



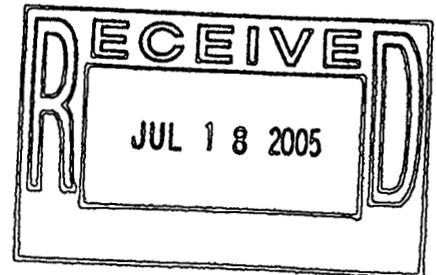
Rocky Flats Environmental Technology Site

TYPE 1 RECONNAISSANCE LEVEL CHARACTERIZATION REPORT (RLCR)

BUILDING 462 CLOSURE PROJECT

May 26, 2005

REVISION 0



Change Control:

- Rev 1. Revised Section 1.0, added text to clarify exterior surveys and pump shed - 6/2/05
- Rev 1. Revised Section 3.0, fixed typos - 6/2/05
- Rev 1. Revised Section 9.0, revised MARSSIM reference date - 6/2/05
- Rev. 1 Revised Attachment A, Overview map, to show pump shed - 6/2/05
- Rev. 1 Revised Attachment C, Survey Unit 462505 Data Summary, revised comment sheet and survey unit map to clarify cooling tower structure surveys - 6/2/05
- Rev. 1 Revised Attachment B, Beryllium Map, revised sample map to label cooling tower pump shed - 6/2/05

ADMIN RECORD

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**TYPE 1
RECONNAISSANCE LEVEL CHARACTERIZATION
REPORT (RLCR)**

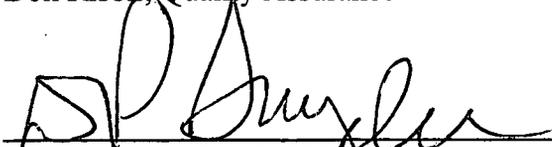
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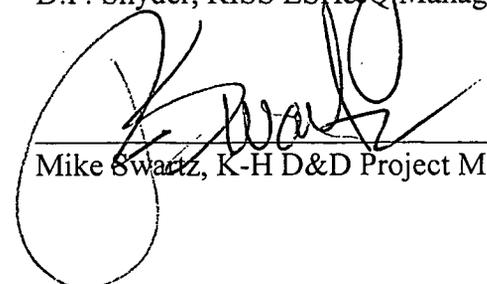
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- B Historical Site Assessment Report
- C Radiological Data Summaries and Survey Maps
- D Chemical Data Summaries and Sample Maps
- E Data Quality Assessment (DQA) Detail

ABBREVIATIONS/ACRONYMS

ACM	Asbestos containing material
Be	Beryllium
CDPHE	Colorado Department of Public Health and the Environment
CERCLA	Comprehensive Emergency Response, Compensation and Liability Act
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
FDFPM	Facility Disposition Program Manual
HVAC	Heating, ventilation, air conditioning
HSAR	Historical Site Assessment Report
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
RFEO	Rocky Flats Field Office
RLC	Reconnaissance Level Characterization
RLCR	Reconnaissance Level Characterization Report
RSP	Radiological Safety Practices
SVOCs	Semi-volatile organic compounds
TCLP	Toxicity Characteristic Leaching Procedure
TSA	Total surface activity
VOCs	Volatile organic compounds

EXECUTIVE SUMMARY

A Reconnaissance Level Characterization (RLC) was performed to enable facility "Typing" per the DPP (10/8/98) and compliant disposition and waste management of Building 462. Because this facility was an anticipated Type 1 facility, the characterization was performed in accordance with the Pre-Demolition Survey Plan (MAN-127-PDSP). All facility surfaces were characterized in this RLC, including exterior and the interior surfaces. Environmental media beneath and surrounding the facility was not within the scope of this RLCR and will be addressed at a future date using the Soil Disturbance Permit process and in compliance with RFCA.

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

Results indicate that no radiological, beryllium, asbestos, or hazardous contamination exists in excess of the PDSP unrestricted release limits of DOE Order 5400.5. Based upon this RLCR, Building 462 is considered a Type 1 facility and can be demolished. To ensure the facility remains free of contamination and the RLC data remain valid, Level 2 Isolation Controls have been established and the facility posted accordingly.

1 INTRODUCTION

Rev. 1. | A Reconnaissance Level Characterization (RLC) was performed to enable compliant disposition and waste management of Building 462. Because this facility was an anticipated Type 1 facility, a PDS characterization was performed. All facility surfaces were characterized in this RLC, including the interior and exterior surfaces (exterior radiological surveys for Building 462 were also performed as part of the West Side Exterior PDS Report, which was approved on March 24, 2005 by DOE and CDPHE). This RLC also included a small pump house associated with Building 462. Environmental media beneath and surrounding the facility was not within the scope of this RLC Report (RLCR) and will be addressed at a future date using the Soil Disturbance Permit process and in compliance with RFCA.

Rev. 1. | As part of the Rocky Flats Environmental Technology Site (RFETS) Closure Project, numerous facilities will be removed. Among these is Building 462. The location of this facility is shown in Attachment A, *Facility Location Map*. This facility no longer supports the RFETS mission and needs to be removed to reduce Site infrastructure, risks and/or operating costs.

Before the facility can be removed, a Pre-Demolition Survey (PDS) must be conducted; this document presents the PDS results. 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 built upon physical, chemical and radiological hazards identified in the facility-specific *Historical Site Assessment Report for the Area 5-Group 7 Facilities*, dated October 2002, Revision 0.

1.1 Purpose

The purpose of this report is to communicate and document the results of the RLC effort. A RLC is performed before 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. RLC 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 Building 462. Environmental media beneath and surrounding the facility is not within the scope of this RLCR 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 RLC 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

Rev 1. | A facility-specific Historical Site Assessment (HSA) was conducted to understand the facility history and related hazards. The assessment consisted of facility walkdowns, interviews, and document review, including review of the Historical Release Report (refer to the D&D Characterization Protocol, MAN-077-DDCP). Results were used to identify data gaps and needs, and to develop radiological and chemical characterization packages. Results of the facility-specific HSA were documented in a facility-specific *Historical Site Assessment Report for the Area 5 - Group 7 Facilities*, dated October 2002, Revision 0. Refer to Attachment B, *Historical Site Assessment Report*, for a copy of the Building 462 HSAR. In summary, the HSAR identified a low potential for radiological, chemical, and beryllium hazards; and the potential for asbestos hazards.

