



Rocky Flats Environmental Technology Site

TYPE 1 RECONNAISSANCE LEVEL CHARACTERIZATION REPORT (RLCR)

Building 520 Closure Project

REVISION 0

July 2, 2003



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

ADMIN RECORD
IA-A-001579

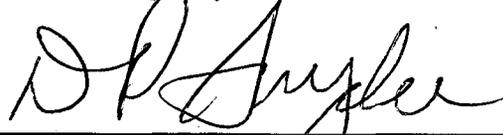
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Reviewed by:  Date: 7/2/03
Don Risoli, Quality Assurance

Reviewed by:  Date: 7/2/03
D.P. Snyder, RISS ESH&Q Manager

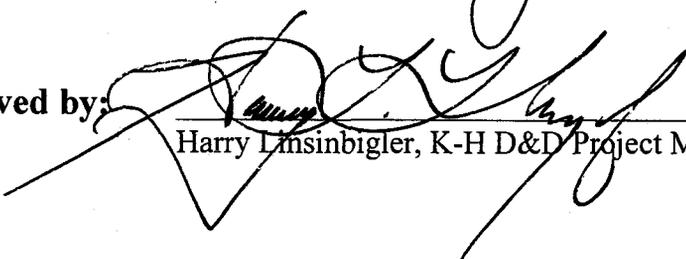
Approved by:  Date: 7/7/03
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ABBREVIATIONS/ACRONYMS

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 _{LW}	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
IHSS	Individual Hazardous Substance Site
IWCP	Integrated Work Control Package
K-H	Kaiser-Hill
LBP	Lead-based paint
LLW	Low-level waste
MARSSIM	Multi-Agency Radiation Survey and Site Investigation Manual
MDA	Minimum detectable activity
MDC	Minimum detectable concentration
NORM	Naturally occurring radioactive material
NRA	Non-Rad-Added Verification
OSHA	Occupational Safety and Health Administration
PARCC	Precision, accuracy, representativeness, comparability and completeness
PCBs	Polychlorinated Biphenyls
PDS	Pre-demolition survey
QC	Quality Control
RCRA	Resource Conservation and Recovery Act
RFCA	Rocky Flats Cleanup Agreement
RFETS	Rocky Flats Environmental Technology Site
RFFO	Rocky Flats Field Office
RLC	Reconnaissance Level Characterization
RLCR	Reconnaissance Level Characterization Report
RSP	Radiological Safety Practices
SVOCs	Semi-volatile organic compounds
TCLP	Toxicity Characteristic Leaching Procedure
TSA	Total surface activity
VOCs	Volatile organic compounds

EXECUTIVE SUMMARY

A Reconnaissance Level Characterization (RLC) was performed to enable facility "Typing" per the DPP (10/8/98) and compliant disposition and waste management of Building 520. Because this facility was an anticipated Type 1 facility, the characterization was performed in accordance with the Pre-Demolition Survey Plan (MAN-127-PDSP) requirements. All facility surfaces were characterized in this RLC, including the interior and exterior surfaces (i.e., equipment, floor, walls, ceiling and roof). Environmental media beneath and surrounding the facility were 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 contamination exists in excess of the PDSP unrestricted release limits of DOE Order 5400. No building materials suspected of containing asbestos were observed during the visual and tactile inspection. All beryllium sample results for Building 520 were less than $0.1 \mu\text{g}/100\text{cm}^2$. Fluorescent light ballasts may contain PCBs. PCB ballasts will be managed and disposed of in compliance with Environmental Protection Agency (EPA) and Colorado Department of Public Health and Environment (CDPHE) regulations. Demolition debris will be managed in compliance with regulations governing PCBs (40 CFR 761), and Environmental Compliance Guidance #27, *Lead-Based Paint (LBP) and Lead-Based Paint Debris Disposal*, as applicable. Concrete associated with Building 520 meets the criteria for concrete recycling criteria per the RFCA RSOP for Recycling Concrete.

Based upon this RLCR, Building 520 is considered a Type 1 facility and can be demolished. To ensure this facility remains free of contamination and RLC data remain valid, Level 2 Isolation Controls have been established and the facility posted accordingly.

1 INTRODUCTION

A Reconnaissance Level Characterization (RLC) was performed to enable compliant disposition and waste management of Building 520. 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 of the facilities (i.e., equipment, floor, walls, ceiling and roof). Environmental media beneath and surrounding the facility were 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.

