Closure Plan for Building 123 Components of RCRA Unit 40

U. S. Department of Energy

Rocky Flats Environmental Technology Site

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draft

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1.0 INTRODUCTION

Partial closure of RCRA Unit 40 includes the closure of the RCRA regulated process waste lines, sumps, and pumping stations associated with Building 123 at the Rocky Flats Environmental Technology Site (RFETS). This system includes above ground process waste lines and ancillary equipment (sumps, etc.) that are currently used in the building, as well as one active underground line. The Building 123 area encompasses overlapping Individual Hazardous Substance Sites (IHSS) 121 and 148. IHSS 121 includes the underground Original Process Waste Lines (OPWLs) P-1, P-2 and P-3. Figure 1.1 shows the location of Building 123 and IHSS 121 and 148. Leakage from old process waste lines and possible spills from operations may have resulted in contaminated soil beneath and adjacent to Building 123. This potentially contaminated soil has been designated IHSS 148. The OPWL is a network of tanks and underground pipelines constructed to transport and temporarily store process waste from point of origin to on-site treatment and discharge points. Both the active and inactive systems include above and underground lines that transfer the process waste to valve vaults or holding tanks. All process waste lines inside the building are currently active. Closure will include deactivation, dismantlement, and remediation of all system components in Building 123, and decontamination, grouting and sampling of the active underground pipeline that leaves the building and extends to Valve Vault 18.

Partial closure of RCRA Unit 40 is part of a larger project to decontaminate and decommission (D&D) Building 123 and surrounding area. This project will remove Buildings 123, 123S, 113, and 114 at RFETS; characterize portions of IHSS 148 and IHSS 121; and close a portion of RCRA Unit 40. The Building 123 slab and foundation will be cored as required to allow for sampling. Sample results will be used to evaluate the contamination beneath the building and modify the ER Ranking List, as results indicate. The overall project is being conducted as an accelerated action under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) approved under the Building 123 Proposed Action Memorandum (PAM). The PAM is a decision document for the D&D of Building 123 and has been approved by the Colorado Department of Public Health and Environment (CDPHE). The Building 123 PAM references this unit closure plan. RCRA Unit 40 is currently under Interim status, and as a result, partial closure activities fall under Colorado Hazardous Waste Regulations: Part 265, Subpart G -"Closure and Post Closure".

1.1 APPLICABILITY

This RCRA Closure Plan applies to both the aboveground and subsurface Process Waste Tank System found in and beneath Building 123 as described:

- The aboveground waste process line in Building 123;
- The underground process waste line connecting Building 123 to Valve Vault 18 and from Valve Vault 18 to Tank 853 in Building 428; and
- All ancillary equipment (secondary containment, sumps, etc.) within the portion of RCRA Unit 40 associated with Building 123.

Note: Pipeline P-1 was modified in 1989. Part of the line (exterior to the building) was removed and replaced with new double walled piping. This line runs from the exterior of the building to Valve Vault 18. This new line is part of RCRA Unit 40 and will be closed in accordance with this plan.

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This Closure Plan will identify the options available for the management, and the removal and/or remediation of this system. This Closure Plan does not apply to:

- The inactive portion of the P-1 Pipeline;
- to Pipelines P-2 or P-3;
- nor to any soil contamination found under this building; and
- Tank 853 in Building 428.

Note: Building operations prior to 1985 that generated mixed waste were not regulated under RCRA, and, therefore, these pipelines are not part of RCRA Unit 40. Non-regulated underground pipelines that were abandoned prior to RCRA regulation include: pipelines P-2 and P-3 (Blue and Orange on attached First Floor Plan) In 1974, Pipelines P-2 and P-3 were grouted in place. The Building 123 PAM and IHSS 148 and 121 Sampling and Analysis Plan (SAP) address the investigation and characterization of any soil contamination created by the lines. The implementation of the RCRA Closure Plan is a component of the facility decommissioning plan.

The following is a summary of the decommissioning plan for the process waste piping system in Building 123.

The Decommissioning of Building 123 has been divided into four main phases:

I. Strip-Out and Utility Isolation
II. Asbestos Abatement
III. Demolition
IV. Characterization of IHSS 121 and 148.

During Phase I, the above grade section of the process waste line (shown in pink on Attachment 1, First Floor Plan) will be removed under either Option 1, 2 or 3 as described in Section 7.0 of this Closure Plan. The piping will be plugged where it goes below ground in Rooms 156, 157 and 158. After removal, all the above ground piping will be packaged as either Low Level Waste or Mixed Waste depending the results of rinsate sampling. The piping will be removed to prepare the building for demolition in Phase III.

