

STATE OF COLORADO

Bill Owens, Governor
Douglas H. Benevento, Executive Director

Dedicated to protecting and improving the health and environment of the people of Colorado

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Colorado Department
of Public Health
and Environment

April 18, 2003

Richard J. DiSalvo
Acting Assistant Manager for Environment and Stewardship
U.S. Department of Energy
Rocky Flats Field Office
10808 Highway 93, Unit A
Golden, Colorado 80403-8200

RE: Final Closeout Report for IHSS Groups 100-4 and 100-5

Dear Mr. DiSalvo:

The Colorado Department of Public Health and Environment, Hazardous Materials and Waste Management Division approves this closeout report and concurs that these IHSS Groups need No Further Accelerated Action (NFAA). (The document needs correction to this language on page 1.) We appreciate the modifications your staff made to this document to address our all comments and also include a comparison to the proposed Wildlife Refuge Worker action levels.

Comments regarding changes that were previously requested for the dioxin discussion in 100-5 are attached. If there are questions about those comments please contact Tracy Hammon at (303) 692-2693.

If you have any questions regarding this correspondence please contact me at (303) 692-3367, Elizabeth Pottorff at 303-692-3429, David Kruchek at (303) 692-3328, or Carl Spreng at 303-692-3358.

Sincerely,

Steven H. Gunderson
RFCA Project Coordinator

cc: Norma Castaneda, DOE
Tim Rehder, EPA
Lane Butler, KH
Dave Shelton, KH
Mark Sattleberg, U.S. F&W
Administrative Records Building T130G

1/24

ADMIN RECORD

IA-A-002984

RFETS MASTER RCRA UNITS

	A	B	C	D	E	F	G	H	I	J
1	Unit No.	Building	Unit Description	Regulatory Status	Closure Status	Closure Date	Closure Document Approval	SET	Closure document submittal	CDPHE approval
93	40.45	123	Sump Tank 6	INTERIM STATUS - CLOSED per 6 CCR 1007-3, Part 265	CLOSED in accordance with "Closure Plan for B123 Components of RCRA Unit 40" (ref. 98-RF-03839, 9/29/98).	9/28/99			1/8/98	CC 9/29/98

RFETS MASTER RCRA UNITS

	A	B	C	D	E	F	G	H	I	J
1	Unit No.	Building	Unit Description	Regulatory Status	Closure Status	Closure Date	Closure Document Approval	SET	Closure document submittal	CDPNE approval
93	40.45	123	Sump Tank 6	INTERIM STATUS - CLOSED per 6 CCR 1007-3, Part 265	CLOSED in accordance with "Closure Plan for B123 Components of RCRA Unit 40" (ref. 98-RF-03839, 9/29/98).	9/28/99	1/8/98		CC 9/29/98	

STATE OF COLORADO

Roy Romer, Governor
Patti Shwayder, Executive Director

Dedicated to protecting and improving the health and environment of the people of Colorado

HAZARDOUS MATERIALS AND WASTE MANAGEMENT DIVISION

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Colorado Department
of Public Health
and Environment

January 8, 1998

Mr. Bob April
Environmental Liaison Group
U.S. Department of Energy
Rocky Flats Office
P.O. Box 928
Golden, CO 80402-0928

RE: Approval of RCRA Closure Plan for Components of Unit 40 located in Building 123

Dear Mr. April:

The Hazardous Materials and Waste Management Division of the Colorado Department of Public Health and Environment (the Division), has reviewed the Closure Plan (hereafter called the Plan) for components of Unit 40 located within the area of Building 123 submitted by the United States Department of Energy for the Rocky Flats Environmental Technology Site. The Division received one written comment on the Plan during the public comment period. The comment, however, did not alter the content of the Plan. A response to the comment has been included (Attachment 1).

The approved Plan (Attachment 2) is being issued by the Division in accordance with its authority under the Colorado Hazardous Waste Act, Sections 25-15-301 through 316, C.R.S. and the regulations thereunder. In accordance with 6 CCR 1007-3, Section 265.113(b), DOE and its integrating management contractors must complete the required closure activities identified in the enclosed Plan within 180 days after receipt of this approval.

If you have any questions regarding this matter, please contact Chris Gilbreath at (303) 692-3371.

Sincerely,

Joe Schieffelin
Permitting and Compliance Unit Leader
Federal Facilities Program

cc w/Attachment 1&2:

T. Rehder, EPA
~~R. Leitner, Kaiser-Hill, T-130C~~
Jefferson County Health Department

cc w/out Attachment 2:

L. Perrault, AGO
S. Tarlton, CDPHE

6.0 CONCLUSION AND CLOSURE CERTIFICATION

Based upon observations and investigations presented in this report, the Closure Performance Standards stated in Section 5.0 of this report are accurate.

The undersigned hereby certifies the following:

1. The following components of RCRA Unit 40 in Building 123 at the Rocky Flats Environmental Technology Site met RCRA Clean Closure standards prescribed in the Closure Plan and meet the requirement of the Colorado Hazardous Waste Act (CHWA) regulations for RCRA closure under interim status, as defined in 6 CCR 1007-3, Section 265, Subpart G:

- all above-ground piping, removable ancillary equipment and secondary containment.
- sumps and pipe chases in Rooms 156, 157 and 158.

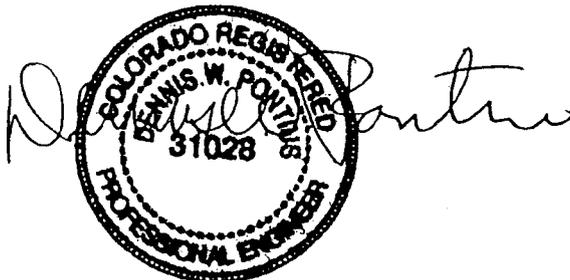
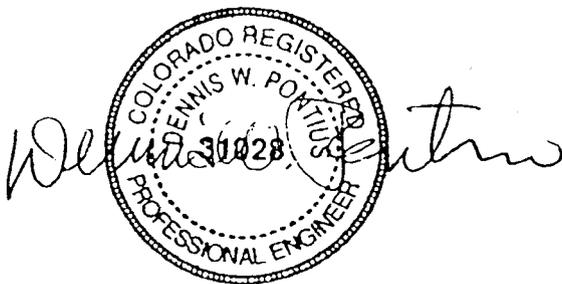
2. The following components of RCRA Unit 40 in Building 123 will be deferred to ER for ranking and future remediation as applicable:

- the Sump in Room 125 (due to 56 ppb Pb).
- the underground pipe from Building 123 to Building 428 (due to 588 ppb Cr and 21.7 ppb Pb).


Professional Engineer

5-28-98
Date

Dennis W. Pontius, P.E.
EnviroTemps, Inc.
555 Zang Street
Suite 104
Lakewood, CO 80228



the under building contamination (UBC) associated with Building 123. This evaluation will determine what, if any, remediation will be required for this area.

5.2.6 Underground Pipe from Room 158, Building 123 to Tank D853 in Building 428.

1. A solution of trisodium phosphate/sodium carbonate was used for decontamination.
2. The piping was adequately flushed with the decontamination solution to remove trace amounts of contaminants of concern as identified in the Closure Plan.
3. The rinsate sample has been evaluated against the performance standards from the RFCA Permit, Part X. The comparison can be found in Appendix B.
4. The final rinsate volume used in the piping and tank did not exceed 113 gallons. This volume is less than 5% of the capacity of the piping and Tank D853.
5. The piping is underground and therefore not visible for inspection.
6. As shown in Appendix B, the final rinsate concentrations of priority pollutants and heavy metals were below the Tier 2 action levels as defined in Attachment 5 of RFCA, except for chromium and lead. The analysis of the rinsate revealed 588 ppb chromium and 21.7 ppb lead remained within the underground portion of the line. The action level of chromium is 100 ppb, and the action level for lead is 15 ppb.
7. All rinsate was processed in the permitted, on-site, liquid waste treatment plant at Building 374.

Conclusion: Closure of the underground piping did not meet the Closure Performance Standards. Remediation of the underground piping will be deferred to the Environmental Restoration (ER) Department. ER will evaluate data from soil samples, groundwater monitoring, and the rinsate analysis to rank Individual Hazardous Substance Sites (IHSS's) 121, 148 and the under building contamination (UBC) associated with Building 123. This evaluation will determine what, if any, remediation will be required for this area.

2. The pipe chases and the sump in Room 158 were adequately flushed with the decontamination solution to remove trace amounts of contaminants of concern as identified in the Closure Plan.

3. The rinsate sample has been evaluated against the performance standards from the RFCA Permit, Part X. The comparison can be found in Appendix B.

4. The final rinsate volume used in the pipe chases did not exceed 10.5 pints. The final rinsate volume used in the sump did not exceed 31 gallons. These volumes are less than 5% of the capacity of the components.

5. All visible waste residuals were removed during washing and rinsing of the sump. The pipe chases were not visible.

6. No contaminants were found to exceed Tier 2 Action levels. As shown in Appendix B, the final rinsate concentrations of priority pollutants and heavy metals were below the Tier 2 action levels as defined in Attachment 5 of RFCA.