3 RADIOLOGICAL CHARACTERIZATION AND HAZARDS

Building 462 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 on, or in 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 462505 was developed for the interior of Building 462. 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 462505 is a MARSSIM Class 3 area due to the low potential for radiological contamination in Building 462. 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-seven (27) TSA measurements (15 random, 10 biased and 2 QC) and twenty-five (25) RSA measurements (15 random and 10 biased) were performed; and a minimum 10% scan of all facility surfaces was performed. The RLC 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 C, *Radiological Data Summary and Survey Maps*. Level 2 Isolation Control postings are displayed on the building to ensure no radioactive materials are inadvertently introduced into the facility.

Exterior radiological surveys for Building 462 were performed as part of the West Side Exterior PDS Report, which was approved on March 24, 2005 by DOE and CDPHE. The West Side Exterior PDS Report confirmed that the exterior surfaces of Building 462 do not contain radiological contamination above the surface contamination guidelines provided in the PDSP. The West Side Exterior PDS Report and survey data, statistical analysis results, and survey map locations are maintained in the RISS Characterization Project files.

4 CHEMICAL CHARACTERIZATION AND HAZARDS

Building 462 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 (refer to RISS Characterization Project files) was developed during the planning phase that describes sampling requirements, the justification for the sample locations and estimated sample numbers. Contaminants of concern included asbestos, beryllium, RCRA/CERCLA constituents, and PCBs.

4.1 Asbestos

A comprehensive asbestos inspection was conducted to determine the presence of friable and non-friable asbestos containing building material. The characterization was conducted in accordance with the PDSP. A CDPHE-certified asbestos inspector conducted the visual inspection in accordance with the *Asbestos Characterization Protocol, PRO-563-ACPR, Revision 1*. No building materials suspected of containing asbestos were identified for sampling at the discretion of the inspector during the visual inspection and walk down. On this basis, no asbestos sampling was required or performed as part of this RLCR.

4.2 Beryllium (Be)

Based on the HSAR and personnel interviews, Building 462 was an anticipated Type 1 facility. There was not, however, adequate historical and process knowledge to conclude that beryllium was not used or stored in this building. Therefore, biased beryllium sampling was performed in accordance with the PDSP and the *Beryllium Characterization Procedure, PRO-536-BCPR, Revision 0, September 9, 1999*. Biased sample locations corresponded with the most probable areas of dust accumulation (including beryllium dust), assuming airborne deposition. All beryllium smear sample results were less than $0.1 \mu\text{g}/100\text{cm}^2$. Beryllium laboratory sample data and location maps are contained in Attachment D, *Chemical Data Summaries and Sample Maps*.

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

Based on a review of the HSAR and a facility walk-down, Building 462 was a cooling tower for Building 460. There is no historical knowledge or visual evidence leading to a suspicion of RCRA/CERCLA contamination; therefore, RCRA/CERCLA constituent sampling was not performed in this facility as part of the RLC.

Sampling for lead in paint in Building 462 was not performed. Environmental Waste Compliance Guidance #27, *Lead-based Paint (LBP) and Lead-based paint Debris Disposal*, states that LBP debris generated outside of currently identified high contamination areas shall be managed as non-hazardous (solid) waste, and additional analysis for characteristics of hazardous waste derived from LBP is not a requirement for disposal. There were no high contamination areas in Building 462.

4.4 Polychlorinated Biphenyls (PCBs)

Based on the HSARs, interviews and facility walk-downs of Building 462, no PCB-containing equipment was ever present in the building, making the potential for PCB contamination resulting from spills highly unlikely. Therefore, PCB sampling was not performed in Building 462 as part of the RLC. Based on the age of the Building 462 (constructed after 1980), paints used do not contain PCBs. Additionally, the building is likely to contain PCB light ballasts. All light ballasts will be inspected and if leaking or large (greater than 9 pounds) PCB ballasts are discovered, they will be removed and managed accordingly.

5 PHYSICAL HAZARDS

Physical hazards associated with Building 462 consist of those common in standard industrial environments and include hazards associated with energized systems, utilities, and trips and falls. The facility has been relatively well maintained and is in good physical condition, and therefore, does not present hazards associated with building deterioration. However, care should be taken during demolition as Building 462 is associated with UBC 400-157.2 "Radioactive Site South Area – Active". 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 Building 462, and consequent waste management, are of adequate quality to support the decisions documented in this report. The data presented in this report (Attachments C and D) were verified and validated relative to DOE quality requirements, applicable EPA guidance, and original DQOs of the project.

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

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

Details of the DQA are provided in Attachment E, *Data Quality Assessment Detail*.

7 DECOMMISSIONING WASTE TYPES AND VOLUME ESTIMATES

The demolition and disposal of Building 462 will generate sanitary waste suitable for disposal at an RFETS-approved sanitary waste landfill. Estimated waste volumes are presented below.

Waste Volume Estimates and Material Types – Building 462							
Facility	Concrete (cu ft)	Wood (cu ft)	Metal (cu ft)	Corrugated Sheet Metal (cu ft)	Wall Board (cu ft)	ACM (cu ft)	Other Waste
462	250	0	1,000	0	0	0	None

8 FACILITY CLASSIFICATION AND CONCLUSIONS

Based on the analysis of radiological, chemical and physical hazards, Building 462 is classified as a RFCA Type 1 facility pursuant to the RFETS Decommissioning Program Plan (DPP; K-H, 1999) and can be demolished. The Type 1 classification is based on a review of historical and process knowledge, and newly acquired RLC/PDS data.

The RLC of Building 462 was performed in accordance with the DDCP and PDSP. All PDSP DQOs were met, and all data satisfied the PDSP DQA criteria. Building 462 did not contain radiological or hazardous waste. 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 this Type 1 facility remains free of contamination and the RLC 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."

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

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

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

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

MAN-077-DDCP, *Decontamination and Decommissioning Characterization Protocol*, Rev. 3, July 15, 2002.

MAN-127-PDSP, *Pre-Demolition Survey Plan for D&D Facilities*, Rev. 1, July 15, 2002.

Rev. 1.

MARSSIM - Multi-Agency Radiation Survey and Site Investigation Manual, Rev. 1, August 2000 (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.