As part of the Rocky Flats Environmental Technology Site (RFETS) Closure Project, numerous facilities will be removed, among these is Building 520. The location of this facility is shown in Attachment A, *Facility Location Map*. This facility no longer supports the RFETS mission and will be removed to reduce Site infrastructure, risks and/or operating costs.

Before this 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 (HSAR).

1.1 Purpose

The purpose of this report is to communicate and document the results of the RLC effort. An RLC is performed before Type 1 building demolition to define the pre-demolition radiological and chemical conditions of a facility. Pre-demolition conditions are compared with the unrestricted 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 for Building 520. Environmental media beneath and surrounding this facility were 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

A Facility-specific Historical Site Assessment (HSA) was conducted to understand the facility histories and related hazards. The assessment consisted of facility walk-downs, 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 plans. Results of the facility-specific HSA were documented in a facility-specific *Historical Site Assessment Report (HSAR) for Area 5 - Group 10 Facilities*, dated November 2002, Revision 0 (refer to Attachment B, *Historical Site Assessment Report*). In summary, the HSAR identified minimal potential for radiological or chemical hazards.

3 RADIOLOGICAL CHARACTERIZATION AND HAZARDS

Building 520 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 the facility surfaces. Measurements were performed to evaluate the contaminants of concern. Based upon a review of historical and process knowledge, building walk-downs, and MARSSIM guidance, a Radiological Characterization Plan was developed during the planning phase that describe the minimum survey requirements (refer to the RISS Characterization Project files).

Radiological survey package 520-5-002 was developed for the interior and exterior surfaces of Building 520, including fixed equipment. The survey package was developed in accordance with Radiological Safety Practices (RSP) 16.01, *Radiological Survey/Sampling Package Design, Preparation, Control, Implementation and Closure*. Total surface activity (TSA), removable surface activity (RSA), media samples, 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*.

Twenty-four (24) TSA measurements (15 random, 5 biased, 2 equipment and 2 QC) and twenty-two (22) RSA measurements (15 random, 5 biased, and 2 equipment) were performed; and a minimum 5% of facility interior and exterior surfaces were scanned. 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*. The radiological survey unit package is maintained in the RISS Characterization Project files. Level 2 Isolation Control postings are displayed on the building to ensure no radioactive materials are inadvertently introduced.

4 CHEMICAL CHARACTERIZATION AND HAZARDS

Building 520 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 this 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 number of samples. Contaminants of concern included asbestos, beryllium, RCRA/CERCLA constituents, lead and PCBs. Refer to Attachment D, *Chemical Data Summaries and Sample Maps*, for details on sample results and sample locations.

4.1 Asbestos

A survey of building materials suspected of containing asbestos was conducted in Building 520 in accordance with the RLCP. A CDPHE-certified asbestos inspector conducted the inspection and sampling in accordance with the *Asbestos Characterization Protocol, PRO-563-ACPR, Revision 1*.

No building materials suspected of containing friable or non-friable asbestos were observed during the visual and tactile inspection. On this basis, no bulk samples were taken for Building 520 as part of this RLC.

4.2 Beryllium (Be)

Based on the HSAR and personnel interviews, Building 520 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 these buildings. 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 surface smear sample results for Building 520 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 the HSAR, facility walk-downs and a review of RFETS waste management databases, Building 520 does not have a history of RCRA/CERCLA contamination. The building does contain several lead-acid batteries, but there is no evidence that these materials have lead to facility contamination. Based on the above historical and process knowledge, RCRA/CERCLA sampling was not performed as part of this RLC.

Sampling for lead in paint in these facilities 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) wastes, and additional analysis for characteristics of hazardous waste derived from LBP is not a requirement for disposal.

This facility may contain RCRA regulated materials such as mercury switches, batteries, and fluorescent lamps. A thorough inspection of the facility will be made, and all regulated materials will be removed prior to demolition.

4.4 Polychlorinated Biphenyls (PCBs)

Based on a review of the HSAR and facility walk-downs, there is no history of PCB use (other than light ballasts), or evidence of PCB contamination in this facility. Based on the age of the building (constructed prior to 1980), paints used are assumed to contain PCBs, and all painted surfaces will be managed as PCB Bulk Product Waste.

This facility may contain fluorescent light ballasts containing PCBs. Fluorescent light fixtures will be inspected to identify PCB ballasts during removal operations. PCB ballasts will be identified based on factors such as labeling (e.g., PCB-containing and non-PCB-containing), manufacturer, and date of manufacturing. All ballasts that do not indicate non-PCB-containing are assumed to be PCB-containing. Leaking PCB ballasts and those that weigh more than 9 pounds will be removed prior to demolition and managed in accordance with Colorado hazardous waste regulations. If non-leaking PCB ballasts are discovered and left in the facility, the debris will be considered PCB Bulk Product Waste.