7. All rinsate was processed in the permitted, on-site, liquid waste treatment plant at Building 374.

Conclusion: Closure of the pipe chases and sump in Room 158 meet the Closure Performance Standards.

5.2.5 Sump in Room 125

1. A solution of trisodium phosphate/sodium carbonate was used for decontamination.

2. The sump in Room 125 was adequately flushed with the decontamination solution to remove trace amounts of contaminants of concern as identified in the Closure Plan.

3. The rinsate sample has been evaluated against the performance standards from the RFCA Permit, Part X. The comparison can be found in Appendix B.

4. The final rinsate volume used in the sump did not exceed 2 gallons. This volume is less than 5% of the capacity of the sump.

5. All visible waste residuals were removed during washing and rinsing of the sump.

6. As shown in Appendix B, the final rinsate concentrations of priority pollutants and heavy metals were below the Tier 2 action levels as defined in Attachment 5 of RFCA, except for lead. The rinsate concentration for lead was 56 ppb and the action level for lead is 15 ppb.

7. All rinsate was processed in the permitted, on-site, liquid waste treatment plant at Building 374.

Conclusion: Closure of the sump in Room 125 did not meet the Closure Performance Standards. Remediation of this sump will be deferred to the Environmental Restoration (ER) Department. ER will evaluate data from soil samples, groundwater monitoring, and the rinsate analysis to rank Individual Hazardous Substance Sites (IHSS's) 121, 148 and

4. The final rinsate volume used in the pipe chases did not exceed 6 pints. The final rinsate volume used in the sump did not exceed 25 gallons. These volumes are less than 5% of the capacity of the components.

5. All visible waste residuals were removed during washing and rinsing of the sump. The pipe chases were not visible.

6. No contaminants were found to exceed Tier 2 Action levels. As shown in Appendix B, the final rinsate concentrations of priority pollutants and heavy metals were below the Tier 2 action levels as defined in Attachment 5 of RFCA.

7. All rinsate was processed in the permitted, on-site, liquid waste treatment plant at Building 374.

Conclusion: Closure of the pipe chases and sump in Room 156 meet the Closure Performance Standards.

5.2.3 Pipe Chases and Sump in Room 157

1. A solution of trisodium phosphate/sodium carbonate was used for decontamination.

2. The pipe chases and the sump in Room 157 were adequately flushed with the decontamination solution to remove trace amounts of contaminants of concern as identified in the Closure Plan.

3. The rinsate sample has been evaluated against the performance standards from the RFCA Permit, Part X. The comparison can be found in Appendix B.

4. The final rinsate volume used in the pipe chases did not exceed 19.5 pints. The final rinsate volume used in the sump did not exceed 44 gallons. These volumes are less than 5% of the capacity of the components.

5. All visible waste residuals were removed during washing and rinsing of the sump. The pipe chases were not visible.

6. As shown in Appendix B, no contaminants of concern were found to exceed Tier 2 action levels. Nickel was present at 111 ppb which is 11 ppb above the Tier 2 standard. Since nickel is not identified as a contaminant of concern, nor is it a RCRA regulated hazardous waste, CDPHE has determined that no further action will be required for the sump in Room 157 (documented in correspondence between K-H and CDPHE dated April 3, 1998).

7. All rinsate was processed in the permitted, on-site, liquid waste treatment plant at Building 374.

Conclusion: Closure of the pipe chases and sump in Room 157 meet the Closure Performance Standards.

5.2.4 Pipe Chases and Sump in Room 158

1. A solution of trisodium phosphate/sodium carbonate was used for decontamination.

6. The final rinsate concentrations of priority pollutants and heavy metals must be below the Tier 2 action levels as defined in Attachment 5 of RFCA.

7. The pH of the rinsate must be between 6 and 9.

Option 2: Dispose as Mixed Waste

1. Waste generated must be managed as RCRA mixed waste with EPA Waste Codes of F001, F002, and F005.

2. The waste generated must be managed in accordance with applicable state and federal regulations.

Option 3: Debris Treatment

Since Option 3 was not used during the closure of RCRA Unit 40 in Building 123, the Closure Performance Standards will not be summarized.

5.2 COMPARISON OF CLOSURE ACTIVITIES WITH THE PERFORMANCE STANDARDS

The following is a comparison of each major component of RCRA Unit 40 in Building 123 to the Closure Performance Standards. This comparison demonstrates whether the unit may be closed. Tables summarizing all the sample analytical results may be found in Appendix A.

5.2.1 Above-ground system components.

1. All above-ground process waste piping and ancillary equipment was packaged as mixed waste with the waste code F001, F002 and F005.

2. Since the above-ground piping was handled according to Option 2 (managed as a hazardous waste) it was sampled for Land Disposal Restriction (LDR) standards according to 40 CFR 268.40 and 268.48. Samples of both the PVC and the steel pipe were collected. All pipe was determined to comply with the LDR standards.

Conclusion: The above-ground components of RCRA Unit 40 met the Closure Performance Standards. Waste generated has been managed as RCRA mixed waste with EPA Waste Codes of F001, F002, and F005, and the packaged waste is being managed in accordance with RFETS procedures, which meet applicable state and federal regulations for on-site storage at a TSDF.

5.2.2 Pipe Chases and Sump in Room 156

1. A solution of trisodium phosphate/sodium carbonate was used for decontamination.

2. The pipe chases and the sump in Room 156 were adequately flushed with the decontamination solution to remove trace amounts of contaminants of concern as identified in the Closure Plan.

3. The rinsate sample has been evaluated against the performance standards from the RFCA Permit, Part X. The comparison can be found in Appendix B.

4.3 BUILDING 123 CLOSURE ACTIVITIES

RCRA Unit 40 in Building 123 was divided into three major components for closure.

Above-ground system components. All above-ground process waste piping (steel and PVC), pumps, and polyethylene pump containments were managed under Option 2. These system components were stripped-out and packaged in waste crates as low level mixed waste for subsequent disposal at an approved and permitted Treatment Storage and Disposal Facility (TSDF).

Pipe chases and sumps. The pipe chases and sumps were managed under Option 1. First the pipe chases and sumps were washed with a solution of trisodium phosphate and sodium carbonate. The volume of solution used was approximately 3 times the volume of the chases and sumps. The chases and sumps were then liberally rinsed with water. Finally, a specified volume of water which did not exceed 5% the capacity of each pipe chase and sump was used as a final rinse. Composite samples of the rinsate were collected for analysis. Three composite samples were collected: one for each sump and associated pipe chases in Room 156, 157, and 158. A separate sample was collected for the sump in Room 125 (Room 125 does not have any pipe chases). All waste generated during the pipe chase and sump closure activities was routed to the process waste system downstream of the closure activities (Building 374) or packaged as a listed mixed waste.

Underground piping. The underground piping was managed under Option 1. This piping begins in Room 158, where the process waste system exits Building 123. It drains to Valve Vault 18, passes through Valve Vaults 17 and 16, and discharges to Tank D-853 in Building 428. This entire stretch of piping was washed with a solution of trisodium phosphate and sodium carbonate. The volume of solution used was approximately 3 times the volume of the piping and the D-853 tank. The piping was then liberally rinsed with water. Finally, a specified volume of water which did not exceed 5% the capacity of the piping and Tank D-853, was used as a final rinse. A sample of the rinsate was collected from the D-853 tank for analysis.

5.0 COMPARISON OF SAMPLE RESULTS TO CLOSURE PERFORMANCE STANDARDS

5.1 SUMMARY OF CLOSURE PERFORMANCE STANDARDS

The Closure Performance Standards are defined in the Closure Plan. A summary of the Closure Performance Standards is provided below.

Option 1: Decontamination.

1. An appropriate solution must be used for decontamination.
2. The system must be flushed with the decontamination solution to remove trace amounts of acids or bases.
3. Rinsate samples must be evaluated against the final rinsate closure performance standards from the Rocky Flats Cleanup Agreement (RFCA) Permit, Part X.
4. The final rinsate volume must not exceed 5% of the capacity of the system.
5. All visible waste residuals must be removed.

interim status unit.

3.0 HISTORICAL OVERVIEW AND WASTE CHARACTERIZATION

Building 123 was constructed in 1953 and was used as an analytical laboratory, dosimetry, and instrument calibration facility. The building also was used for medical research, storage for all radiological health records, office space for radiation health specialists, and a laboratory for calibration of criticality alarms. The process waste system in Building 123 was used from 1953 through 1997 when the building was decommissioned.

The building was modified several times through its operation. The process waste system was modified in 1968 when an extension to the east wing was built, in 1972 when the west wing was added to the building, in 1974 when portions of the above-ground piping were installed and old underground lines were grouted, in 1989 when the underground line to Valve Vault 18 was replaced, and finally in 1995 when various upgrades were made to the above-ground piping. A detailed description of the history of the process system in Building 123 can be found in the Closure Plan.

The process waste system incorporated into RCRA Unit 40 included the system components in Rooms 103, 103A, 105, 111, 112, 113B, 121, 123, 123A, 125, 126C, 127, 155, 155B, 156, 157, and 158; the active underground line (double walled pipe) between Room 158, Valve Vault 18, and Tank D-853 in Building 428; sumps in Rooms 125, 156, 157, and 158, and pipe chases in Room 156, 157, and 158.