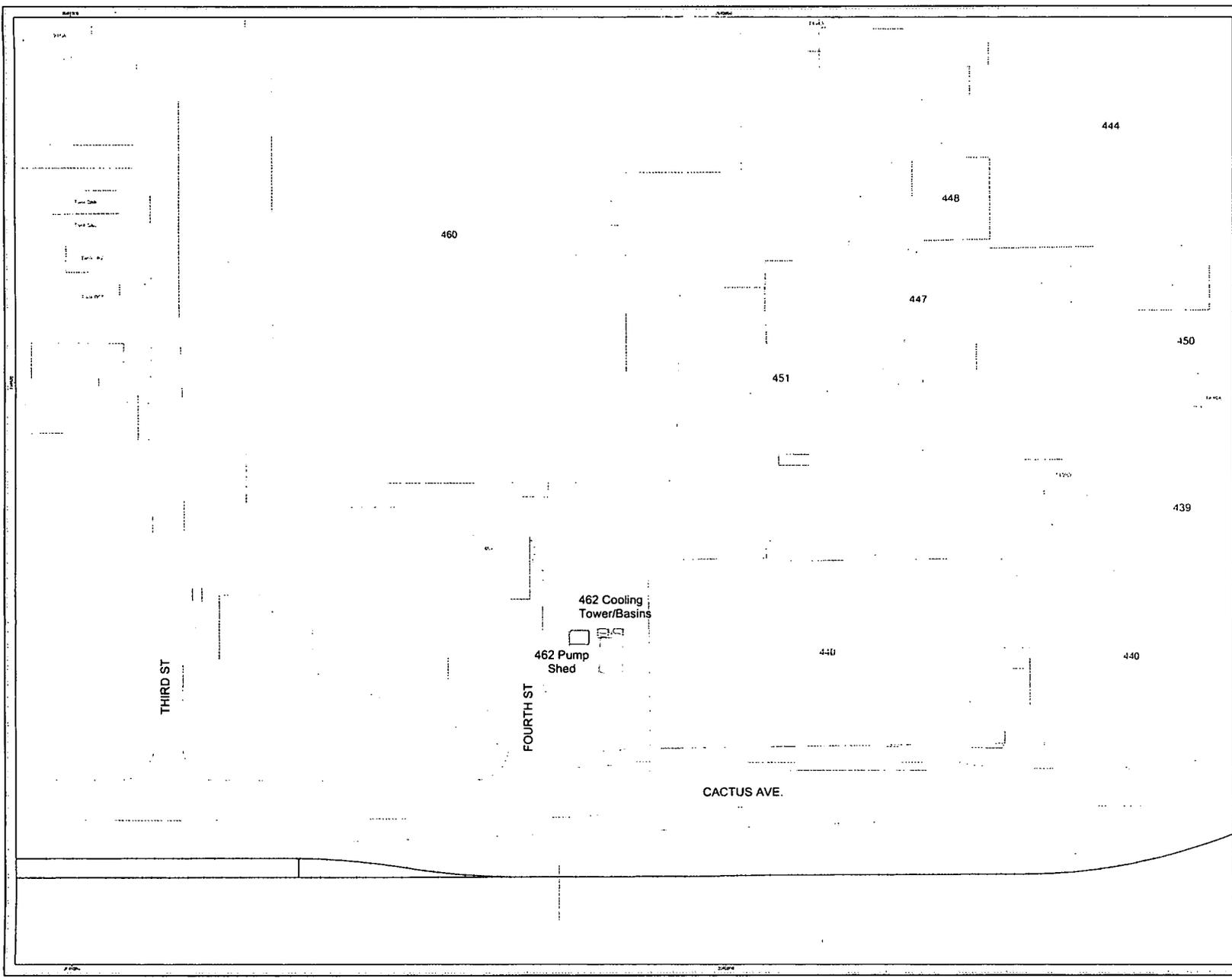
RFCA Standard Operation Protocol for Recycling Concrete, September 28, 1999.

Historical Site Assessment Report for the Area 5 - Group 7 Facilities, dated October 2002, Revision 0.

ATTACHMENT A

Facility Location Map

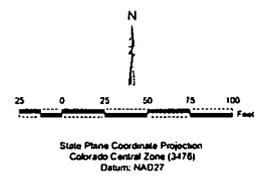
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Building 462 Location Plan

Standard Map Features

- Demolished Facility
- Remaining Facility
- 462 Cooling Tower/Basins & Pump Shed
- Demolished Roads
- Paved Roads
- Dirt Roads
- Railroad Removed
- Railroad Remaining
- Fence Remaining
- Stream or Ditch
- Lakes and Ponds



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

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DATE: 6/2/2005

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ATTACHMENT B

Historical Site Assessment Report

**D&D RISS Facility Characterization
Historical Site Assessment Report
October, 2002 Rev. 0**

Facility ID: (AREA 5 - Group 7) Buildings 460, 439, 462, 668, and T664A.

Anticipated Facility Type (1, 2, or 3): Buildings 460, 439, 668, 462 and T664A are anticipated Type 1 facilities.

This facility-specific Historical Site Assessment (HSA) has been performed in accordance with:

D&D Characterization Protocol, RFETS MAN-077-DDCP, latest version, and

Facility Disposition Program Manual, RFETS MAN-076-FDPM, latest version

Physical Description

Building 460

Building 460 is a 212,980 square foot, two-story structure, built in 1984. The structure is a pre-fabricated building constructed on a concrete foundation. The exterior walls are constructed of insulated metal panels attached to a steel frame. The roof is constructed of metal decking with built-up roofing. Building 460 is configured with the south half of the building as office space and a high-bay area on the north half of the building. The ceilings of the office area are 2-foot by 4-foot acoustical panels with recessed light fixtures. The floors in the offices are mostly carpeted. The ceiling in the high-bay area is the underside of the roof and the floor is concrete.

Building 460 has the following utilities: electrical, plant water, plant sanitary, plant steam, and fire protection is provided by an overhead sprinkler system and wall mounted fire extinguishers. Building 460 was originally connected to the site process waste system. The building's process waste system was isolated in the mid 1990s.

Building 439

Building 439 is a 5,140 square foot, single story building constructed in 1971. This structure is a pre-fabricated insulated metal building constructed on a concrete slab. This building is configured with a high bay area in the center of the building and several smaller machine rooms and offices on the east and west sides of the building.