5 PHYSICAL HAZARDS

Physical hazards associated with Building 520 are those common to standard industrial environments and include hazards associated with energized systems, utilities, and trips and falls. This building 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 practice.

6 DATA QUALITY ASSESSMENT

Data used in making management decisions for decommissioning of Building 520 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.

7 DECOMMISSIONING WASTE TYPES AND VOLUME ESTIMATES

The demolition and disposal of Building 520 will generate a variety of wastes. Estimated waste types and waste volumes are presented below. All waste can be disposed of as sanitary waste, except PCB Bulk Product Waste. There is no radioactive or hazardous waste. PCB ballasts will be managed pursuant to the Site PCB waste management procedures. Concrete associated with Building 520 meets the criteria for concrete recycling criteria per the RFCA RSOP for Recycling Concrete.

Waste Volume Estimates and Material Types							
Facility	Concrete (cu ft)	Wood (cu ft)	Metal (cu ft)	Corrugated Sheet Metal (cu ft)	Wall Board (cu ft)	ACM (cu ft)	Other Waste
Building 520	1,000	0	200	100	0	0	Built-up roof insulation – 350 cu. ft.

8 FACILITY CLASSIFICATION AND CONCLUSIONS

Based on the analysis of radiological, chemical and physical hazards, Building 520 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 data.

The RLC of Building 520 was performed in accordance with the DDCP and PDSP. All PDSP DQOs were met, and all data satisfied the PDSP DQA criteria. This facility does not contain radiological or hazardous wastes. PCB ballasts will be managed and disposed of in compliance with Environmental Protection Agency (EPA) and Colorado Department of Public Health and Environment (CDPHE) regulations. Demolition debris will be managed in compliance with regulations governing PCBs (40 CFR 761), and Environmental Compliance Guidance #27, *Lead-Based Paint (LBP) and Lead-Based Paint Debris Disposal*, as applicable. Environmental media beneath and surrounding the facilities will be addressed at a future date using the Soil Disturbance Permit process and in compliance with RFCA. Concrete associated with Building 520 meets the criteria for concrete recycling criteria per the RFCA RSOP for Recycling Concrete.

To ensure this Type 1 facility remains free of contamination and 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 Clean-up 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.
- MARSSIM - Multi-Agency Radiation Survey and Site Investigation Manual, December 1997 (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 (HSAR) for the Area 5 - Group 10 Facilities*, Dated November 2002, Revision 0.

ATTACHMENT A

Facility Location Map

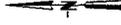
Building Cluster 520

Standard Map Features

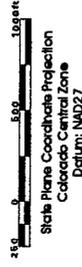
-  Buildings and other structures
-  Demolished buildings and other structures
-  Lakes and ponds
-  Streams, ditches, or other drainage features
-  Fences and other barriers
-  Paved roads
-  Dirt roads

DATA SOURCE BASE FEATURES:

Buildings, fences, hydrography, roads and other structures from 1994 aerial fly-over data captured by ES&S IBI, Las Vegas. Digitized from the orthophotographs. 1/95



Scale = 1 : 12450
1 inch represents approximately 1038 feet



State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

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

GE Dept. 303-956-7707

Prepared by:

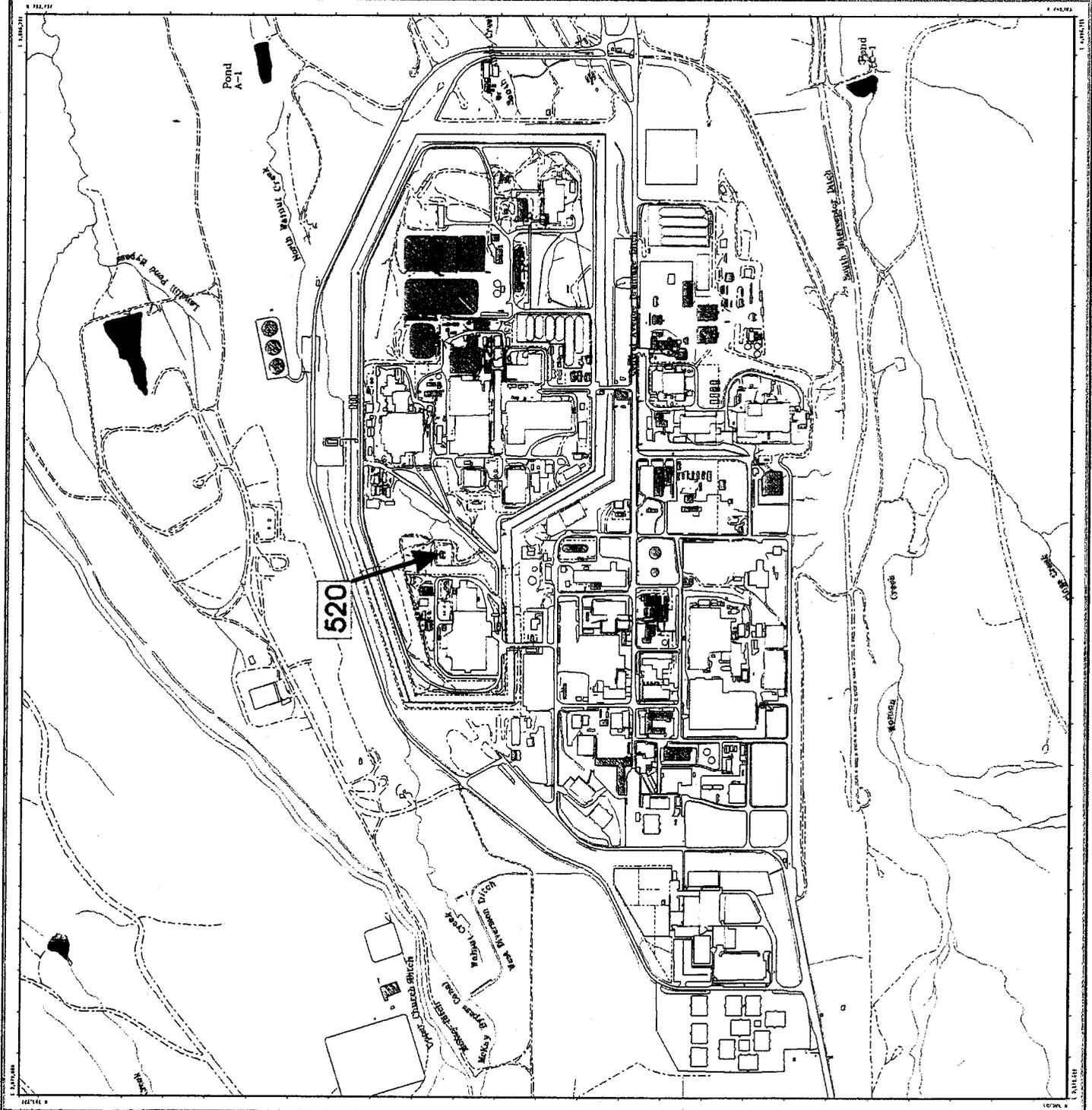


Prepared for:



MAP ID: FY 2003

July 01, 2003



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ATTACHMENT B

Historical Site Assessment Report

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

Facility ID: (AREA 5 GROUP 10) Buildings K771, and 520.

Anticipated Facility Type (1, 2, or 3): Buildings K771 and 520 are anticipated Type 1 facilities. Trailer

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 K771

Building K771 is a 160 square foot building acquired in 1999. The structure is a single room, skid mounted, portable building. The exterior walls are corrugated sheet metal. The floor is carpeted. The roof is constructed of sheet metal.

Building K771 was connected to plant power, but was disconnected about a year ago. The building has no other utilities.

Building 520

Building 520 is a 1020 square foot single-story building acquired in the mid 1970s. The structure is a cinderblock building constructed on a concrete pad. The roof is a metal roof with built-up insulation.

Building 520 has the following utilities: electrical and fire protection is provided by wall mounted fire extinguishers.

Historical Operations

Building K771

Building K771 was acquired in about 1999 and was used to sell breakfast food to the Building 771 morning shift personnel. This effort did not make any money and the venture ended after about 6 months. The building was then used for miscellaneous storage, Building 771 Rad Con operations to house it survey equipment and by Emergency Response to stage response equipment. The only thing remaining in the building is an emergency response cabinet with some PPE stored in it. Building K771 is a portable skid-mounted structure.

Building 520

Building 520 was constructed as part of the 517/518 substation and is used to house switchgear equipment. There has been no radiological or hazardous operation associated with this substation. The building contains switchgear equipment, an electrical heating system and a battery backup system to operate the switchgear equipment in case of a power outage. The 517 and 518 transformers south of Building 520 are labeled as containing no PCBs.