The Closure Plan describes the waste streams which were disposed of in the Building 123 component of RCRA Unit 40, and also provides a list of EPA waste codes used in the building.

4.0 CLOSURE CERTIFICATION ACTIVITIES

4.1 BUILDING 123 RCRA CLOSURE TEAM

Closure activities were conducted in February and March 1998 by Resource Technologies Group (RTG) under subcontract to Denver West Remediation and Construction (DWRC) and Kaiser-Hill. RMRS provided management and technical support of the Building 123 Decommissioning project for Kaiser-Hill. As stated above, RMRS subcontracted independent Professional Engineering services from EnviroTemps.

4.2 CLOSURE OPTIONS

The Closure Plan listed three options for closure of RCRA Unit 40 in Building 123 which are summarized below. Details may be found in the Closure Plan and in the Construction Package for Building 123 Strip-Out.

Option 1 - Decontamination using a solution capable of removing the contaminants of concern and testing the final rinsate to verify treatment standards according to the Rocky Flats Environmental Technology Site (RFETS) RCRA Permit, Part 10, Closure, Section C, "Clean Closure by Decontamination".

Option 2 - Manage as RCRA mixed waste with no on-site treatment.

Option 3 - Debris treatment as defined by RFETS RCRA Permit, Part 10, Closure, Section D, "Debris Rule Decontamination".

1.0 EXECUTIVE SUMMARY

RCRA Unit 40 in Building 123 is an interim status unit. Closure was done in accordance with the Closure Plan for Building 123 Components of RCRA Unit 40, November 1997 (Closure Plan) and the requirements of the Colorado Hazardous Waste Regulations, 6 CCR 1007-3, Part 265.

All above-ground components of RCRA Unit 40 in Building 123 were removed and managed as RCRA listed mixed waste in accordance with Option 2 of the Closure Plan. This waste will be sent to an approved Treatment Storage and Disposal Facility (TSDF) for disposition.

Closure of the pipe chases and sumps in Room 156 and 158 was done in accordance with Option 1 (decontamination) of the Closure Plan. Analytical testing confirmed that these components met RCRA Clean Closure Standards.

Closure of the pipe chases and sump in Room 157 was also done accordance with Option 1 of the Closure Plan. Analytical testing showed that nickel was present at 111 ppb which is 11 ppb above the Tier 2 standard. Since nickel is not identified as a contaminant of concern nor is it a RCRA regulated hazardous waste, CDPHE has determined that no further action will be required for Sump 157.

Closure of the sump in Room 125 and the underground piping did not meet the Closure Performance Standards. The rinsate sample for Room 125 exceeded standards for lead and rinsate sample for the underground piping exceeded standards for chromium and lead. Remediation of the Room 125 sump and the underground piping will be deferred to the Environmental Restoration (ER) Department. ER will evaluate data from soil samples, groundwater monitoring, and the rinsate analysis to rank Individual Hazardous Substance Sites (IHSS's) 121, 148, and the under building contamination (UBC) associated with Building 123. This evaluation will determine what, if any, remediation will be required for these areas.

2.0 INTRODUCTION

The purpose of this report is to verify completion of RCRA Closure operations and to certify closure of the Building 123 components of RCRA Unit 40 that have met RCRA clean closure standards.

RCRA Unit 40 is the site-wide network of tanks, pipelines, and sumps, constructed to transport and temporarily store process waste from the point of origin to on-site treatment and discharge points. The Building 123 component of RCRA Unit 40 consisted of regulated process waste lines (above and below grade), sumps, and pump stations. This process waste system was used to transport laboratory wastes generated in Building 123, to Building 374 for treatment.

Closure of RCRA Unit 40 in Building 123 (an interim status unit) was done in accordance with the Closure Plan for Building 123 Components of RCRA Unit 40, November 1997 (Closure Plan) and the requirements of the Colorado Hazardous Waste Regulations, 6 CCR 1007-3, Part 265. The Closure Plan was approved by the Colorado Department of Public Health and Environment (CDPHE) on January 8, 1998. Partial closure of RCRA Unit 40 was an element of a larger project to decommission Buildings 123, 113, 114, and 123S. This project was conducted as an accelerated remedial action approved under the Building 123 Proposed Action Memorandum (PAM). The PAM is a decision document for the decommissioning of Building 123 and was approved by CDPHE on August 25, 1997.

Rocky Mountain Remediation Services, L.L.C., retained an independent Professional Engineer from EnviroTemps (ET) to witness the closure activities and perform this certification. This report provides evidence to support the closure determinations by the Owner/Operator and verification by an independent Professional Engineer (PE), as required by 6 CCR 1007-3, Section 265.115, for RCRA closure of an

**CERTIFICATION OF CLOSURE
FOR THE BUILDING 123 COMPONENTS OF RCRA UNIT 40**

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APPENDICES

Appendix A - Floor Plan of RCRA Unit 40 piping in Building 123
Appendix B - Analytical Results.

**CERTIFICATION OF CLOSURE
FOR THE BUILDING 123 COMPONENTS OF
RCRA UNIT 40**

Prepared By:
Rocky Mountain Remediation Services, L.L.C.

Certified By:
Dennis Pontius, P.E., EnviroTemps, Inc.

CERTIFICATION OF CLOSURE
FOR THE BUILDING 123 COMPONENTS OF
RCRA UNIT 40

REVISION 0

MAY 1998

K. S. NORTH
July 29, 1998
98-RF-03839
Page 2

and from rinsate analysis from the sump and piping will be evaluated to rank the IHSSs, the under building contamination (UBC), and to determine what, if any, remediation will be required for this area. As required by the regulations and the Closure Plan, closure activities were evaluated and certified by an independent, Colorado-registered professional engineer.

If you have questions, please contact John Wrapp at 966-5883 or Dave Grosek at 966-3305.

John C. Morris
for Robert April, Group Lead
Stakeholder & Environmental Liason
DOE, RFFO

Karan North
Karan North, Division Manager
Environmental Management & Compliance
Kaiser-Hill Company, L.L.C.

enclosure (1): As Stated



98-RF-

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BRAILSFORD, M		
BORMOLINI, A.		
CARD, R. G.		
HILL, J		
FULTON, J.		
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NORTH K	X	
PARKER A		
TILLER R		
TUOR N		
VOORHEIS G		
POLSTON S		
SHELTON D	X	
NORTH K		
CARR M		
WRAPP J	X	X
DOBK K	X	X
HOYT D	X	X
HOKIOS T	X	
REGAN FROST L	X	
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UNCLASSIFIED	x	x
CONFIDENTIAL		
SECRET		

Rocky Flats Environmental Technology Site

SEP 29 1998

98-RF-03839

Mr. Joe Schieffelin, Unit Leader
 Hazardous Waste Monitoring and Enforcement
 Colorado Department of Public Health and the Environment
 4300 Cherry Creek Drive South
 Denver, Colorado 80222-1530

RESOURCE CONSERVATION AND RECOVERY ACT (RCRA) CERTIFICATION OF CLOSURE FOR THE COMPONENTS OF RCRA UNIT 40 IN BUILDING 123 - KSN-045-98

Dear Mr. Schieffelin:

The U.S. Department of Energy, Rocky Flats Field Office (DOE, RFFO) and Kaiser-Hill Company L.L.C. are submitting the enclosed Certification of Closure for the Building 123 Components of RCRA Unit 40. Closure activities were performed as part of the Building 123 Decommissioning Project. All closure activities were conducted in accordance with the applicable requirements for interim status units defined in 6 CCR 1007-3, Part 265, and the Closure Plan for Building 123 Components of RCRA Unit 40, November, 1997, (Closure Plan). The Closure Plan was approved by the Colorado Department of Health and Environment (CDPHE) on January 8, 1998, and was reissued with modifications on July 7, 1998.

Closure activities included the following:

- 1) Removing above ground process waste lines and ancillary equipment, for subsequent disposal as listed mixed waste.
- 2) Decontaminating sumps, pipe chases, and underground process waste lines.

As stated in Section 5.0 of the attached report, closure requirements were achieved for the above ground piping and ancillary equipment, and the sumps and pipe chases in rooms 156, 157, and 158. The sump in Room 125 and the underground piping did not meet closure performance standards. Remediation of the sump in Room 125 and the underground piping will be deferred to environmental restoration activities for IHSS 121, 148 and the building slab. Data from soil samples, from under groundwater monitoring,

AUTHORIZED CLASSIFIER
 SIGNATURE

Exempt from Class
 Per CEX-266-95

IN REPLY TO RF CC NO.:

ACTION ITEM STATUS

PARTIAL/OPEN
 CLOSED

ROYALS:

ORIG & TYPIST INITIALS

Attachment 2
Photographs

Best Available Copy

FINAL CLOSE-OUT REPORT
FOR THE BUILDING 123
DECOMMISSIONING PROJECT

RF/RMRS-98-253.UN
REVISION 0
EFFECTIVE DATE: 9/24/98

Attachment 1

Project Location and Building Floor Plan

Certification of Closure for the Building 123 Components of RCRA Unit 40, May 1998.