Building 439 has the following utilities: electrical, plant water, plant sanitary, and fire protection is provided by an overhead sprinkler system and wall mounted fire extinguishers.

Building 462

Building 462 is a 590 square foot cooling tower constructed in 1985 and provides cooling water to Building 460. Building 462 is a metal structure elevated above a concrete pad by 8 concrete pedestals.

Building 462 has the following utilities: electrical and plant water.

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Historical Site Assessment Report
October, 2002 Rev. 0**

Building 668

Building 668 is a 1,540 square foot single-story building constructed in 1957. The exterior walls are Transite® panels and fiberglass panels, the floor is a concrete pad pour on grade. Building 668 is not a heated building and does not have a ventilation system. The building was once wire for electricity but is currently disconnected. The building was also fitted with fire protection sprinkler heads, but these heads were never activated.

Building 668 currently has no utility hook-ups.

Trailer T664A

Trailer T664A is a 4,392 square foot general office trailer acquired in 1991. This trailer has corrugated metal siding with corrugated metal skirting. The entrances have wooden stairs leading to a wooded enclosure. The interiors are primarily a cubical layout, but have several hard-walled offices, conference rooms, and rest rooms. Interior walls are wallboard, the ceiling is a drop ceiling with acoustical tiles and recessed lights. The floors are primarily covered with carpet except in the bathrooms, which are covered with vinyl tile.

Trailer T664A has the following utilities: electrical, plant water, plant sanitary, and fire protection is provided by an overhead sprinkler system and wall mounted fire extinguishers.

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Historical Operations

Building 460

Building 460 was originally constructed as a manufacturing facility designed to fabricate stainless steel and other non-nuclear parts such as reservoirs, tubes, and non-fissile trigger components. Building 460 housed fabrication operations such as Mechanical Machining in Room 134, Electrochemical machining and Grinding in Room 141, Electro Discharge machining in room 141, and Crush grinding in room 142. Assembly machining in room 143, welding in rooms 122A, 122C, 132, 132B, 132C and 135, Grit Blasting in room 135B, Cleaning in rooms 156, 156C, and 157. Inspection operation in rooms 115A, 115H, 121, 122B, 123, 151A, 151S, and 163. A metallurgical laboratory was operated in Room 135. Room 141B housed a Hexavalent Chrome reduction process which was not part of the RCRA permit due to its classification as a recycling operation and this equipment still remain. Building 460 also had a cafeteria on the second floor until the mid 1990s

Non-radioactive process wastes were collected in 4 sump tanks. Sump Tank ST1 was located in room 141B, ST2 was located in Room 151, ST3 was located in Room 156, and T4 was located in room 156C. All these tanks have been closed in accordance with the "RCRA Closure Plan for the B460". The facility's process wastewater collection and filtration system was located in Room 140 and consisted of 2 holding tanks and a sump tank. Wastewater was filtered prior to being transported to Building 374 for treatment. These tanks have also been closed in accordance with the "RCRA Closure Plan for the B460". Most of the process waste lines were overhead lines and only in a few areas were they located in the concrete floor slab. Much of the process waste lines and process waste equipment were removed during the closure process. Waste streams handled in Building 460 included solvents, metals, and acids. See the building 460 WSRIC for a more complete list of process that occurred in Building 460.

In the mid 1990 manufacturing operation ended in Building 460 and most of the process equipment was removed. The building was then used as an administrative office building housing primarily DOE personnel. Building 460 began storing low level radioactive, RCRA and TSCA wastes in September 2002. Building 460 is currently a containerized waste storage facility, and does not perform any waste repackaging or waste treatment.

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Building 439

Building 439 was originally a fabrication and machine shop, which supported Building 440 operations as well as other R&D operations. Historically, this building housed such operations as an organic coating lab in the southeast corner of the building. A machine shop located on the west side of the building, quality assurance testing equipment such as NDT, ultrasonic density testing and tinsel testing equipment on the north side of the facility. Other operation housed in Building 439 include electronic equipment services, Gamma Survey instrument maintenance, silver recovery related to electronic equipment, Radiological counting and survey operations, and PU&D equipment release operations. Currently Building 439 is currently used to store equipment, as a break room, and general offices in support of Building 440 operations.

Building 462

Building 462 is the evaporative cooling tower for Building 460. The cooling system consists of both an open loop and closed loop system interconnected by a heat exchanger. Nalco 2536 is added to the cooling water to prevent rust build-up and Nalco 2590 is added to the cooling water for alga control. Sodium Hypochlorite is used as a fungicide and biocide.

Building 668

Building 668 is the Drum Certification Building. Building 668 was originally used to seal fiberglass-coated wood waste crates after being filled with low level waste. The crates were sealed using fiberglass matting and sprayed on fiberglass resin. This operation was moved to Building 664 in the 1980's and the building was then used to inspect, number, label, and certify new waste crates and waste drums prior to being sent to the production buildings to be filled with waste. Although the waste crates sealing operations that occurred in the early days of operation did contain radioactive waste, the waste containers where never opened, they were only permanently sealed prior to shipment. There is no evidence of any radiological contamination related to this event. Polyester resins and cleaning solvents where used in the fiberglass operations.

Trailer T664A

Trailer T664 is a general office trailer, which has historically, be used to house management and administrative personnel in support of waste storage and shipping operation conducted in Buildings 440 and 664.

Current Operational Status

Buildings 460, 439, 462 and Trailer T664A are all operational. Building 668 is not operational, but has some old equipment and supplies related to past operation, which need to be cleaned out.

**D&D RISS Facility Characterization
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October, 2002 Rev. 0**

Contaminants of Concern

Asbestos

Describe any potential, likely, or known sources of Asbestos:

Building 668 is posted as containing asbestos, T664A is posted as possibly containing asbestos. The Industrial Hygiene Group (IH) has collected some asbestos data on Building 460. Contact IH for a copy of this information.

Beryllium (Be)

Describe any potential, likely, or known Be production or storage locations:

The only facility on the List of Historic and Present Be Areas is the High Bay area of Building 460. The High Bay area is listed based on historical information that beryllium copper plates were occasionally polished in the high bay area. The UBC section of the HRR states that Be may have occasionally been handled in Building 439. No evidence of this was found.

