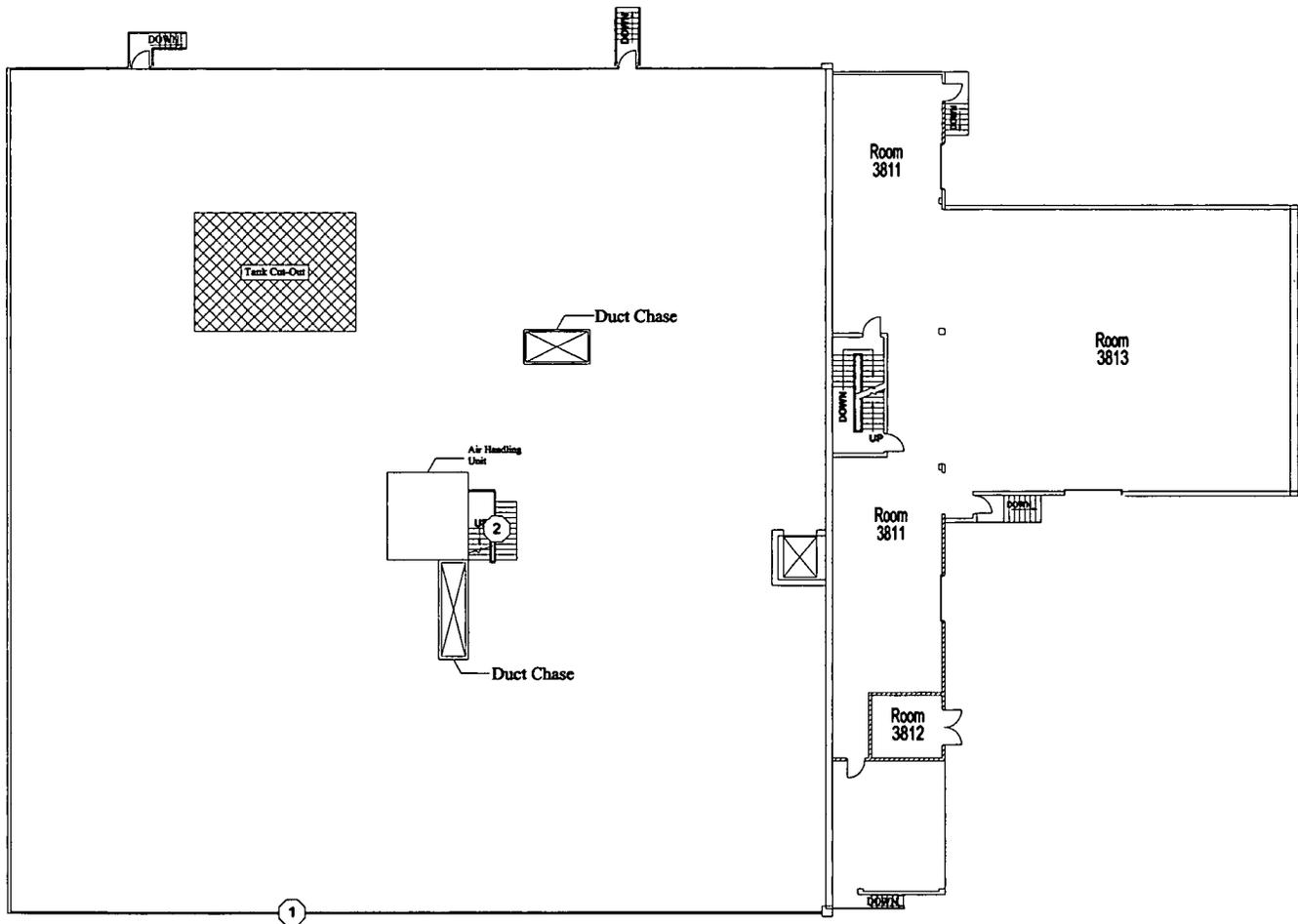
PRE-DEMOLITION SURVEY FOR BUILDING 374
 Survey Area: AN Survey Unit: 374016 Classification: 3
 Building: 374
 Survey Unit Description: Exterior walls of Building 374
 Total Area: 1474 sq. m.
 PAGE 1 OF 1



<p>Notes: Total sq. m. Scanned - 162 m² Total percent scanned - 11%</p>	<p>SURVEY MAP LEGEND</p> <ul style="list-style-type: none"> ● Smear & TSA Location ◆ Smear, TSA & Sample Location ■ Open/Inaccessible Area □ Area in Another Survey Unit □ Total Scan Area 	<p>Neither the United States Government nor Kaiser Hill Co., nor any agency thereof, nor any of their employees, makes any warranty, express or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of any information, apparatus, product, or process disclosed, or represents that its use would not infringe privately owned rights.</p> <p>Scan Survey Information Survey Instrument ID #(s) & RCT ID #(s): 1, 2, 3, 4, 6, 7, 9, 14 & 15</p>	<p>N ↑</p>	<p>0 25 FEET</p> <p>0 8 METERS</p> <p>1 inch = 18 feet 1 grid sq. = 1 sq. m.</p>	<p>U.S. Department of Energy Rocky Flats Environmental Technology Site</p> <p>Prepared by: J.Jimenez 303.968.2269 Prepared for:</p> <p>FINAL</p> <p>MAP ID: 371 - 374 Survey Units/374016 Kaiser Hill October 13, 2004</p>
---	--	---	-----------------------	---	---