Close-Out Radiological Survey Plan for the 123 Cluster, Revision 1, January 1998.

Close-Out Radiological Survey Report for the 123 Cluster, Revision 0, August 1998.

Closure Plan for Building 123 Components of RCRA Unit 40 (RCRA Closure Plan), Revision 0, November 12, 1997.

Concrete Sampling and Analysis Plan to Characterize the Building 123 Slab, Revision 0, December 1997.

ER Ranking, September 1998.

Final Pre-Remedial Investigation of Individual Hazardous Substance Sites (IHSS) 121 and 148 at Building 123, Data Summary Report, September 1998.

Lessons Learned for the Building 123 Decommissioning Project, August 1998.

Proposed Action Memorandum for the Decommissioning of Building 123 (PAM), Revision 6, March 26, 1998.

Reconnaissance Level Characterization Plan for Building 123, Revision 0, September 1997.

Reconnaissance Level Characterization Report, Revision 0, October 1997.

Soil Sampling and Analysis Plan to Characterize Individual Hazardous Substance Sites (IHSS) 121 and 148 at Building 123, Revision 1, May 1998.

Waste Management Plan for Building 123, Revision 1, March 1998.

13.0 OPEN

10.0 DEMARCATION OF WASTES LEFT IN PLACE

No wastes have been left in place. Buildings 123, 113, 114, and 123 S. were removed down to the respective buildings slabs. The building slabs are considered components of the IHSS and will be evaluated as part of the IHSS 121 and 148 ranking by ER.

11.0 DATES AND DURATION OF SPECIFIC ACTIVITIES

Planning for the Building 123 Decommissioning Project began in January 1997. Reconnaissance characterization of the buildings took place in September and October 1997. This was followed by engineering, evacuation of the building, and award of subcontracts for the building strip-out, asbestos abatement and demolition. Work by the subcontractors began in November 1997 and was completed in May 1998. Details of the work completed between November and May are provided in Section 2 of this report.

12.0 FINAL DISPOSITION OF WASTES

The table in Attachment 15 lists final volumes of all wastes generated during the Building 123 Decommissioning Project. Also included in Attachment 15 is a Waste Stream Residue Identification and Characterization (WSRIC) Summary for the waste streams generated during decommissioning of Building 123, 113, 114, and 123S. Each waste stream generated was assigned a waste code. The following is a summary of the waste code categories:

1. Non-radiological contaminated, non-hazardous waste (including asbestos),
2. Non-radiological contaminated, hazardous waste,
3. Radiological contaminated waste (including asbestos); and
4. Low-level mixed waste.

Building materials were analyzed according to the TCLP to determine whether the wastes met Land Disposal Restrictions specified in 40 CFR 268. The data is summarized in Attachment 16. The results were presented to CDPHE, and it was agreed that the analysis data was adequate to demonstrate that the wastes were non-hazardous.

final survey process. When compared against the 123 Cluster Derived Concentration Guideline Levels, and DOE's "No-Rad-Added Program", survey and sample results indicated that all building materials remaining following strip-out, except for the Building 123 concrete slab and paint covering the Room 111, South wall, could be released in an unrestricted manner.

Contaminated paint from Room 111 was removed and disposed of as low level radioactive waste prior to building demolition. Residual radioactivity in excess of the release criteria remains within the Building 123 slab and is located in what were once Rooms 109, 123, and 123. Attempts to remediate these areas failed. In an effort to protect these areas from the weather and demolition activities, the areas were sealed with a weatherproof epoxy coating and covered with a steel plate bolted into the slab. In addition, abandoned source wells and process waste piping located in the Building 123 slab have not been fully characterized. The areas containing elevated levels of residual radioactivity, abandoned process waste piping, and source wells will be addressed during evaluation of IHSS 121, 148 and the Building 123 slab.

6.0 WASTE STREAM IDENTIFICATION

Waste generated during the project was handled according to the *Waste Management Plan for Building 123*, March 1998 (Attachment 14). This report included a summary of anticipated wastes and instructions for the disposition of each waste stream.

The tables in Attachment 15 list the waste streams and actual quantities of waste generated during the decommissioning of Buildings 123, 113, 114, and 123S.

7.0 SITE RECLAMATION

Soil remediation was not within the scope of this project. As described in the PAM, the RMRS ER Department will evaluate subsurface contamination identified during the course of the project.

8.0 DEVIATIONS FROM THE DECISION DOCUMENT

The PAM was updated regularly throughout the project to reflect changes in the project plan, scope, and/or sequence of activities. The minor modification to the PAM was submitted to CDPHE on May 21, 1998 (see Attachment 4).

9.0 DEMARCATION OF WHERE EXCAVATION TOOK PLACE

No excavation took place during the decommissioning of Building 123 project other than characterization drilling, conducted under the SAP. Refer to the SAP for locations drill samples collected to characterize IHSS 121, 148, and the building slab. All drilling was done in accordance with a Rocky Flats Soil Disturbance Permit.

4.0 RCRA CLOSURE (VERIFICATION OF TREATMENT PROCESS)

The only treatment process used during the Decommissioning of Building 123 was decontamination of some components of RCRA Unit 40 using an extraction technology. These operations were conducted as part of the *Closure Plan for Building 123 Components of RCRA Unit 40* (RCRA Closure Plan), Revision 9, November 12, 1997 and not the Building 123 PAM. A detailed description can be found in the RCRA Closure Plan and the report entitled *Certification of Closure for the Building 123 Components of RCRA Unit 40*, May 1998 (Attachment 8). A brief description of the closure status of RCRA Unit 40 in Building 123 is summarized on the next page.

The RCRA Closure Plan listed three options for closing the system:

- 1) Decontamination,
- 2) Disposal as RCRA listed mixed waste; and
- 3) Debris treatment.

All above-ground components of RCRA Unit 40 in Building 123 were removed and managed as RCRA listed mixed waste in accordance with Option 2 of the Closure Plan. This waste will be sent to an approved TSD Clean Closure Standards.

Closure of the pipe chases and sump in Room 157 was also done accordance with Option 1 of the Closure Plan. Analytical testing showed that nickel was present at 111 parts per billion (ppb) which is 11 ppb above the Tier 2 standard. Nickel is not identified as a contaminant of concern and it is not a RCRA regulated hazardous waste.

Closure of the sump in Room 125 and the underground piping did not meet the Closure Performance Standards. The rinsate sample for Room 125 exceeded standards for lead (56 ppb versus (vs) 15 ppb). The Closure Plan deferred any areas not meeting Clean Closure Standards to the ER Department. ER evaluated data from soil samples, groundwater monitoring, and the rinsate analysis to rank IHSS 121, 148, and the under building contamination associated with Building 123. This evaluation will determine what, if any, remediation will be required for these areas. The ER Ranking may be found in Attachment 19.

5.0 RADIOLOGICAL ANALYSIS

The *Close-Out Radiological Survey Report for the 123 Cluster*, August 1998, documents details of the radiological decontamination verification. As stated previously, this report is available for review upon request.

Buildings 123, 113, 114, and 123S were surveyed in accordance with the *Close-Out Radiological Survey Plan for the 123 Cluster*, Revision 4. This Plan incorporated guidance provided by the *Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM)* (draft) and the *Manual for Conducting Radiological Surveys in Support of License Termination*, NUREG/CR-5849 (draft). Final disposition of building materials was determined following an analysis of the data obtained from the radiological surveys and samples collected during the

Detailed descriptions of the RCRA Closure, radiological decontamination, and IHSS characterization may be found in the documents referenced above. These documents provide actual analytical results of samples and surveys. The *RCRA Certification Report* and documentation related to asbestos abatement may be found in the referenced attachments. Due to the volume of information contained in the *Close-Out Radiological Survey Report*, this report will not be provided as an attachment. It has been distributed to DOE and is available for review upon request. The *Final Pre-Remedial Investigation of Individual Hazardous Substances Sites (IHSS) 121 and 148 at Building 123, Data Summary Report* and the *RCRA Certification Report* has also been distributed to DOE.

In addition, it should be noted that there were no releases to the environment due to the decommissioning of Buildings 123, 113, 114, and 123S.

3.2 REMEDIAL ACTION DELIVERABLES

In addition to the remedial action goals defined in the PAM, the CDPHE specified certain requirements that needed to be fulfilled as a condition of their approval of the PAM. These requirements are defined in the letter from the CDPHE to DOE dated August 25, 1997 (Attachment 12). Approval of the PAM was conditional, dependent on completion of the following actions:

- 1) Review and approval of the SAP.
- 2) Review and approval of the IHSS 148 Remediation Plan (Note: This action was deleted by an approved modification to the PAM on March 28, 1998).
- 3) Review and approval of the Unit 40 Closure Plan.
- 4) Review only of the Asbestos Abatement Plan.
5. Review and approval of the Demolition Plan.

Copies of approval letters for the SAP, the Closure Plan, and the Demolition Plan are included in Attachment 12. Also included is a transmittal letter for the Asbestos Abatement Plan. Remediation was not included in the scope of this project. The Building 123 Decommissioning Project included only the characterization of IHSS 121 and 148. Therefore, a remediation plan is not required as part of the Building 123 PAM.