Current Operational Status

Buildings K771 and 520 are operational.

Contaminants of Concern

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

Asbestos

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

Buildings K771 and 520 have no asbestos posting.

Beryllium (Be)

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

None of the facilities addressed in this HSA are on the List of known Be Areas.

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.

RCRA/CERCLA Constituents

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

See the Historical operations section above for a listing of the operations which occurred in the facilities addressed in this HSA.

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

None of the facilities in this HSA have had any RCRA/CERCLA spills.

Describe methods in which spills were mitigated, if any:

None of the facilities in this HSA have had any RCRA/CERCLA spills.

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

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 K771 was temporarily used by Rad Con to store survey instruments and Emergency Response used the building to store Emergency Response equipment. 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

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.):

None

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.

Environmental Restoration Concerns

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

Buildings K771 and 520 are not associated with any IHSSs, PACs, or UBCs.

Best Available Copy

ATTACHMENT C

Radiological Data Summaries and Survey Maps

SURVEY UNIT 520-5-002
RADIOLOGICAL DATA SUMMARY - PDS

Survey Unit Description: B520 (Interior & Exterior)

520-5-002
PDS Data Summary

<u>Total Surface Activity Measurements</u>			<u>Removable Activity Measurements</u>		
	22	22		22	22
	Number Required	Number Obtained		Number Required	Number Obtained
MIN	5.5	dpm/100 cm ²	MIN	-1.5	dpm/100 cm ²
MAX	41.1	dpm/100 cm ²	MAX	2.7	dpm/100 cm ²
MEAN	19.7	dpm/100 cm ²	MEAN	0.1	dpm/100 cm ²
STD DEV	10.1	dpm/100 cm ²	STD DEV	1.3	dpm/100 cm ²
TRANSURANIC DCGL _w	100	dpm/100 cm ²	TRANSURANIC DCGL _w	20	dpm/100 cm ²

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**SURVEY UNIT 520-5-002
TSA - DATA SUMMARY**

Manufacturer:	NE Tech	NE Tech	NE Tech	NE Tech
Model:	DP-6	DP-6	DP-6	DP-6
Instrument ID#:	1	2	3	4
Serial #:	1260	3115	3107	2402
Cal Due Date:	7/10/03	9/24/03	8/6/03	10/9/03
Analysis Date:	6/19/03	6/19/03	6/19/03	6/19/03
Alpha Eff. (c/d):	0.223	0.219	0.219	0.222
Alpha Bkgd (cpm)	0.7	0.0	1.0	5.0
Sample Time (min)	1.5	1.5	1.5	1.5
LAB Time (min)	1.5	1.5	1.5	1.5
MDC (dpm/100cm²)	48.0	48.0	48.0	48.0

Sample Location Number	Instrument ID#:	Sample Gross Counts (cpm)	Sample Gross Activity (dpm/100cm ²)	LAB Gross Counts (cpm)	LAB Gross Activity (dpm/100cm ²)	Sample Net Activity (dpm/100cm ²) ¹
1	1	6.0	26.9	2.7	12.1	14.1
2	3	7.3	33.3	3.3	15.1	20.6
3	2	5.3	24.2	5.0	22.8	11.4
4	1	12.0	53.8	4.6	20.6	41.1
5	1	6.0	26.9	3.3	14.8	14.1
6	1	5.3	23.8	2.0	9.0	11.0
7	1	4.7	21.1	3.3	14.8	8.3
8	1	8.7	39.0	4.7	21.1	26.3
9	1	4.7	21.1	2.7	12.1	8.3
10	1	6.0	26.9	4.0	17.9	14.1
11	1	4.7	21.1	2.0	9.0	8.3
12	1	8.0	35.9	2.7	12.1	23.1
13	1	8.0	35.9	2.0	9.0	23.1
14	3	4.0	18.3	2.0	9.1	5.5
15	1	8.7	39.0	4.1	18.4	26.3
16	4	10.0	45.0	0.0	0.0	32.3
17	1	8.0	35.9	0.7	3.1	23.1
18	1	9.3	41.7	3.3	14.8	28.9
19	1	12.0	53.8	2.0	9.0	41.1
20	1	7.3	32.7	2.7	12.1	20.0
21	1	6.7	30.0	2.0	9.0	17.3
22	1	6.0	26.9	3.3	14.8	14.1