0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85

Building 374 - Metal Coupon Locations



<p>SURVEY MAP LEGEND</p> <p># Metal coupons from Roof area</p>	<p>Neither the United States Government nor Kaiser Hill Co., nor any agency thereof, nor any of their employees, makes any warranty, express or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of any information, apparatus, product, or process disclosed, or represents that its use would not infringe privately owned rights.</p> <p>Notes:</p>	<p>N</p> <p>↑</p>	<p>0 FEET 25</p> <p>0 METERS 8</p> <p>DRAWING NOT TO SCALE</p>	<p>U.S. Department of Energy Rocky Flats Environmental Technology Site</p> <p>Prepared by: J.Jimenez 303.966.2269</p> <p>Prepared for:</p> <p>FINAL</p> <p>MAP ID: 371 - 374 Survey Units\B374\Metalcpn</p> <p>RAISER HILL COMPANY</p> <p>October 25, 2004</p>
---	---	--------------------------	--	---

35

***** 707/776/777 PROJECT G.A.M.M.A SPECTRUM ANALYSIS *****

ISOCS Report Generator : ISOCSAN.TPL 2/26/96
Report Generated On : 10/13/04 2:46:26 PM

Spectrum File Name : C:\PCNT2K\CAMFILES\MEDIA\MED00259.CNF
Sample Title : 374 Roof Coupon
Sample Identification : Coupon
Sample Type : Coupon
Desc. 1 : B374 Roof Coupon Flashing along
Desc. 2 : S. side of roof-3M W. of Rm 3801
Desc. 3 : Tank Removal area
Desc. 4 : 456 dpm via NE Electra

Peak Locate Threshold : 3.00
Peak Locate Range (in channels) : 1 - 8192
Peak Area Range (in channels) : 1 - 8192
Identification Energy Tolerance : 1.000 keV

COPY

Sample Size : 1.600E+000 100 cm2

Note: For Point Source, report UNIT = none.

Sample Taken On : 10/12/04 1:30:00 PM
Acquisition Started : 10/13/04 8:10:59 AM

Live Time : 23115.5 seconds
Real Time : 23121.3 seconds

Energy Calibration Used Done On : 7/23/04
Efficiency / Geometry ID : B374COUPON@OMM
Efficiency Calibration Used Done On : 10/13/04
Counted in accordance with procedure : PRO-1754-GENIE2000-1 VERSION 0

Analysis Performed by: [Signature] 902666 10/13/04

Reviewed by: [Signature] 701199 10/13/04

Qualitative results on coupon reported off the
16.5 keV Pb210 peak which is outside of our established
energy/eff CAL CURVES. SPECTRUM correlates with
Electra probe value AND is indicative of NORM with
no indication of DOE enhanced materials noted.
[Signature] 10/13/04

 ** INTERFERENCE CORRECTED REPORT **

Nuclide Name	Nuclide Id Confidence	Wt mean Activity (dpm/100 cm2)	Wt mean Activity Uncertainty
BE-7	0.999	1.6707E+002	52.84%
K-40	0.999	1.9828E+002	20.44%
PB-210	0.997	6.3704E+002	62.85%

? = nuclide is part of an undetermined solution
 X = nuclide rejected by the interference analysis

Errors quoted at 2.000 sigma

***** UNIDENTIFIED PEAKS *****

Peak Locate Performed on: 10/13/04 2:46:25 PM
 Peak Locate From Channel: 1
 Peak Locate To Channel: 8192

Peak No.	Energy (keV)	Peak Size in Counts per Second	Peak CPS % Uncertainty
M 2	312.14	6.1791E-003	21.94 PAZZI PK
M 4	510.94	2.4858E-002	30.01 AAVI PK

M = First peak in a multiplet region
 m = Other peak in a multiplet region

Errors quoted at 2.000 sigma

***** 707/776/777 PROJECT G A M M A SPECTRUM ANALYSIS *****

ISOCs Report Generator ISOCsAN.TPL 2/26/96
Report Generated On : 10/13/04 7:51:44 AM

Spectrum File Name : C:\PCNT2K\CAMFILES\MEDIA\MED00258.CNF
Sample Title : B374 Coupon Air Handling Unit
Sample Identification : 2.75" Coupon
Sample Type : MED
Desc. 1 : 132 dpm per NE Electra
Desc. 2 : Air Handling Unit W. of Door 40
Desc. 3 :
Desc. 4 :

Peak Locate Threshold : 3.00
Peak Locate Range (in channels) : 1 - 8192
Peak Area Range (in channels) : 1 - 8192
Identification Energy Tolerance : 1.000 keV

COPY

Sample Size : 3.680E-001 100 cm2

Note: For Point Source, report UNIT = none.