3.3 DOCUMENTATION OF REMEDIAL ACTION

All Administrative Records for the Building 123 Decommissioning Project have been tracked and controlled as required. Attachment 13 contains a summary of Building 123 documents and records.

3.0 REMEDIAL ACTION GOALS VERIFICATION

3.1 REMEDIAL ACTION GOALS

Verification of remedial action goals for the Building 123 Decommissioning project is summarized in several reports. The following table, *Table 3-1, Verification Documentation and Remedial Actions* describes the remedial action described in the PAM, and the associated verification report.

This was followed by abatement under full containment for the following friable and non-friable ACM:

- Wall board (transite panels).
- Drywall, mud, and tape.
- Floor tile.
- Thermal insulation.
- Loose fill in concrete block.

All asbestos abatement was done in accordance with an Abatement Plan prepared by the Abatement Subcontractor and accepted by RMRS for K-H project personnel. Completion of abatement was confirmed by an independent, State Certified, abatement oversight personnel through visual inspections and clearance air sampling. All abatement, air sampling, and sample analysis was conducted in accordance with State regulations. Documentation demonstrating completion of asbestos abatement may be found in Attachment 9.

2.4.3 Unforeseen Site Conditions

The project encountered several unforeseen site conditions during the strip-out and asbestos abatement phases. In each situation, associated work was stopped, the project team called-in subject matter experts to help determine appropriate actions, health and safety issues were addressed, and work packages were modified to include the new actions. As a result, all unforeseen site conditions were addressed without safety issues. The following is a list of the conditions encountered:

- An abandoned duct was found above a suspended ceiling in Room 111. The duct was not properly supported and contained perchloric acid residues.
- Loose asbestos fill was found inside the cells of a concrete block wall.
- In Room 135, an additional room was constructed of transite within the original room walls.
- Stub-ups of old process waste piping were found underneath cabinets in several of the original laboratories.
- Asbestos mastic was found under the laboratory counter tops.
- High contamination areas were designated in Rooms 123 and 124.
- The extent of radiological contamination in Rooms 103 and 109 was much more widespread than originally anticipated.
- High contamination was also found on the south wall of Room 111.

Removal of the Lead/Steel Vault

Building 123 housed a 68-ton lead/steel vault that was once used for lung and body counting. The vault was constructed of unique steel manufactured prior to 1945. Steel manufactured prior to this date is free of radioactivity resulting from nuclear fallout, which makes the material valuable for use as shielding when measuring internally deposited radioactivity. DOE found that there was a need for the vault in Russia, and made arrangements for the vault to be removed, refurbished, and then shipped to the Russian government.

Prior to building demolition, temporary structural supports were installed and a bearing wall of Building 123 was removed. The vault was moved out of the building on cribbing, placed onto a trailer, and transported by tractor-trailer to Oklahoma where it was refurbished under the direction of the Lawrence Livermore National Laboratory (LLNL) in California.

Concrete Sampling

The concrete slab was sampled during the strip-out phase for radiological contamination. All sampling was conducted according to the *Concrete Sampling and Analysis Plan to Characterize the Building 123 Slab*, December 1997. Characterization of the slab was necessary to determine levels of contamination due to the following features:

- Source pits: concrete lined pits installed during original construction for the storage of radioactive sources. These pits varied in depth from 8" to 18'.
- Floor drains, which were used at one time to divert process, waste lines in Rooms 156, 157, and 158.
- Process waste pump sumps in the courtyard and in Room 123.

Concrete core data was used to determine which areas of the slab had radiological contamination, the extent of the contamination, and which areas of the slab needed to undergo additional decontamination or encapsulation. This data was also transmitted to the Rocky Mountain Remediation Services, L.L.C. (RMRS) Environmental Restoration Department for their use in ranking the IHSS. The Concrete Sampling and Analysis Plan and the results of this sampling may be found in Attachment 20.

2.4.2 Asbestos Abatement

Extensive asbestos abatement was also conducted in Building 123. Concurrent with strip-out activities, abatement of non-friable asbestos was conducted. This included removal of the following asbestos containing materials (ACM):

- Asbestos containing cabinet linings.
- Counter tops with asbestos containing mastic.
- Doors with asbestos core material.
- Arc chutes in one of the building transformers.

2.4 STRIP-OUT AND ASBESTOS ABATEMENT

During the strip-out and asbestos abatement phases of the project, all of the identified hazards were removed from the buildings in preparation for demolition. Most strip-out and asbestos abatement activities were conducted concurrently. Due to the presence of multiple contaminants in Building 123, removal of the hazards had to be carefully sequenced to minimize potential exposures to the workers. For example, explosion hazards from perchloric acid had to be eliminated before asbestos abatement could begin. Asbestos abatement often included the removal of materials that were radiologically contaminated, and that contained lead.

2.4.1 Strip-Out

Strip-out activities included the following tasks:

- Removal of radioactively contaminated asbestos floor tile.
- Removal of all carpet.
- Removal of all process hoods and associated ducting, including a thorough rinse of the hood and ducting system, process waste system, and process scrubbers for perchloric acid.
- Removal of all laboratory cabinets, counter tops, and sinks.
- Partial closure of RCRA Unit 40. Closure of this portion of RCRA Unit 40 included removal of above grade and use of extraction technology/rinsate sampling for closure of below grade portions of the piping, sumps, and pipe chases.
- Removal of a 68-ton lead/steel vault for refurbishment and shipment to Russia by DOE.
- Removal of miscellaneous items such as fire protection equipment which was salvaged for future use.

Strip-Out activities of special interest are summarized below:

Perchloric Acid Rinse

A strip-out activity of note was the removal of perchloric acid residues from the process ventilation and piping systems. As stated above, the entire hood, ducting, process waste, and scrubber system were flushed to rinse perchloric acid residues. The flushing procedure was developed by Resource Technologies Group under subcontract to the Strip-Out/Demolition Subcontractor [Denver West Remediation and Construction, L.L.C. (DWRC)]. Due to the explosive nature of perchloric acid, the process for rinsing and dismantling the system was meticulously planned by experienced personnel to ensure the safety of the workers implementing the procedure. The procedure was reviewed by independent experts at the Oak Ridge National Laboratory prior to approval. Generally, all surfaces were wetted, power washed, and tested prior to cutting and removal. Mechanical connections were cut from the system, and disassembled while submerged under water.

2.1.2 Integrated Safety Management

Consideration for safety was integrated into all facets of the Building 123 Decommissioning Project. The Integrated Safety Management principles (defining scope, identifying hazards, implementing controls, performing the work, and providing feedback) were implemented during general project planning, during the preparation of project plans and documents, and during daily execution of project tasks. On a project level, hazards were defined as the scope was being developed. Resources were allocated and the project schedule was designed to address implementation of the required controls. Project plans (such as sampling plans, radiological survey plans, engineering documents, an Integrated Work Control Packages) addressed scope, hazards, and necessary controls at a more detailed level. Finally, hazards and controls were addressed during the daily execution of work tasks in Plan of the Day meetings and through the development of Activity Hazards Analyses. As a result, the project was successfully completed with only two Occupational Safety and Health Agency Recordable Accidents: one bee sting, and one sore knee.

2.2 RELOCATION OF BUILDING TENANTS, EQUIPMENT, AND CHEMICALS

Decommissioning of Building 123 began with the relocation of building tenants, and removal furniture, equipment, and excess chemicals. An Economic Disposal Plan was developed for the excess furniture and equipment by the RFETS Property Utilization and Disposal Department and the K-H Safeguards, Security, Site Operations and Integration (SSOI) Department. Excess chemicals were inventoried, classified, and either shipped to an approved off-site treatment, storage and disposal facility (TSDF), or stored on-site in accordance with the Waste Chemical Consent Order and RFETS procedures. Attachment 6 contains a portion of the Property Disposal Inventory (the actual documentation is of considerable size and is on file with K-H SSOI) and correspondence documenting the disposition of waste chemicals in Building 123.

2.3 CHARACTERIZATION

The buildings were then characterized for hazards and potential contamination. *The Reconnaissance Level Characterization Report for Building 123, October 1997 (Attachment 7)* identifies the type, quantity, condition, and location of both confirmed and potential sources of radioactive and hazardous substances which were present in Building 123. No significant hazards were identified in Buildings 123S, 113, and 114. Hazards identified in Building 123 are listed below:

- Asbestos
- PCBs in light ballasts
- Fluorescent light bulbs (were handled as hazardous waste due to mercury)
- Perchloric acid
- Chemicals
- RCRA hazardous waste
- Radiological contamination
- Metals (lead, chromium, cadmium, an arsenic) in paint

Characterization was followed by detailed planning, engineering, and award of subcontracts for strip-out, asbestos abatement, and building demolition.

PROJECT FINAL CLOSE-OUT REPORT BUILDING 123 DECOMMISSIONING PROJECT

1.0 INTRODUCTION

The purpose of this close-out report is to document completion of the Building 123 Decommissioning Project. This report is formatted as required by the Rocky Flats Cleanup Agreement Implementation Guidance Document.