¹ - Average LAB used to subtract from Gross Sample Activity

12.8	Sample LAB Average
MIN	5.5
MAX	41.1
MEAN	19.7
SD	10.1
Transuranic DCGL _w	100

QC Measurements

1 QC	4	5.0	22.5	2.0	9.0	13.5
8 QC	4	4.7	21.2	2.0	9.0	12.2

¹ - Average QC LAB used to subtract from Gross Sample Activity

9.0	QC LAB Average
MIN	12.2
MAX	13.5
MEAN	12.8
Transuranic DCGL _w	100

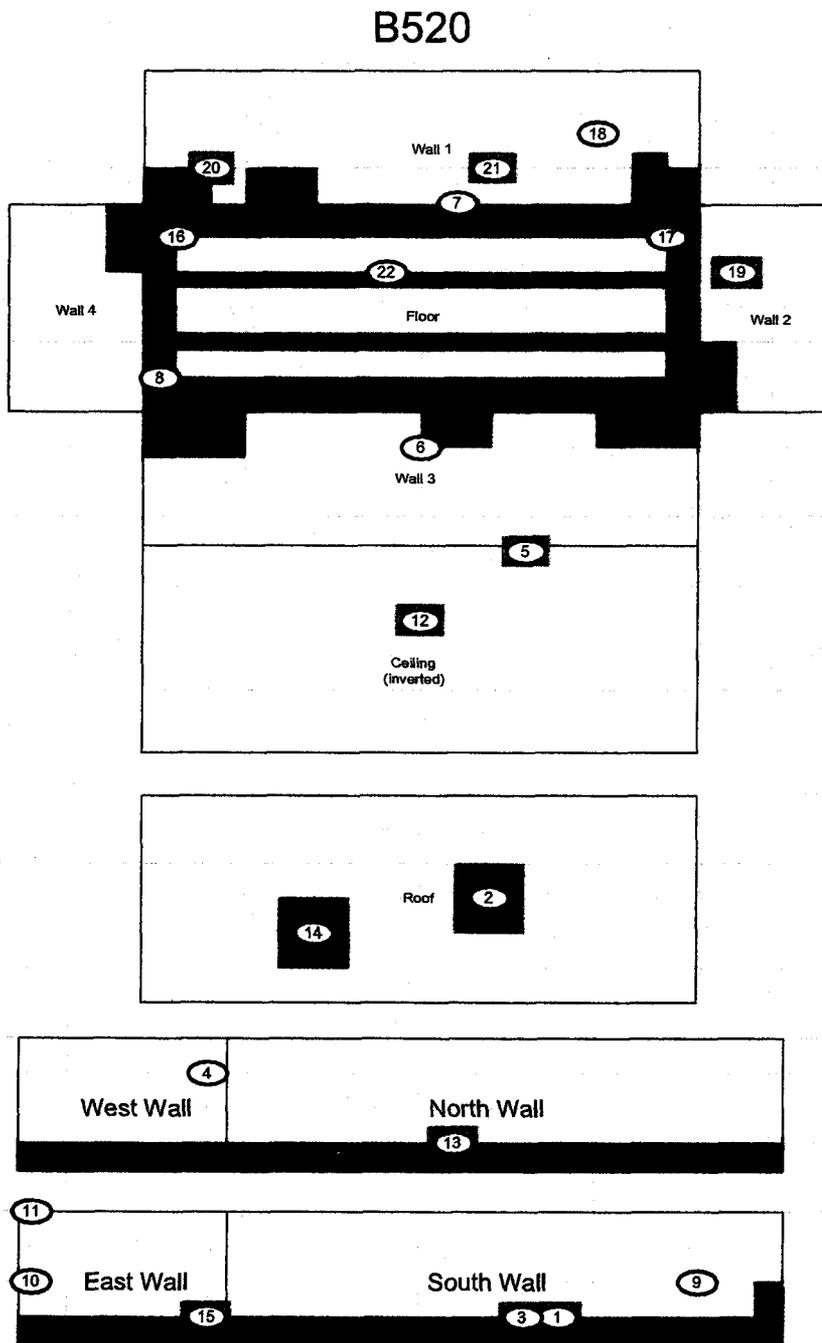
**SURVEY UNIT 520-5-002
RSC - DATA SUMMARY**