Sample Taken On : 10/12/04 2:00:00 PM
Acquisition Started : 10/12/04 3:20:44 PM

Live Time : 58407.7 seconds
Real Time : 58423.0 seconds

Energy Calibration Used Done On : 7/23/04
Efficiency / Geometry ID : B374COUPON@0MM
Efficiency Calibration Used Done On : 10/13/04
Counted in accordance with procedure : PRO-1754-GENIE2000-1 VERSION 0

Analysis Performed by [Signature] 902666 10/13/04

Reviewed by: [Signature] 701189 10/13/2004

Qualitative results on coupon reported
off a peak (46.5 KeV) outside of
energy/efficiency CAL CURVES. Spectrum
is indicative of naturally occurring (uranium series)
radioactive material. No DOE enhance
material noted. [Signature] 10/13/04

 ** INTERFERENCE CORRECTED REPORT **

Nuclide Name	Nuclide Id Confidence	Wt mean Activity (dpm/100cp ²)	Wt mean Activity Uncertainty
K-40	0.998	3.6988E+002	14.94%
PB-210	0.994	2.3520E+002	64.12%

10/13/04

? = nuclide is part of an undetermined solution
 X = nuclide rejected by the interference analysis

Errors quoted at 2.000 sigma

***** UNIDENTIFIED PEAKS *****

Peak Locate Performed on: 10/13/04 7:51:43 AM
 Peak Locate From Channel: 1
 Peak Locate To Channel: 8192

Peak No.	Energy (keV)	Peak Size in Counts per Second	Peak CPS % Uncertainty
M 1	23.48	1.5554E-002	10.74 <i>Cd X-ray</i>
M 3	66.39	3.1568E-003	26.96 <i>W X-ray</i>
M 4	98.37	3.1975E-003	26.29 <i>TI 210 PK</i>
M 5	140.01	3.5575E-003	110.08 <i>High error</i>
M 6	198.48	2.1986E-003	157.05 <i>↓</i>
M 7	312.16	4.1684E-003	61.11 <i>PA231 PK</i>
M 8	511.05	2.5208E-002	4.97 <i>ANN PK</i>
M 9	569.30	1.1334E-003	50.35 <i>PA234 PK</i>
M 10	802.94	2.3401E-003	25.03 <i>PO 210 PK</i>
M 11	961.71	1.0198E-003	149.42 <i>High error</i>

M = First peak in a multiplet region
 m = Other peak in a multiplet region

Errors quoted at 2.000 sigma

ATTACHMENT D

Chemical Data Summaries and Sample Maps

Industrial Hygiene Information System Surface Sample Report

IHSR_SURFACE_SAMPLE

Date: 10/14/2004

Page: 1 of 2

RIN: 05Z0145

Sample Number/Type: 374-10112004-84-101 WIPE Hygienist: RUTH MCCAFFERTY
Location Info: FINAL SURVEY-SEE SURVEY MAP FOR EXACT LOCATION
Room No: 3813
Analyte: BERYLLIUM AND BE COMPOUNDS (AS BE)
Concentration: < 0.1000 _ UG/100CM2

Sample Number/Type: 374-10112004-84-102 WIPE Hygienist: RUTH MCCAFFERTY
Location Info: FINAL SURVEY-SEE SURVEY MAP FOR EXACT LOCATION
Room No: 3813
Analyte: BERYLLIUM AND BE COMPOUNDS (AS BE)
Concentration: < 0.1000 _ UG/100CM2

Sample Number/Type: 374-10112004-84-103 WIPE Hygienist: RUTH MCCAFFERTY
Location Info: FINAL SURVEY-SEE SURVEY MAP FOR EXACT LOCATION
Room No: 3813
Analyte: BERYLLIUM AND BE COMPOUNDS (AS BE)
Concentration: < 0.1000 _ UG/100CM2

Sample Number/Type: 374-10112004-84-104 WIPE Hygienist: RUTH MCCAFFERTY
Location Info: FINAL SURVEY-SEE SURVEY MAP FOR EXACT LOCATION
Room No: 3813
Analyte: BERYLLIUM AND BE COMPOUNDS (AS BE)
Concentration: < 0.1000 _ UG/100CM2

Sample Number/Type: 374-10112004-84-105 WIPE Hygienist: RUTH MCCAFFERTY
Location Info: FINAL SURVEY-SEE SURVEY MAP FOR EXACT LOCATION
Room No: 3813
Analyte: BERYLLIUM AND BE COMPOUNDS (AS BE)
Concentration: < 0.1000 _ UG/100CM2