Summarize any recent Be sampling results:

There have been no recent Be samples collected on any of these facilities.

Lead

Describe any potential, likely, or known sources of Lead (e.g., paint, shielding, etc.):

Based on the age of some of the facilities addressed in this HSA, lead in paint may be a concern. No processes containing lead were conducted in these facilities.

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RCRA/CERCLA Constituents

Describe any potential, likely, or known sources of RCRA/CERCLA constituents (e.g., chemical storage, waste storage, and processes):

Building 460 was a major non-nuclear manufacturing facility and used chemicals such as acids, bases and solvents. Metals contamination of these chemicals did occur as part of the machining and fabrication operations (i.e. chromium). Building 460 had several permitted RCRA units associated with these activities. These RCRA units have been closed. Building 460 is currently a permitted LLW and mixed waste Storage facility. Historically, Building 439 was used as a machine shop to support Building 440 operations and other maintenance operations in the 400 area. No significant amounts of RCRA or CERCLA Constituents were handled in this facility. See the Historical operations section above for a more detailed listing of the operations which occurred in the facilities addressed in this HSA.

Building 460 had the following permitted storage areas. All RCRA units have been closed in accordance with the "RCRA Closure Plan for the B460 Process Waste System"

- 39.03 - Fabric Filtration Unit
- 40.08 - Process Waste Tank T-1
- 40.09 - Process Waste Tank T-2
- 40.10 - Filter System Collection Tank T-4
- 40.11 - Sump Tank ST-1
- 40.12 - Sump Tank ST-2
- 40.13 - Sump Tank ST-3
- 40.14 - Sump Tank ST-4
- 40.15 - Sump Tank ST-5

Building 460 has the following current permit - MS001- B460 Containerized Storage. This permit is a temporary permit. The final permit is expected to be approved later this year.

Describe any potential, likely, or known spill locations (and sources, if any):

See the Environmental Concerns section below for information about RCRA/CERCLA spills.

Describe methods in which spills were mitigated, if any:

See the Environmental Concerns section below for information about RCRA/CERCLA spills.

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PCBs

Describe any potential, likely, or known sources of PCBs (e.g., light ballasts, paints, equipment, etc.):

No PCB containing process where housed in any of the facilities addressed in this HSA. Based on the age of construction of some of these facilities, PCBs in paint may be a concern.

Describe any potential, likely, or known spill locations (and sources, if any):

No PCB spills occurred in any of the facilities addressed in this HSA.

Describe methods in which spills were mitigated, if any:

No PCB spills occurred in any of the facilities addressed in this HSA.

Radiological Contaminants

Describe any potential, likely, or known radiological production or storage locations:

Building 460 recently became a LLW storage facility. In the past Building 668 housed fiberglass operations used to seal LLW waste crates. Historically, Building 439 was primarily a machine shop in support of Building 440 operation. The UBC section of the HRR states that uranium, on limited occasions, may have been handled in Building 439. No evidence of this was found. See the Historical operations section above for a more detailed listing of the operations which occurred in the facilities addressed in this HSA.

Describe any potential, likely, or known spill locations (e.g., known leaking sealed radioactive sources, leaking waste drums, potentially contaminated drains, etc.):

None of the facilities in this HSA have had a radiological spill.

Describe methods in which spills were mitigated, if any:

None of the facilities in this HSA have had a radiological spill.

Describe any potential, likely, or known isotopes of concern (e.g., weapons grade plutonium, uranium isotopes, pure beta emitters, mixed fission products, etc.):

Isotopes of concern include uranium and plutonium.

Describe any potential, likely, or known external facility contamination (e.g., stack release points, unfiltered ventilation, facility's physical location to known site releases, etc.):

See section below for information on IHSSs PACs, and UBCs.

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Environmental Restoration Concerns

Describe any ER concerns that could affect facility characterization (e.g., IHSSs, PACs, UBCs):

Building 460 is associated with or located near the following IHSSs, PACs, or UBCs. See individual IHSS, PAC, or UBC report for additional information.

- 1) 400-136.1, "Cooling Tower Pond East of Building 444", Active.
- 2) 400-157.2, "Radioactive site South Area", Active.
- 3) 400-205, "Building 460 Sump No. 3, Acid Side". Active.
- 4) 400-804, "Road North of Building 460", Active.
- 5) 400-812, "Tank T-2 Spill in Building 460, Proposed NFA in 2001.
- 6) 400-813, "RCRA Tank Leak in Building 460, Active.
- 7) 400-815, "RCRA Tank Leak in Building 460, Active.

Building 439 is associated with or located near the following IHSSs, PACs, or UBCs. See individual IHSS, PAC, or UBC report for additional information.

- 1) 400-157.2, "Radioactive site South Area", Active.

Building 439 is identified as a UBC because it housed modification and machining operations, which may have involved deleted uranium or beryllium.

Building 668 is associated with or located near the following IHSSs, PACs, or UBCs. See individual IHSS, PAC, or UBC report for additional information.

- 1) 600-120.1, "Fiberglass area north of Building 664 ", Active.

Building 462, and Trailer T664A are not associated any IHSS, PAC, or UBC

Additional Information

Describe any additional information that may be useful during facility characterization (e.g., contaminant migration routes, waste handling operations, physical hazards, Historical Release Reports, WSRIC data, etc.):

None

References

Provide all sources of information utilized to gather data for facility history (e.g., documents, files, interviews):

Sources reviewed to complete this HSA were the RFETS Facility List, the Historical Release Report, Site Master List of RCRA Units, and the Site IHSS, PAC, and UBC databases. The WSRIC for those buildings with a WSRIC. In addition, a facility walkdown and interviews were performed.