Manufacturer:	Eberline	Eberline	Eberline	Eberline
Model:	SAC-4	SAC-4	SAC-4	SAC-4
Instrument ID#:	5	6	7	8
Serial #:	959	952	971	924
Cal Due Date:	7/9/03	7/9/03	8/6/03	10/23/03
Analysis Date:	6/23/03	6/23/03	6/23/03	6/23/03
Alpha Eff. (c/d):	0.33	0.33	0.33	0.33
Alpha Bkgd (cpm)	0.1	0.1	0.2	0.5
Sample Time (min)	2	2	2	2
Bkgd Time (min)	10	10	10	10
MDC (dpm/100cm²)	9.0	9.0	9.0	9.0

Sample Location Number	Instrument ID#	Gross Counts (cpm)	Net Activity (dpm/100 cm ²)
1	5	1	1.2
2	6	0	-0.3
3	7	0	-0.6
4	8	0	-1.5
5	5	0	-0.3
6	6	0	-0.3
7	7	1	0.9
8	8	0	-1.5
9	5	1	1.2
10	6	2	2.7
11	7	0	-0.6
12	8	1	0.0
13	5	2	2.7
14	6	0	-0.3
15	7	1	0.9
16	8	0	-1.5
17	5	0	-0.3
18	6	2	2.7
19	7	0	-0.6
20	8	0	-1.5
21	5	0	-0.3
22	6	0	-0.3
		MIN	-1.5
		MAX	2.7
		MEAN	0.1
		SD	1.3
		Transuranic DCGL_w	20

PRE-DEMOLITION SURVEY FOR 520

Survey Area: 5 Survey Unit: 520-5-002 Classification: 3
 Building: 520
 Survey Unit Description: 520 Interior and Exterior
 Total Area: 618 sq. m. Total Floor Area: 94 sq. m.

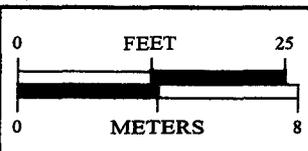
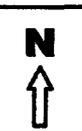


■ Scan Area

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, 3

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

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

Prepared by: GIS Dept. 303-988-7707 Prepared for:

CH2MHILL
 Communications Group

MAP ID: 03-01771520-SC July 1, 2003

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ATTACHMENT D

Chemical Data Summaries and Sample Maps

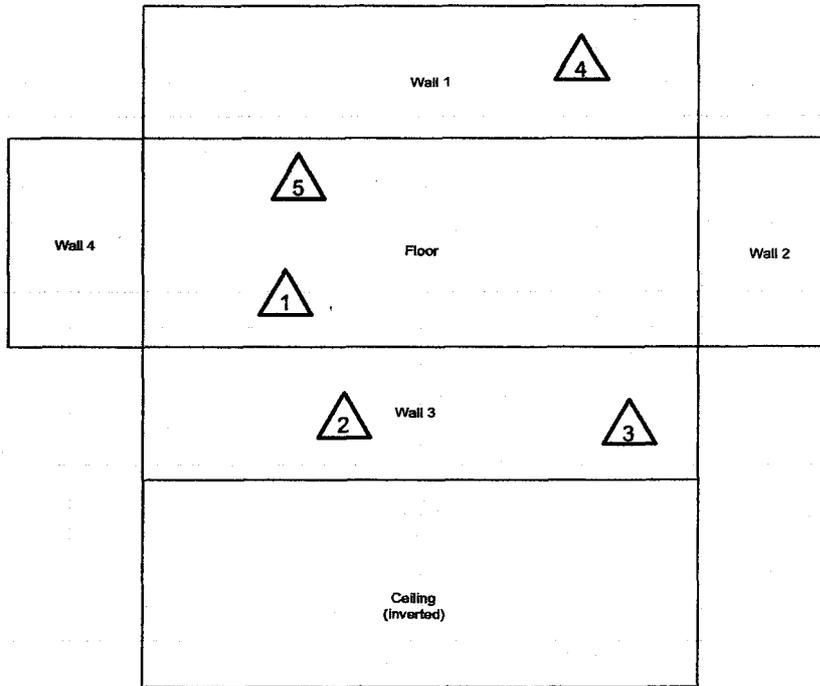
Beryllium Data Summary

Sample Number	Map Survey Point Location	Room	Sample Location	Result (µg/100 cm ²)
Building 520				
520-06192003-315-101	1	Main	Top of 13,800 V panels	< 0.1
520-06192003-315-102	2	Main	Top of cinderblock ledge, south wall	< 0.1
520-06192003-315-103	3	Main	Top of thermostat, south wall	< 0.1
520-06192003-315-104	4	Main	Top of substation alarm annunciator	< 0.1
520-06192003-315-105	5	Main	On concrete floor under desk	< 0.1