Sample Number/Type: 374-10112004-84-106 WIPE Hygienist: RUTH MCCAFFERTY
Location Info: FINAL SURVEY-SEE SURVEY MAP FOR EXACT LOCATION
Room No: 3813
Analyte: BERYLLIUM AND BE COMPOUNDS (AS BE)
Concentration: < 0.1000 _ UG/100CM2

Sample Number/Type: 374-10112004-84-107 WIPE Hygienist: RUTH MCCAFFERTY
Location Info: FINAL SURVEY-SEE SURVEY MAP FOR EXACT LOCATION
Room No: 3813
Analyte: BERYLLIUM AND BE COMPOUNDS (AS BE)
Concentration: < 0.1000 _ UG/100CM2

Sample Number/Type: 374-10112004-84-108 WIPE Hygienist: RUTH MCCAFFERTY
Location Info: FINAL SURVEY-SEE SURVEY MAP FOR EXACT LOCATION
Room No: 3813
Analyte: BERYLLIUM AND BE COMPOUNDS (AS BE)
Concentration: < 0.1000 _ UG/100CM2

Sample Number/Type: 374-10112004-84-109 WIPE Hygienist: RUTH MCCAFFERTY
Location Info: FINAL SURVEY-SEE SURVEY MAP FOR EXACT LOCATION
Room No: 3813
Analyte: BERYLLIUM AND BE COMPOUNDS (AS BE)
Concentration: < 0.1000 _ UG/100CM2

Sample Number/Type: 374-10112004-84-110 WIPE Hygienist: RUTH MCCAFFERTY
Location Info: FINAL SURVEY-SEE SURVEY MAP FOR EXACT LOCATION
Room No: 3813
Analyte: BERYLLIUM AND BE COMPOUNDS (AS BE)
Concentration: < 0.1000 _ UG/100CM2

Sample Number/Type: 374-10112004-84-111 WIPE Hygienist: RUTH MCCAFFERTY
Location Info: FINAL SURVEY-EAST TROUGH, 1' W OF E END
Room No: 3813
Analyte: BERYLLIUM AND BE COMPOUNDS (AS BE)
Concentration: < 0.1000 _ UG/100CM2

Sample Number/Type: 374-10112004-84-112 WIPE Hygienist: RUTH MCCAFFERTY

DOES NOT CONTAIN
OFFICIAL USE ONLY INFORMATION
J.A. NESHEIM (30498)
Name/Org: Emelle Cassal Date: 07-02-08
OFFICE

OFFICIAL USE ONLY

Contains information which may be exempt from public release under the Freedom of Information Act (5 USC 552), exemption (b) (7)(C).
Approval by the Department of Energy prior to public release is required.

41

Industrial Hygiene Information System Surface Sample Report

IHSR_SURFACE_SAMPLE

Date: 10/14/2004

Page: 2 of 2

RIN: 05Z0145

Sample Number/Type: 374-10112004-84-112 WIPE Hygienist: RUTH MCCAFFERTY
Location Info: FINAL SURVEY-WEST TROUGH,1' W OF E END
Room No: 3813
Analyte: BERYLLIUM AND BE COMPOUNDS (AS BE)
Concentration: < 0.1000 _ UG/100CM2

Sample Number/Type: 374-10112004-84-113B BLANK Hygienist: RUTH MCCAFFERTY
Location Info:
Room No:
Analyte: BERYLLIUM AND BE COMPOUNDS (AS BE)
Concentration: < 0.1000 _ UG

Sample Number/Type: 374-10112004-84-114B BLANK Hygienist: RUTH MCCAFFERTY
Location Info:
Room No:
Analyte: BERYLLIUM AND BE COMPOUNDS (AS BE)
Concentration: < 0.1000 _ UG