The objective of this project was to decommission Buildings 123, 113, 114, and 123S in support of the Rocky Flats Environmental Technology Site (RFETS) Ten-Year Plan to close the site. Building 123 was targeted for decommissioning because it was believed to be relatively low-risk. Decommissioning of the Building 123 structure offered an opportunity to strengthen the decommissioning expertise on a moderately sized, relatively low-risk building. The other buildings were small structures immediately adjacent to Building 123 and could be conveniently and economically removed when Building 123 was demolished. A brief description of the decommissioning tasks is provided in Section 2.0 of this report. Drawings showing the project location and the Building 123 floor plan may be found in Attachment 1. The photographs are located in Attachment 2.

The decommissioning of Building 123 was done according to the *Propose Action Memorandum for the Decommissioning of Building 123 (PAM)*, August 25, 1997. (Attachment 4). The PAM provides a detailed description of the decommissioning tasks for Buildings 123, 113, 114, and 123S. These tasks included decontamination of radiological contaminated facility systems, partial closure of Resource Conservation and Recovery Act (RCRA) Unit 40, and characterization of Individual Hazardous Substance Sites (IHSS) 121 and 148.

2.0 REMEDIAL ACTION DESCRIPTION

2.1 GENERAL

Decommissioning of Buildings 123, 113, 114, and 123S was conducted in three major phases: Strip-Out, Asbestos Abatement, and Demolition. A description of each phase is provided in Sections 2.4 and 2.5 below. Prior to implementation of these three main phases, the following activities occurred:

2.1.1 Environmental Readiness Evaluation (ERE)

An Environmental Readiness Evaluation (ERE) was conducted prior to commencement of each of the three major project phases. The purpose of the ERE was to review documentation prepared to support the project and conduct interviews with various project personnel, to determine whether the project was prepared to proceed with each major phase (Strip-Out, Asbestos Abatement, and Demolition). Findings and observations from the ERE team were addressed by the project team and corrected prior to initiation of work. ERE approval from K-H and DOE was required prior beginning Strip-Out, Asbestos Abatement, and Demolition.

ACRONYMS

ACM	Asbestos containing materials
CDPHE	Colorado Department of Public Health and Environment
DOE	US Department of Energy
DWRC	Denver West Remediation & Construction, L.L.C.
ERE	Environmental Readiness Evaluation
IHSS	Individual Hazardous Substance Sites
K-H	Kaiser-Hill Company, L.L.C.
MARSSIM	Multi-Agency Radiation Survey and Site Investigation Manual
PAM	Proposed Action Memorandum
PEP	Proposed Execution Plan
ppb	Parts per billion
RCRA	Resource Conservation and Recovery Act
RFETS	Rocky Flats Environmental Technology Site
RMRS	Rocky Mountain Remediation Services, L.L.C.
SAP	Sampling and Analysis Plan
SSOI	Safeguards, Security, Site Operations and Integration
TCLP	Toxicity Characteristic Leaching Procedure
TSDf	Treatment, storage and disposal facility
WEMS	Waste and Environmental Management System
WSRIC	Waste Stream Residue Identification and Characterization

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ATTACHMENTS

- Attachment 1—Project Location and Building Floor Plan
- Attachment 3—Not Used
- Attachment 4—Proposed Action Memorandum for the Decommissioning of Building 123 (PAM)
- Attachment 5—Not Used
- Attachment 6—Property Disposal Inventory, Economic Disposition Plan, and Documentation of Proper Storage and Handling
- Attachment 7—Reconnaissance Level Characterization Report
- Attachment 8—Certificates of Closure for the Building 123 Components of RCRA Unit 40
- Attachment 9—Asbestos Abatement Completion Documentation, Demolition Notification, and Approvals
- Attachment 10—Certification of Destruction
- Attachment 11—Soil Sampling and Analysis Plan to Characterize Individual Hazardous Substance Sites (IHSS) 121 and 148 at Building 123
- Attachment 12—Documentation of Additional Conditions of the PAM
- Attachment 13—Building 123 Administrative Record Document Summary
- Attachment 14—Waste Management Plan for Building 123
- Attachment 15—Waste Generation Summary
- Attachment 16—Toxicity Characteristic Leaching Procedure (TLCP) Sample Analysis
- Attachment 17—Not Used
- Attachment 18—Final Pre-Remedial Investigation of Individual Hazardous Substance Site (IHSS) 121 and 148 at Building 123, Data Summary Report
- Attachment 19—ER Ranking
- Attachment 20—Radiological Characterization Information for the Building 123 Slab

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PROJECT FINAL CLOSE-OUT REPORT
BUILDING 123 DECOMMISSIONING PROJECT

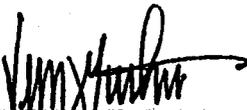
REVISION 1

FEBRUARY 1999

This Final Close-Out Report for the Building 123 Decommissioning Project has been reviewed and approved by:


Kaiser-Hill Project Manager

Feb 24, 1999
Date


RMRS Project Manager

FEB 24, 1999
Date



KAISER HILL COMPANY

RF/RMRS-98-253.UN

FINAL CLOSE-OUT REPORT BUILDING 123 DECOMMISSIONING PROJECT

As Required by the Rocky Flats Cleanup Agreement

Rocky Mountain Remediation Services, L.L.C.

REVISION 1

FEBRUARY 1999

ADMIN RECORD

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B123-A-00100

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NOTICE

All drawings located at the end of the document.

Copy to Brooks

RECEIVED
David C. Shelton

Revised 12/99

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DUE DATE
ACTION



Department of Energy

FEB 16 2000

ROCKY FLATS FIELD OFFICE
P.O. BOX 928
GOLDEN, COLORADO 80402-0928
Action to: _____ Info Only _____
Due Date _____ Copy to: _____

FEB 16 2000

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PARKER, A.M.		
PHILLIPS, F.J.	X	
ROOGERS, A.D.		
SANDLIN, N.B.		
SHELTON, D.C.	X	
SPEARS, M.		
TILLER, R.		
TUOR, N.B.		
VOORHEIS, G.M.		
WARTHER, R.F.		
DORR, K.	X	

Mr. Steve Gunderson
Colorado Department of Public Health and Environment
4300 Cherry Creek Drive South
Denver, Colorado 80246-1530

Dear Mr. Gunderson:

Enclosed is the Final Close-Out Report for the Building 123 Decommissioning Project. It is submitted for your review and approval pursuant to paragraph 118 of the Rocky Flats Cleanup Agreement. This completes the reporting for this activity.

If you have any questions concerning this report, please contact me at (303) 966-5918, or Reginald Tyler at (303) 966-5927.

Joseph A. Legare
Assistant Manager
for Environment and Infrastructure

Enclosure
cc w/enc:
T. Rehder, US EPA

cc w/o enc:
R. DiSalvo, OCC, RFFO
W. Fitch, CFO, RFFO
D. Shelton, K-H
K. Dorr, K-H

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If elevated radionuclides were detected, additional analyses for metals could be required. As indicated in Table 6, americium-241 is slightly greater than background plus two standard deviations at one location, uranium-235 is slightly greater than background plus two standard deviations at one location, and uranium-238 is slightly greater than background plus two standard deviations in two locations. These data indicate that the sumps and pipelines had not leaked. Results for analytes greater than background plus two standard deviations are shown on Figure 11 and summarized in Table 6. The full data set is presented in Appendix B

RCRA Unit 40 process waste lines were excavated and removed from the sumps to MH-2. The remaining pipeline south of MH-2 to Valve Vault 18 could not be removed because of infrastructure constraints. The location of this pipeline is shown on Figure 15. The sump (waste pumping station), reported to be in Room 125, was not found. The following portions of RCRA Unit 40 were removed:

- Sumps in former Rooms 156, 157, and 158, and associated pipelines; and
- Process waste line from the sumps to MH-2.