ATTACHMENT C

Radiological Data Summaries and Survey Maps

Survey Area: 5

Survey Unit: 462505

Building: 462

Description: Building 462 Interior, Cooling Tower, Concrete Basin and Pad, all surfaces

Rocky Flats Environmental Technology Site Final Radiological Survey Summary Results

Total Surface Activity Measurements

Nbr Random Measurements Required: 15

Nbr Biased Measurements Required: 10

Nbr QC Required: 2

Nbr Random Measurements Performed: 15

Nbr Biased Measurements Performed: 10

Nbr QC Performed: 2

Alpha

Maximum: 63.8 dpm/100cm²

Minimum: -4.5 dpm/100cm²

Mean: 22.0 dpm/100cm²

Standard Deviation: 16.1

QC Maximum: 44.4 dpm/100cm²

QC Minimum: 44.3 dpm/100cm²

QC Mean: 44.3 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 Biased Measurements Required: 10

Nbr Random Measurements Performed: 15

Nbr Biased Measurements Performed: 10

Alpha

Maximum: 4.2 dpm/100cm²

Minimum: -1.8 dpm/100cm²

Mean: 0.1 dpm/100cm²

Standard Deviation: 1.3

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.

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Survey Area: 5

Survey Unit: 462505

Building: 462

Description: Building 462 Interior, Cooling Tower, Concrete Basin and Pad, 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	515538	05/25/05	Electra	3127	DP-6	08/21/05	0.206	NA	48.0	NA	T/Q/S
2	513922	05/25/05	Electra	3102	DP-6	06/16/05	0.216	NA	48.0	NA	T/Q/S
3	515538	05/25/05	SAC-4	767	NA	08/03/05	0.330	NA	10.0	NA	R
4	515538	05/25/05	SAC-4	1130	NA	07/03/05	0.330	NA	10.0	NA	R

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

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Survey Area: 5

Survey Unit: 462505

Building: 462

Description: Building 462 Interior, Cooling Tower, Concrete Basin and Pad. all surfaces

Comments Sheet

General N/A
Comments:

TSA For instruments that were used for both TSAs and scans (T/S) on the Instrument Data Sheet, The TSA A-Priori MDA is 48.0 and the scan A-Priori MDA is 300.0.
Comments:

- rest. |*
1. Locations 16 - 18 are on equipment inside the pump shed.
 2. Locations 19 - 25 are on the interior and exterior surfaces of the cooling tower, metal structure and concrete slab. The metal structure of the cooling tower is only shown on the map as a dashed outline.

RSA N/A
Comments:

Media N/A
Comments:

Survey Area: 5

Survey Unit: 462505

Building: 462

Description: Building 462 Interior, Cooling Tower, Concrete Basin and Pad, all surfaces

Random Removable Surface Activity Data Sheet

Random Measurement Location	Inst / RCT Nbr	Net Alpha (dpm/100cm ²)	Net Beta (dpm/100cm ²)	
462505PRP-N001	3	1.2	N/A	N/A
462505PRP-N002	4	-1.8	N/A	N/A
462505PRP-N003	3	2.7	N/A	N/A
462505PRP-N004	4	-0.3	N/A	N/A
462505PRP-N005	3	-0.3	N/A	N/A
462505PRP-N006	4	-0.3	N/A	N/A
462505PRP-N007	3	-0.3	N/A	N/A
462505PRP-N008	4	-1.8	N/A	N/A
462505PRP-N009	3	1.2	N/A	N/A
462505PRP-N010	4	-0.3	N/A	N/A
462505PRP-N011	3	-0.3	N/A	N/A
462505PRP-N012	4	-0.3	N/A	N/A
462505PRP-N013	3	-0.3	N/A	N/A
462505PRP-N014	4	-0.3	N/A	N/A
462505PRP-N015	3	-0.3	N/A	N/A

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Survey Area: 5

Survey Unit: 462505

Building: 462

Description: Building 462 Interior, Cooling Tower, Concrete Basin and Pad, all surfaces

Biased Removable Surface Activity Data Sheet

Biased Measurement Location	Inst / RCT Nbr	Net Alpha (dpm/100cm ²)	Net Beta (dpm/100cm ²)	
462505PBP-N016	4	1.2	N/A	N/A
462505PBP-N017	3	-0.3	N/A	N/A
462505PBP-N018	4	-0.3	N/A	N/A
462505PBP-N019	3	-0.3	N/A	N/A
462505PBP-N020	4	-1.8	N/A	N/A
462505PBP-N021	3	4.2	N/A	N/A
462505PBP-N022	4	-0.3	N/A	N/A
462505PBP-N023	3	1.2	N/A	N/A
462505PBP-N024	4	-0.3	N/A	N/A
462505PBP-N025	3	-0.3	N/A	N/A

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Survey Area: 5**Survey Unit:** 462505**Building:** 462**Description:** Building 462 Interior, Cooling Tower, Concrete Basin and Pad, 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)	
462505PRP-N001	1	12.2	N/A	N/A
462505QRP-N002	1	44.4	N/A	N/A
462505PRP-N002	2	63.8	N/A	N/A
462505PRP-N003	1	28.7	N/A	N/A
462505PRP-N004	2	26.8	N/A	N/A
462505PRP-N005	1	9.3	N/A	N/A
462505PRP-N006	2	11.0	N/A	N/A
462505PRP-N007	1	15.6	N/A	N/A
462505PRP-N008	2	8.3	N/A	N/A
462505PRP-N009	1	9.3	N/A	N/A
462505PRP-N010	2	20.3	N/A	N/A
462505PRP-N011	1	15.6	N/A	N/A
462505PRP-N012	2	20.3	N/A	N/A
462505PRP-N013	1	28.7	N/A	N/A
462505PRP-N014	2	5.0	N/A	N/A
462505PRP-N015	1	51.1	N/A	N/A
462505QRP-N015	2	44.3	N/A	N/A

Survey Area: 5

Survey Unit: 462505

Building: 462

Description: Building 462 Interior, Cooling Tower, Concrete Basin and Pad, all surfaces