~~OFFICIAL USE ONLY~~

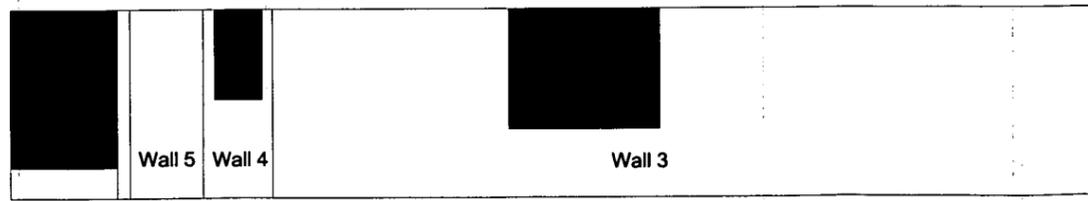
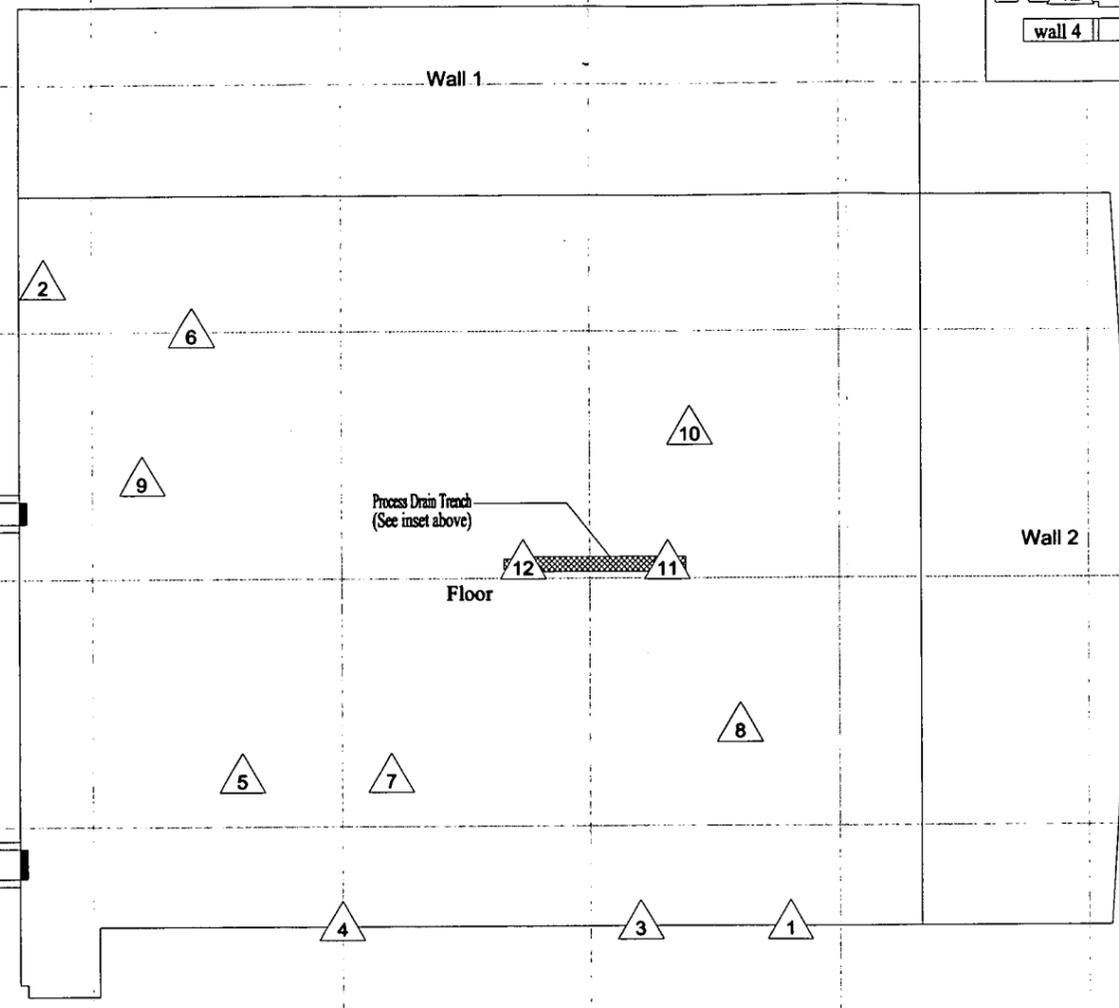
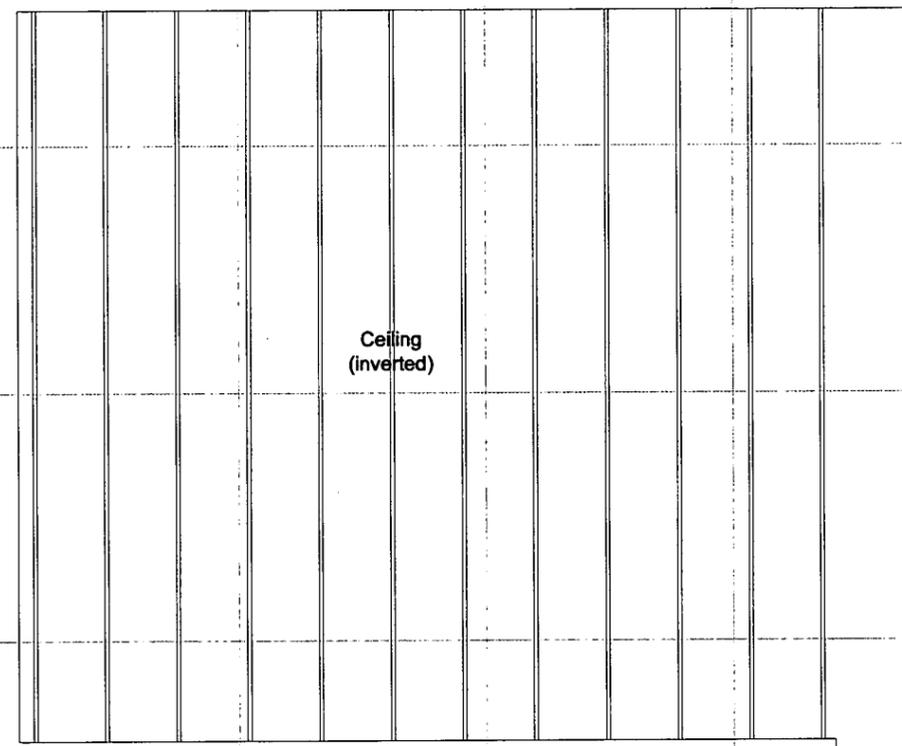
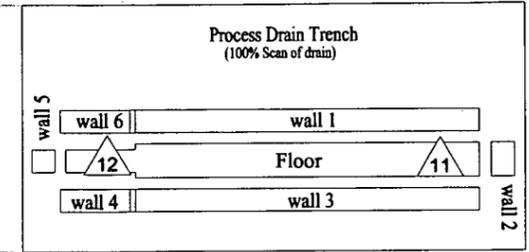
~~Contains information which may be exempt from public release under the Freedom of Information Act (5 USC 552), exemption number(s) 0.
Approval by the Department of Energy prior to public release is required.~~