2.5 Deviations from the ER RSOP

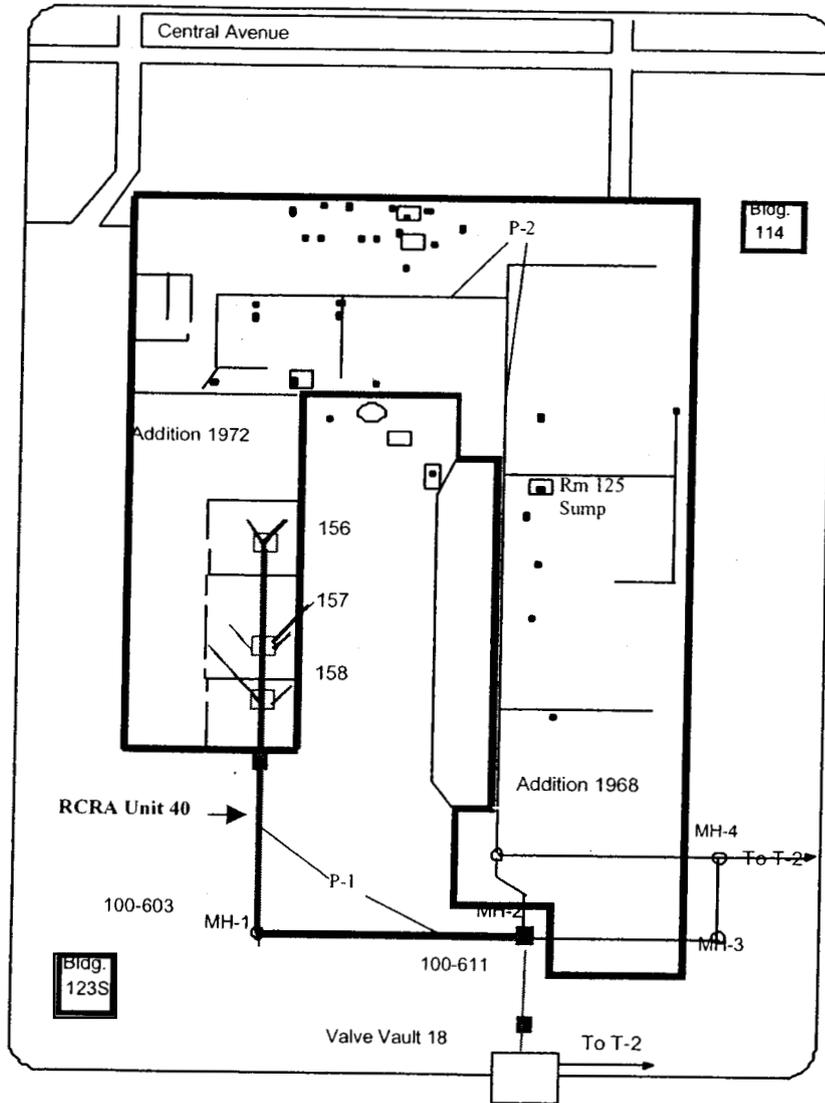
Deviations from the ER RSOP include the following:

- Actual confirmation sampling locations differed slightly from planned locations in most cases and several planned confirmation samples were not collected. A comparison of planned versus actual sampling locations is presented in Table 8.
- Several confirmation sampling locations were not measured but were hand plotted and estimated as noted on Table 5; and
- Process waste line removal stopped at the steamlines because of worker safety issues. Remaining NPWL and OPWL will be dispositioned with IHSS Group 000-4, PAC 000-504 and IHSS Group 000-2, IHSS 000-121 respectively.

Table 8
Planned Versus Actual Sampling Locations

Sampling Location	Planned Easting	Planned Northing	Actual Easting	Actual Northing	Comments
BU38-0001	2081723.239	749136.392	2081730.80	749131.89	No significant change
BU38-0002	2081724.613	749036.094	2081729.02	749039.10	No significant change
BU38-0003	2081657.748	749031.973	2081656.21	749038.61	No significant change
BU38-0004	2081658.206	749063.573	2081652.69	749068.93	No significant change
BU38-0005	2081657.290	749093.800	2081653.59	749089.94	No significant change
BU38-0006	2081657.748	749105.249	2081653.59	749103.45	No significant change
BU38-0007	2081657.290	749146.925	2081653.59	749145.41	No significant change
BU38-0008	2081661.870	749125.400	2081653.59	749124.00	No significant change
BU38-0009	2081695.303	749218.828	2081608.1	749065.5	No significant change
BU38-0011	NA	NA	In-Process Sample	In-Process Sample	In process sample, not sampled

Figure 14
 UBC 123 RCRA Unit 40



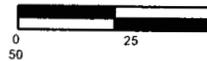
	<p>IHSS 121</p> <p>IHSS 148</p>	<p>□ Manhole</p> <p>□ Waste Pumping Station</p> <p>● Sump</p> <p>□ Pit</p>	<p>Scale (ft)</p>  <p>0 25 50</p>	
	<p>— P1</p> <p>— P2</p> <p>— P3</p> <p>■ RCRA Unit 40</p>			

Table 7
RFCA Tier II Sum of Ratios

Location	Tier II SOR Radionuclides	Tier II SOR Nonradionuclides
BU38-0002	0.13	NA
BU38-0003	0.01	NA
BU38-0004	0.14	NA
BU38-0005	0.01	NA
BU38-0006	0.01	NA
BU38-0007	0.00	NA
BU38-0008	0.00	NA
BU38-0009	NA	0.00
BU39-0001	0.15	NA
BU39-0003	0.13	NA
BU39-0004	0.13	NA
BU39-0005	0.12	NA
BU39-0006	NA	0.01
BU39-0007	NA	0.00
BU39-0008	NA	0.01
BU39-0012	NA	0.01
BU39-0013	NA	0.01
BV39-0001	0.13	NA
BV39-0003	0.18	NA
123 Emergency Southeastern Process Line	0.13	NA
123 Pad Soil Sample	0.12	NA
B123 Metal Manhole	0.12	NA
Source Well Pipe	0.13	NA
West of Manhole 2	0.01	NA
Central Point on Southern PWL	0.13	NA
Eastern Process Line	0.14	NA
Northern Process Line	0.13	NA
Source Pit	0.12	NA
Southeast Slab	0.13	NA

NA Not applicable because sample was not analyzed for specific constituents.

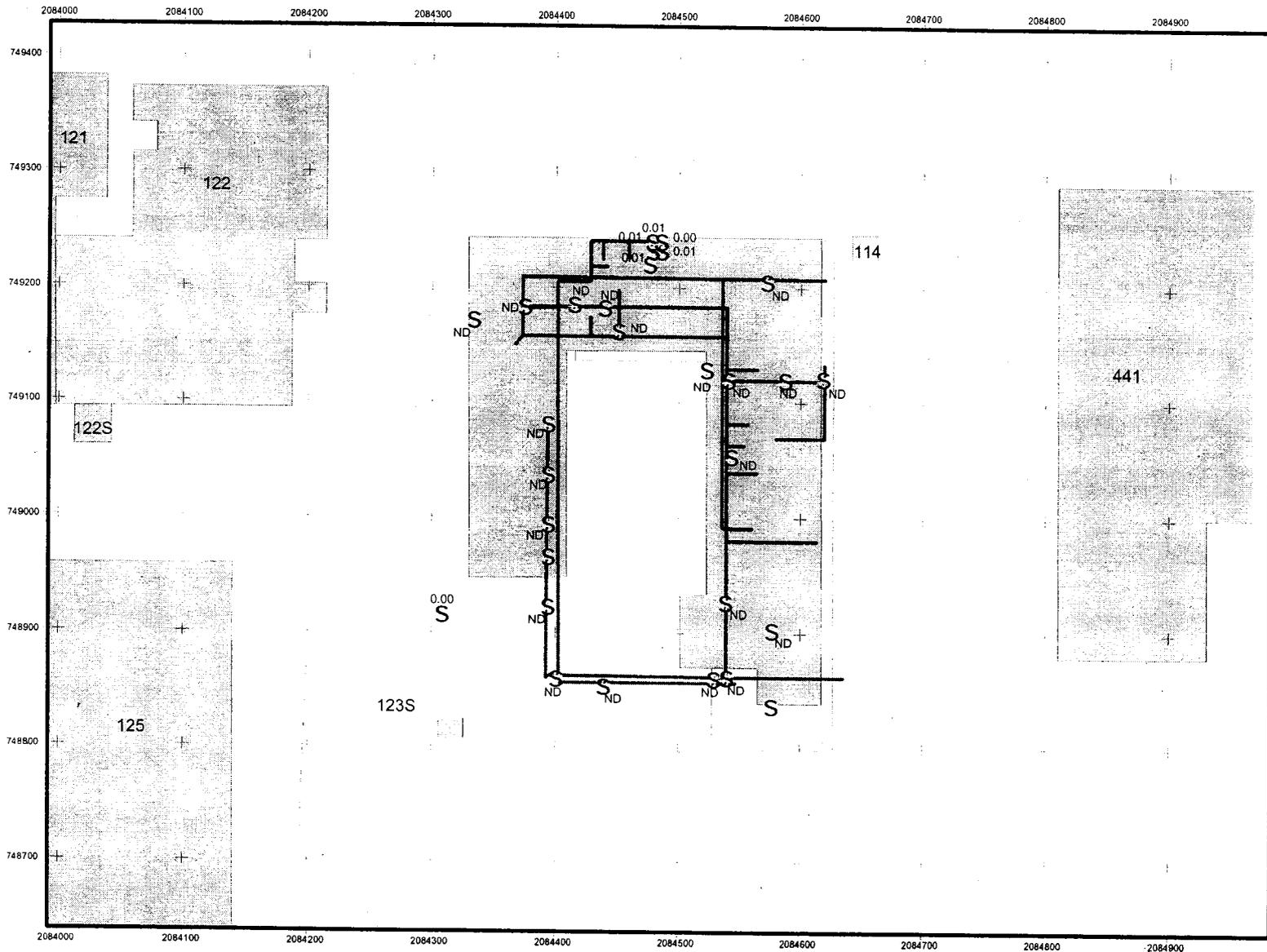


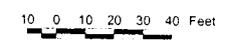
Figure 13
RFCA Tier II
Nonradionuclide
Sum of Ratios

Key

- S Confirmation Samples
- N Process Waste Lines
- Buildings and other structures
- IHSS 148
- Paved areas
- Dirt roads
- Drainage Features
- ND No Data