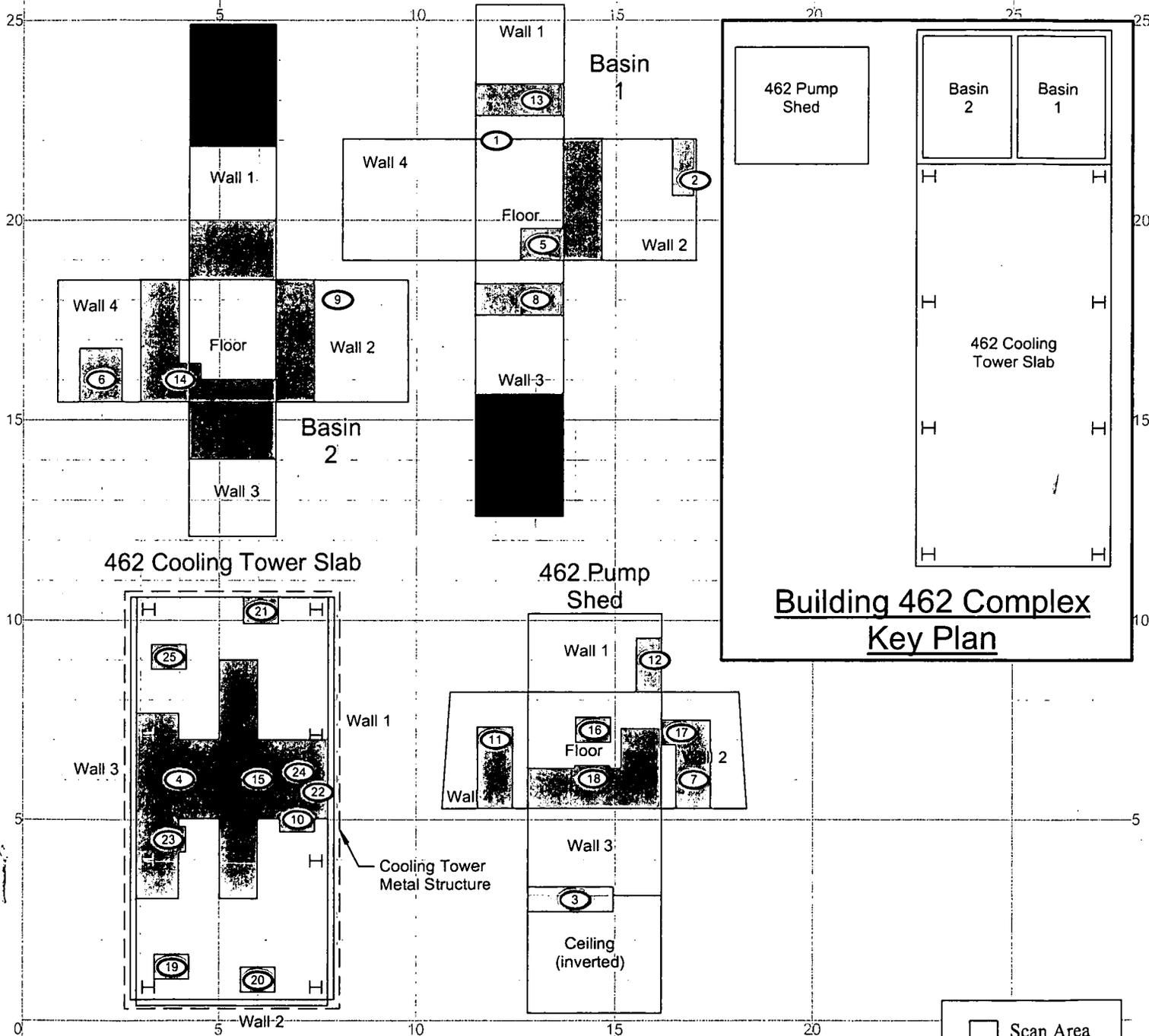
Biased Total Surface Activity Data Sheet

Biased Measurement Location	Inst / RCT Nbr	Net Alpha (dpm/100cm ²)	Net Beta (dpm/100cm ²)	
462505PBP-N016	2	-4.5	N/A	N/A
462505PBP-N017	1	2.4	N/A	N/A
462505PBP-N018	2	29.3	N/A	N/A
462505PBP-N019	1	28.1	N/A	N/A
462505PBP-N020	1	25.2	N/A	N/A
462505PBP-N021	1	8.7	N/A	N/A
462505PBP-N022	2	41.8	N/A	N/A
462505PBP-N023	1	47.6	N/A	N/A
462505PBP-N024	1	21.8	N/A	N/A
462505PBP-N025	2	23.3	N/A	N/A

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RLC SURVEY FOR BUILDING 462

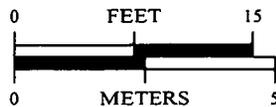
Survey Area: 5 Survey Unit: 462505 Classification: 3
 Building: 462
 Survey Unit Description: B462 Interior, Cooling Tower, Concrete Basin and Pad
 Total Area: 183 sq. m. Total Floor Area: 73 sq. m.



SURVEY MAP LEGEND

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

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Scan Survey Information
 Survey Instrument ID #(s) & RCT ID #(s):
 1,2

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

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

Prepared by: GIS Dept. 303-966-7707

Prepared for:



MAP ID: 03-0138462-IN_SC

May 26, 2005

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ATTACHMENT D

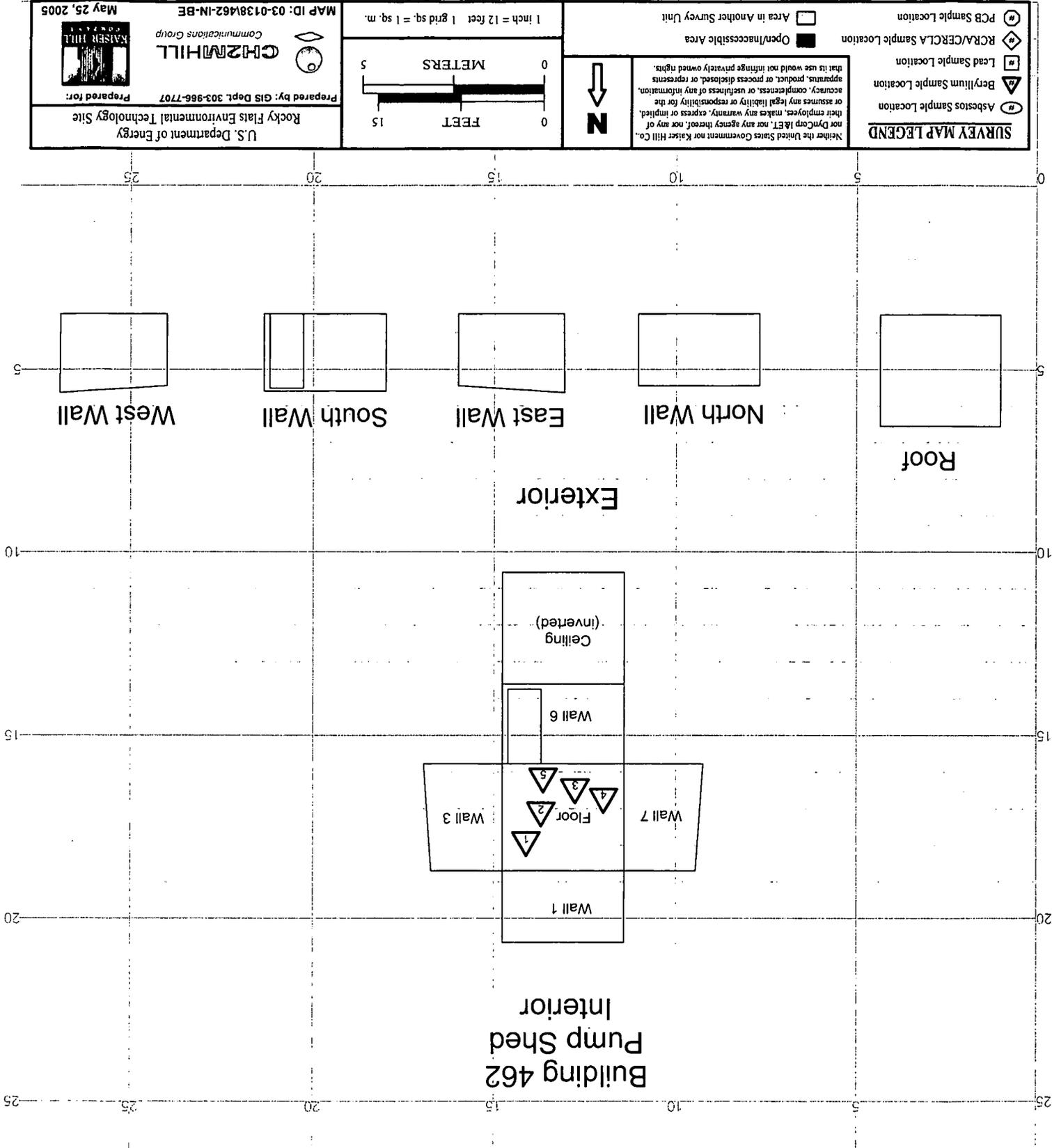
Chemical Data Summaries and Sample Maps

Beryllium Data Summary

Sample Number	Map Survey Point Location	Sample Location	Result ($\mu\text{g}/100 \text{ cm}^2$)
Building 462 – RIN 05D0572			
462-02192005-00-001	1	Electrical Box	< 0.1
462-02192005-00-002	2	Electrical Box	< 0.1
462-02192005-00-003	3	Pipe	< 0.1
462-02192005-00-004	4	Electrical Box	< 0.1
462-02192005-00-005	5	Electrical Box, Exterior	< 0.1

CHEMICAL SAMPLE MAP

Building 462
Beryllium



ATTACHMENT E

Data Quality Assessment (DQA) Detail

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 asbestos and 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 RISS 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 (MARSSIM) Survey Units. Chemical data are organized by RIN (Report Identification Number) and are traceable to the sample number and corresponding sample location.

Beta/gamma survey designs were not implemented for Building 462 based on the conservatism of the transuranic limits used as DCGLs in the unrestricted release decision process. 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) and the Uranium DCGL_w (5,000 dpm/100cm²) unrestricted release limits.

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

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.

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 unrestricted release levels. 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 thereby ensuring accuracy criteria. All results meet the 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 the facility. On this basis, Building 462 meets the unrestricted release criteria with the confidences stated herein and can be demolished.

Table E-1 V&V of Radiological - Building 462

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 462505 (interior) and EXT-B-001 (exterior).	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 E-3 for details.
SENSITIVITY	detection limits	TSA: ≤50 dpm/100cm ² RA: ≤10 dpm/100cm ²	all measures	MDAs ≤ 50% DCGL _w per MARSSIM guidelines (RLC performed to PDS requirements).

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Table E-2 V&V of Beryllium - Building 462

V&V CRITERIA, CHEMICAL ANALYSES		DATA PACKAGE		COMMENTS
BERYLLIUM	Prep: NMAM 7300 METHOD: OSHA ID-125G	LAB ---->	Johns Manville Corp. Littleton, Co.	
	QUALITY REQUIREMENTS		RIN ---->	RIN 05D0572
		Measure	Frequency	
ACCURACY	Calibrations Initial	linear calibration	≥1	All results were below associated action levels.
	Continuing	80%<%R<120%	≥1	
	LCS/MS	80%<%R<120%	≥1	
	Blanks - lab & field	<MDL	≥1	
	interference check std (ICP)	NA	NA	
PRECISION	LCSD	80%<%R<120% (RPD<20%)	≥1	
	field duplicate	all results < RL	≥1	
REPRESENTATIVENESS	COC	Qualitative	NA	
	hold times/preservation	Qualitative	NA	
	Controlling Documents (Plans, Procedures, maps, etc.)	Qualitative	NA	
COMPARABILITY	measurement units	ug/100cm ²	NA	
COMPLETENESS	Plan vs. Actual samples	>95%	NA	
	usable results vs. unusable	>95%		
SENSITIVITY	detection limits	MDL of 0.00084 ug/100cm ²	all measures	

Table E-3 Data Completeness Summary - Building 462

ANALYTE	Building/Area/ Unit	Sample Number Planned (Real & QC)	Sample Number Taken (Real & QC)	Project Decisions (Conclusions) & Uncertainty	Comments (RIN, Analytical Method, Qualifications, etc.)
Beryllium	Building 462 (interior)	5 biased (interior)	5 biased (interior)	No beryllium contamination found, all results are below associated action levels	OSHA ID-125G RIN 05D0572 No results above action level (0.2ug/100cm ²) or investigative level (0.1 ug/100cm ²).
Radiological	Survey Area 5 Survey Unit: 462505 Building 462 – Interior	25 α TSA (15 random/10 biased) 25 α Smears (15 random/10 biased) 2 QC TSA 5% scan of all interior surfaces	25 α TSA (15 random/10 biased) 25 α Smears (15 random/10 biased) 2 QC TSA Minimum 10% scan of all facility surfaces	No contamination found at any location; all values below PDS unrestricted release limits	Transuranic DCGLs used.