42

CHEMICAL SAMPLE MAP

Building: 374 Room 3813

PAGE 1 OF 1

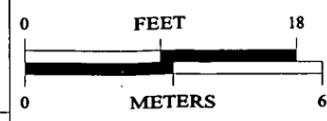
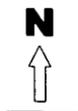


SURVEY MAP LEGEND

- ⊙ Asbestos Sample Location
- ⚠ Beryllium Sample Location
- ⊠ Lead Sample Location
- ⬠ RCRA/CERCLA Sample Location
- ⊛ PCB Sample Location

Neither the United States Government nor Kaiser Hill Co., nor any agency thereof, nor any of their employees, makes any warranty, express or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of any information, apparatus, product, or process disclosed, or represents that its use would not infringe privately owned rights.

- 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: J.Jimenez 303.966.2269 Prepared for:

FINAL



MAP ID: 371 - 374 Survey Units/B374374020-8e October 14, 2004

ATTACHMENT E

Data Quality Assessment

DATA QUALITY ASSESSMENT (DQA)

VERIFICATION & VALIDATION 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 E-1, and beryllium in E-2. A data completeness summary for all results is given in Table E-3.

All relevant Quality records supporting this report are maintained in the B371 Characterization Project Files. This 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 Survey Units. Chemical data are organized by RIN (Report Identification Number) and are traceable to the sample number and corresponding sample location.

Survey designs were implemented based on the transuranic limits used as DCGLs in the unrestricted release decision process. All survey results were evaluated against, and were less than the Transuranic DCGL_w (100 dpm/100cm²).

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.

Based upon an independent review of the radiological data, it is determined that the original project DQOs satisfied site PDSP guidance. All facility contamination levels were below applicable unrestricted release levels, except as noted above. Minimum survey requirements were met, sampling/survey protocol was performed in accordance with applicable procedures, survey units were properly designed and bounded, and instrument performance and calibration were within acceptable limits.

Isolation Controls have been implemented to prevent the inadvertent introduction of further contamination into the facility. On this basis, the Room 3813 Dock area and Building 374 Exterior meet the RLCP and PDSP DQO criteria with the confidences stated herein.

Table E-1 V&V of Radiological Surveys – Room 3813 (Interior) & Building 374 Exterior

V&V CRITERIA, RADIOLGICAL SURVEYS		K-H RSP 16.00 Series MARSSIM (NUREG-1575)		
QUALITY REQUIREMENTS				
	Parameters	Measure	Frequency	COMMENTS
ACCURACY	initial calibrations	80%<x<120 %	≥1	Calibration using Alpha Group procedure and approved technicians.
	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 <10 cpm
PRECISION	field duplicate measurements for TSA	≥5% of real survey points	≥100% packages	N/A
REPRESENTATIVENESS	MARSSIM methodology: Survey Unit 374016 & 374020	statistical	NA	Systematic and random w/ statistical confidence.
	Survey Maps	NA	NA	Random 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	
SENSITIVITY	detection limits	TSA: ≤50 dpm/100cm ² RA: ≤10 dpm/100cm ²	all measures	MDAs ≤ ½ DCGL _w per MARSSIM guidelines.