Scale = 1:500



State Plane Coordinate Projection
 Colorado Central Zone
 Datum: NAD 27

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

Prepared By:



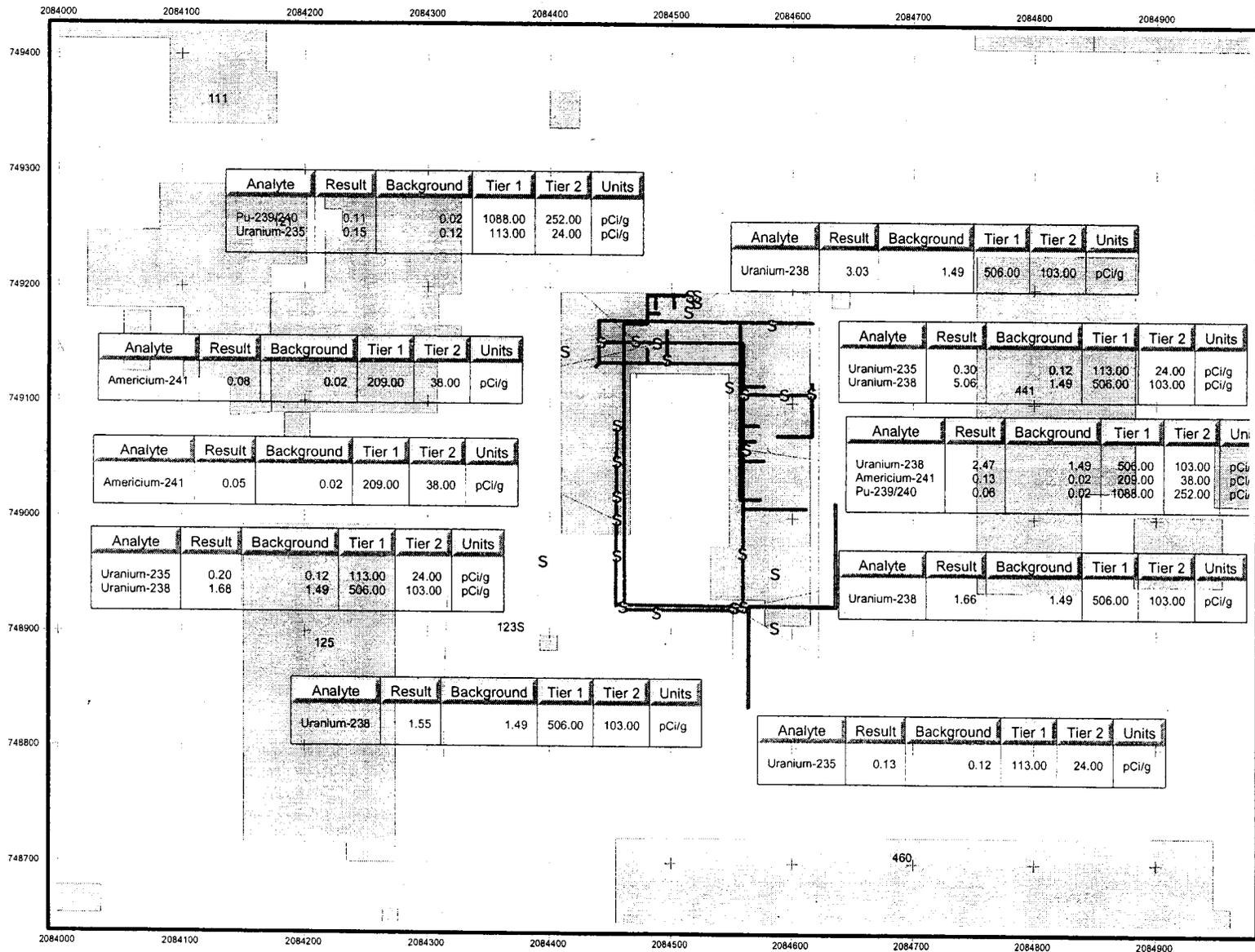


Figure 11
Confirmation Sampling Results
Greater Than Background Plus
Two Standard Deviations or
Method Detection Limits

Key

- Process Waste Lines Left in Place
- Confirmation Samples
- Process Waste Lines Removed
- Pits-as-built
- Buildings and other structures
- IHSS 148
- Paved areas
- Dirt roads
- Drainage Features



Scale = 1:700
30 0 30 Feet

State Plane Coordinate Projection,
Colorado Central Zone
Datum: NAD 27
U.S. Department of Energy
Rocky Flats Environmental
Technology Site

Prepared By:



**Table 6
Confirmation Sampling Results Greater Than Background Plus Two Standard Deviations or Method Detection Limits**

IHSS Group	IHSS/PAC/UBC Site	Location Code	Analyte	Result (pCi/g)	Background Plus Two Standard Deviations (pCi/g)	Tier I AL (pCi/g)	Tier II AL (pCi/g)
100-4	UBC 123 – Radiological Health Physics Laboratory IHSS 100-148 – Waste Leaks	BU38-0002	Uranium-238	1.66	1.49	506.00	103.00
		BU38-0002	Uranium-238	1.66	1.49	506.00	103.00
		BU38-0004	Uranium-235	0.20	0.12	113.00	24.00
			Uranium-238	1.68	1.49	506.00	103.00
		BU38-0005	Americium-241	0.05	0.02	209.00	38.00
		BU39-0001	Uranium-238	3.03	1.49	506.00	103.00
		BU39-0004	Americium-241	0.08	0.02	209.00	38.00
		BU39-0011	Uranium-238	3.09	1.49	506.00	103.00
		BV39-0003	Uranium-235	0.30	0.12	113.00	24.00
			Uranium-235	0.23	0.12	113.00	24.00
			Uranium-238	3.70	1.49	506.00	103.00
			Uranium-238	5.06	1.49	506.00	103.00
		Central Point on Southern PWL	Uranium-238	1.55	1.49	506.00	103.00
		Eastern Process Line	Americium-241	0.13	0.02	209.00	38.00
			Plutonium-239/240	0.06	0.02	1,088.00	252.00
			Uranium-238	2.47	1.49	506.00	103.00
		Northern Process Line	Plutonium-239/240	0.11	0.02	1,088.00	252.00
			Uranium-235	0.15	0.12	113.00	24.00

Confirmation sampling results indicate that all contaminant concentrations are less than RFCA Tier II ALs. Results of the confirmation sampling are shown on Figure 11 and detailed in Table 6. Figure 11 and Table 6 present confirmation sampling results that are greater than background plus two standard deviations or MDLs along with RFCA Tier I and Tier II ALs for reference. Confirmation sampling contaminant concentrations were below the proposed Wildlife Refuge Worker (WRW) ALs. Residual lead concentrations were greater than the proposed ecological ALs. The complete data set is in Appendix B.

SOR calculations were based on the following list of contaminants of concern (COCs):

- Radionuclides (americium-241, plutonium-239/240, uranium-234, uranium-235, and uranium-238);
- Metals (arsenic, copper, mercury, lead); and
- Organics (SVOCs).

The COCs are based on characterization data that exceed background plus two standard deviations or MDLs. Metals and organics were grouped together for nonradionuclide SOR calculations. Plutonium, americium, and uranium were grouped together for radionuclide SOR calculations. Tier II SOR calculations for radionuclides and nonradionuclides are presented on Figures 12 and 13, respectively. As shown, all locations are less than the threshold value of 1. Table 7 lists the confirmation sampling RFCA Tier II SORs.

2.4 RCRA Unit Closure

During decommissioning the pipe chases and sumps in Rooms 156, 157, and 158, shown on Figure 14, were closed in accordance with the Closure Plan for Building 123 Components of RCRA Unit 40 (DOE 1997) but were not removed. Closure of the sump in Room 125 and the underground pipe from Room 158 did not meet the closure performance standards (RMRS 1998b) and were deferred to ER remediation. RCRA COCs at this location were metals and radionuclides.

RCRA closure accelerated action objectives were to remove all sumps and process waste lines associated with RCRA Unit 40, shown in Figure 14, within the IHSS Group 100-4 AOC. Sumps located in the former Rooms 156, 157, and 158 were removed along with more than 1 foot of soil around and beneath the sumps. Pipelines between former Rooms 156 and 157 sump locations and more than 1 foot of soil around and beneath the pipelines was excavated. Additionally, approximately 40 feet of associated 4-inch diameter stainless steel pipeline was excavated. Contamination was not detected on sumps or associated pipeline.

Confirmation samples were collected from the soil beneath each sump location, and one was collected in the pipeline trench between the Room 156 and 157 sump locations. Confirmation sampling locations are BU38-0002, BU38-0003, BU38-0004, BU38-0005, BU38-0006, BU38-0007, BU38-0008 and the Central Point of Southern PWL. Soil samples were analyzed for radionuclides only because they could be used as an indication of sump or pipeline leaks.

24/24

**CLOSEOUT REPORT
FOR IHSS GROUPS 100-4
(UBC 123, IHSS 148, PAC 100-611)
AND 100-5 (PAC 100-609)**

Unit 40 B123 pg 25

Approval received from the Colorado Department of Public Health and Environment

(April 22, 2003)

Approval letter contained in the Administrative Record

April 2003