CHEMICAL SAMPLE MAP

Building 520 Interior Beryllium

PAGE 1 OF 1



<p>SURVEY MAP LEGEND</p> <ul style="list-style-type: none"> Asbestos Sample Location Beryllium Sample Location Lead Sample Location RCRA/CERCLA Sample Location PCB Sample Location 	<p>Neither the United States Government, nor Kaiser Hill Co. nor CH2M HILL, 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>N</p>	<p style="text-align: center;">0 FEET 25</p> <p style="text-align: center;">0 METERS 8</p> <p style="text-align: center; font-size: x-small;">1 inch = 18 feet 1 grid sq. = 1 sq. m.</p>	<p>U.S. Department of Energy Rocky Flats Environmental Technology Site</p> <p style="font-size: x-small;">Prepared by: GIS Dept. 303-966-7707 Prepared for:</p> <div style="display: flex; justify-content: space-between; align-items: center;"> <div style="text-align: right;"> <p>CH2MHILL <i>Communications Group</i></p> </div> </div> <p style="font-size: x-small; margin-top: 5px;">MAP ID: 03-01771520-Be June 30, 2003</p>
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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 520 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.

All beryllium results were less than associated action levels (0.1 µg/100cm²) also confirming a Type 1 facility classification.

Based upon an independent review of the radiological data, it is 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 data accuracy. All radiological 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 520 meets the unrestricted release criteria with the confidences stated herein.

Table E-1 V&V of Radiological Surveys – Building 520

V&V CRITERIA, RADIOLOGICAL 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
	MARSSIM methodology: Survey Unit 520-5-002 (interior and exterior).	statistical and biased	NA	Random w/ statistical confidence.
REPRESENTATIVENESS	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	> 95%	NA	See Table E-3 for details.
SENSITIVITY	usable results vs. unusable	> 95%	NA	
	detection limits	TSA: ≤ 50 dpm/100cm ² RA: ≤ 10 dpm/100cm ²	all measures	MDAs ≤ 50% DCGL _w per MARSSIM guidelines.

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Table E-2 V&V of Beryllium Results – Building 520

V&V CRITERIA, CHEMICAL ANALYSES		DATA PACKAGE		COMMENTS
BERYLLIUM	Prep: NMAM 7300 METHOD: OSHA ID-125G	LAB ----> Reservoirs Environmental Inc.	RIN ----> RIN03Z1879	
QUALITY REQUIREMENTS				
ACCURACY	Calibrations Initial	Linear	Frequency ≥1	No qualifications significant enough to change project decisions i.e., classification of a Type I facility is confirmed. All results were below associated action levels.
	Continuing	calibration	≥1	
	LCS/MS	80%<%R<120 %	≥1	
	Blanks - lab & field	80%<%R<120 %	≥1	
PRECISION	interference check std (ICP)	<MDL	≥1	
	LCSD	NA	NA	
	field duplicate	80%<%R<120 % (RPD<20%)	≥1	
REPRESENTATIVE SS	COC	all results < RL	≥1	
	hold times/preservation	Qualitative	NA	
	Controlling Documents (Plans, Procedures, maps, etc.)	Qualitative	NA	
COMPARABILITY	measurement units	Qualitative	NA	
	Plan vs. Actual samples	ug/100cm ²	NA	
COMPLETENESS	usable results vs. unusable	>95%	NA	
	detection limits	>95%	NA	
SENSITIVITY		MDL of		
		0.012 ug/100cm ²	all measures	

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Table E-3 Data Completeness Summary – Building 520

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 520 (interior)	5 biased	5 biased	No beryllium contamination found, all results less than associated action levels	OSHA ID-125G RIN03Z1879 No results above action level (0.2ug/100cm ²) or investigative level (0.1 ug/100cm ²).
Radiological	Survey Area 5 Survey Unit: 520-5-002 Building 520 (interior and exterior)	20 α TSA (15 random/5 biased) and 20 α Smears (15 random/5 biased)	20 α TSA (15 random/5 biased) and 20 α Smears (15 random/5 biased)	No elevated contamination found at any location; all values below PDS unrestricted release levels	Transuranic and/or Uranium DCGLs as applicable.
		2 α TSA and 2 α Smears Equipment 2 QC TSA	2 α TSA and 2 α Smears Equipment 2 QC TSA		
		5% scan of interior and exterior surfaces	5% scan of interior and exterior surfaces		