Table E-2 V&V of Beryllium Results – Room 3813 (Interior) & Building 374 Exterior

V&V CRITERIA, CHEMICAL ANALYSES		DATA PACKAGE		COMMENTS
BERYLLIUM	Prep: NMAM 7300 METHOD: OSHA ID-125G	LAB ---->	Johns Manville Corp. Denver, Co.	
	QUALITY REQUIREMENTS	RIN ---->	RIN 05Z0145 Sample #'s - 374- 10112004-84-101 through 112	
		Measure	Frequency	
ACCURACY	Calibrations		≥1	No qualifications significant enough to change project decisions, i.e., classification of Type 3 facilities confirmed. All results were below associated action levels.
	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	Laboratory Control Sample Duplicate	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 0.10ug/100cm ²	all measures	

Table E-3 Data Completeness Summary – Room 3813 (Interior) & Building 374 Exterior

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	B374, Room 3813	10 random 2 biased (interior)	10 random 2 biased (interior)	No beryllium contamination found at any location, all results below the regulatory limit	OSHA ID-125G RIN 05Z0145 Sample numbers 374-10112004-84-101 through 112 No results above action level (0.2ug/100cm ²) or investigative level (0.1ug/100cm ²).
Radiological	Survey Area: AN Survey Unit: 374020 B374, Room 3813 (All Surfaces)	16 α TSA (16 – Random/Systematic) and 16 α Smears (16 - Random/Systematic) 2 QC TSA 53 % scanned	16 α TSA (16 – Random/Systematic) and 16 α Smears (16 - Random/Systematic) 2 QC TSA 53 % scanned	No elevated contamination at any location; all values below PDS unrestricted release levels No result above action level	Transuranic DCGLs No result above action level
Radiological	Survey Area: AN Survey Unit: 374016 B374 Exterior (Walls)	23 α TSA (23 – Random/Systematic) and 23 α Smears (23 - Random/Systematic) 2 QC TSA 11% scanned	23 α TSA (23 – Random/Systematic) and 23 α Smears (23 - Random/Systematic) 2 QC TSA 11% scanned	No elevated contamination at any location; all values below PDS unrestricted release levels No result above action level	Transuranic DCGLs No result above action level

48

ATTACHMENT F

Historical Review

**Building 374, Room 3813
Historical Review, Rev. 1
October 26, 2004**

Facility ID: Building 374, Room 3813 & B374 Exterior

Anticipated Facility Type (1, 2, or 3): Type 3 based on process history and proximity to B371. Historically, this area was used as a dock area only and the potential for contamination is very low, with the exception of a process drain trench located in the middle of the floor.

Physical Description: The Building 374, Room 3813 Area is the former dock area located in the east section of Building 374. This area only includes Room 3813.

Historical Operations:

Room 3813 was added on to B374 after original construction and was utilized as a dock area for the shipment/receipt of miscellaneous solid/liquid waste and equipment.

Current Operational Status

Room 3813 is no longer operational. All major equipment (roll-up door, metal dock ramp, process drain trench grating) has been removed. The only items that remain are fire suppression system piping and room HVAC ductwork.

Contaminants of Concern

Asbestos

A Colorado state Certified Asbestos Building Inspector performed a complete inspection of the area, no suspect material was found.

Beryllium (Be)

This area of Building 374, Room 3813, is not an RFETS Beryllium (Be) Area, based on historical and existing classifications, and historical use. In addition, there has been no release of beryllium outside of B374, according to historical records. B374 was constructed after the fires in B771 and B776. Be contamination outside of B374 is unlikely.

Lead

No paint is located in this area and therefore no paint removal is required from the substrate.

A visual inspection of Room 3813 by Environmental Compliance personnel verified the absence of hazardous waste residuals and/or stains on the floor/concrete slab, walls, or ceiling.

RCRA/CERCLA Constituents

A review of the RCRA operating record for Unit 374.1, Room 3813 and the building files indicates that no hazardous or mixed waste was spilled in Room 3813. A visual inspection of the building by 371/374 Environmental Compliance personnel verified the absence of hazardous waste residuals and/or stains on the floor/concrete slab, walls, or ceiling. Therefore, it has been determined that no additional sampling for RCRA/CERCLA constituents is required.

PCBs

Free-flowing or exposed PCBs have never been used or transferred in Room 3813. PCB ballasts in fluorescent light fixtures were present throughout the area, and have been removed and disposed of.

SD

**Building 374, Room 3813
Historical Review, Rev. 1
October 26, 2004**

Radiological Contaminants

The contaminants of concern for the 374 project, including all areas of Buildings 371 and 374, are transuranic alpha-emitting radioisotopes (including Pu-238, Pu-239/240, Pu-242, and Am-241). Based on findings documented in Radiological Engineering TBD-00157, Rev. 1, alpha-only surveys assure that the unrestricted-release limits for any other isotopes that may exist in Building 371/374 will not be exceeded.

Room 3813 was posted as a Radioactive Material Area due to the storage of miscellaneous waste awaiting shipment from Building 374. This area has no history of being posted as an Airborne Radioactivity Area or a Contamination Area. There is no history of spills in this area; however, according to interviews, liquid waste storage tanks were routinely discharged into process drain trenches located in the slab to go into Tank D852, in Room 2804. These discharges were always controlled and no spills ever occurred on adjacent building surfaces, with the exception of incidental liquids in rare cases. This incidental liquid was always immediately cleaned and followed with radiological surveys to ensure no contamination was present. The two process drain trenches are located in the floor of Room 3813 and are lined with a stainless steel covering. One trench is longer (approximately 8 feet) and contained no process drain piping. The second trench is smaller (approximately 2 feet), and contained a process drain vent and pipe leading to the concrete foundation and continuing through the concrete slab to Room 2804 tank farm. Initial maximum radiological contamination levels inside the trenches were 720 dpm/100 cm² (removable) and 4500 dpm/100 cm² (direct). This trench area has been cleaned and wiped down to unrestricted release levels. Inspections of the stainless steel did not reveal any penetrations existed. Therefore, no contamination is expected below this stainless steel. The process drain vent has been removed from the second, smaller trench and the pipe leading to Room 2804 has been grouted shut. The remaining process drain piping in the slab/foundation will be removed during demolition as Surface Contaminated Object waste. It is not suspected that any D&D activities impacted the radiological status of this area.

B374 was built after the fires in B771 and B776; therefore, contamination on exterior surfaces is not expected. The most potential for contamination on exterior walls would have been from building operations (e.g., waste operations outside the building). As such, the lower walls will be targeted for a majority of the scan locations.

Environmental Restoration Concerns

UBC sampling performed inside the B374 footprint has been performed. Based on the preliminary results, no remedial action is anticipated.

Additional Information

None

References

(1) *Reconnaissance Level Characterization Report for the 371/374 Building Cluster*, dated August 28, 2000, Revision 0.

Further Actions

Complete the PDS process.

**D&D Facility Characterization
Historical Site Assessment - Interview Checklist**

Facility ID: Building 374, Room 3813 Dock Area
Facility Type (1, 2, or 3): Type 3

This facility specific Historical Site Assessment (HSA) - Interview Checklist has been conducted in accordance with:
D&D Characterization Protocol, RFETS MAN-077-DDCP, latest version, and
Facility Disposition Program Manual, RFETS MAN-076-FDPM, latest version

Personnel Interviewed (Name, Title, and Function):

Terry Wright, 374 Waste Operations, T371K, X3186

What time frame did the interviewee work in the facility?

Mr. Wright was an operations manager for waste water treatment operations from 1992 until the present.

Has the building configuration changed since you worked in the building? If so, in what way?

The Room 3813 Dock area of B374 had no significant configuration changes during his time in the facility.

What operations/processes were conducted in the building during the interviewee's time at the facility?

This area was always used as a waste receiving/shipment dock. It was also used for moving equipment in and out of B374.

What types of equipment were in the building during the interviewee's time in the facility?

Mainly, forklifts and pallet jacks were used and stored in this area of B374. In addition, three 450 gallon waste storage tanks for liquids from other buildings were stored in this area on a routine basis.

Where was the equipment located? (specific rooms/areas)

All equipment was located in Room 3813.

Were any radioactive materials or equipment handled in the building? If so, what types and where?

Solid and liquid containerized wastes were handled in this area on a routine basis. Almost all of this waste was considered low-level waste or low-level mixed waste. No radioactive materials were stored on the outside of B374.

Were any chemicals (e.g., Asbestos, Beryllium, Lead, RCRA/CERCLA Constituents, PCBs, etc.) handled in the building? If so, what types and where?

Some containerized waste had RCRC/CERCLA constituents in Room 3813. No history of asbestos or beryllium waste in this area, unless the waste was located in a drum. The exterior of B374 had no instances in which any chemicals mentioned above were handled on or around the building except when moving containerized waste from transport vehicles into the building.

Did any spills or uncontrolled release of radioactive materials or chemicals occur while you worked in the building? If so, what types and where?

There were no uncontrolled releases of radioactive material in this area. However, many times, the liquid waste receiving tanks that were routinely stored in this area were poured down the process drain trench (stainless steel lined). In these cases, proper radiological controls were set up to ensure that no liquids were spilled on adjacent building surfaces. If incidental liquids were released, they were immediately cleaned with wipes and water, followed by detailed radiological surveys. The piping associated with this trench ran to Tank D-852 in Room 2804.

No spills occurred outside of B374 that would make the exterior of B374 suspect.

Were these spills/releases cleaned up? If so, how were cleaned up?

If incidental liquids were released during transfer operations in Room 3813, they were immediately cleaned with wipes and water, followed by detailed radiological surveys

Do you know of any additional issues, concerns, or process knowledge that could affect facility characterization?

This dock area was continuously cleaned on a regular basis. The housekeeping of this area was always kept to good standards. It was routinely aggressively swept and mopped at least weekly during Mr. Wright's time in the facility.

The exterior of B374 never encountered any scenarios that would make the exterior suspect to any type of chemical or radiological contamination. No releases ever occurred outside of the building.