The underground process waste lines will be managed during Phase IV. The underground process waste lines refer to the inactive section of P1 (yellow on the attached sketch), P2 (blue), P3 (orange), and the active underground section of piping which goes to Valve Vault 18 (green).

During Phase IV, the soil and the concrete slab will be sampled (drilled) for characterization. Closure activities for the inactive underground process waste lines, the building slab and surrounding soil will be determined by ER based upon the results of the characterization study. Soil remediation is not considered as part of the work scope of either the B123 Pam or this Closure Plan. Final disposition of the underground portion of the active process waste line (green) will depend on sample analysis of the rinsate. If the rinsate sample of the underground portion of the active waste line is below RFCA Tier 2 standards then the line will have been successfully "Clean Closed". But if the rinsate sample does not meet RFCA Tier 2 standards then the pipeline will be deferred to ER.

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2.0 FACILITY CONTACT

The RFETS contact for closure activities is:

Manager, Rocky Flats Field Office
U. S. Department of Energy
P. O. Box 928
Golden, Colorado 80402-0928
Phone: (303) 966-2025

3.0 UNIT CLOSURE NOTIFICATION, CERTIFICATION AND SCHEDULE

The closure of the Building 123 above ground process waste system, sumps, and underground pipelines will be conducted as a partial closure of Unit 40. Notification will be submitted to the Director of the Colorado Department of Public Health and Environment (CDPHE) of the intent to close the process waste system 45 days prior to the planned start of closure activities.

If the total time necessary for closure is expected to exceed 180 days, the facility will notify the Director within 30 days of such a determination (Part 265.113(b)) and at least 30 days prior to the expiration of the 180 day closure period (Part 265.113(c)).

Within 60 days after completion of closure activities, the facility will notify CDPHE through submittal of proper certification that the unit has been closed in accordance with the approved closure plan. The certification package will be signed by the owner or operator and by an independent, Colorado-registered Professional Engineer.

4.0 REGULATORY REQUIREMENTS

A plan for closure of RCRA hazardous waste treatment and storage units at RFETS is required pursuant to 6 CCR 1007-3, Part 265 of the Colorado Hazardous Waste Regulations: Part 265, Subpart G - "Closure and Post Closure", Sections 265.110 through 265.120. No demonstration of financial responsibility is required because compliance with 6 CCR 1007-3, Part 266, Subpart A - "Financial Requirements", is not required for government owned facilities.

5.0 UNIT DESCRIPTION

RCRA Unit 40

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. Operation of the process waste system in Building 123 began in 1952 in the east and central wings. An extension to the east wing was added in 1968, and the west wing was added in 1972. The process waste system for Building 123 was modified with each of the expansions to the building.

The process waste system incorporated into RCRA Unit 40 includes the system components in Rooms 103, 103A, 105, 111, 112, 113B, 121, 123, 123A, 124, 125, 126C, 127, 155, 155B, 156, 157, and 158 in

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the building, and the active underground line that connects to Valve Vault 18. A drawing of the building and the process waste piping is included in Appendix A. The history of the Building process waste system is described below.

Building 123 Ancillary Equipment: Four concrete sumps that were used for emergency secondary containment are considered ancillary equipment to RCRA Unit 40 and by their construction an integral part of the buildings floor structure. These sumps are described as follows:

- Sump 125, located in Room 125, a small concrete sump with epoxy paint surface, dimensions: 1'8" long by 1'10" wide by 1'11" deep;
- Sump 156, located in Room 156, a concrete sump with a gray epoxy painted surface; dimensions: 4' long by 4' wide by 4'2" deep. Entry into this sump requires a confined space entry permit;
- Sump 157, located in Room 157, a concrete sump with a gray epoxy painted surface; dimensions: 4' long by 5' wide by 4'2" deep. Entry into this sump requires a confined space entry permit; and
- Sump 158, located in Room 158, concrete sump with a gray epoxy painted surface; dimensions: 4' long by 4' wide by 5'2" deep. Entry into this sump requires a confined space entry permit.

Underground Section: The original process waste lines (P2) were installed below grade in 1952. The southern portion of this system in the east wing was modified in 1968 when the east wing addition was constructed. The process waste line installed in 1968 is referred to as the P3 line. In 1972, an additional underground process waste piping system was installed which serviced the construction of the west wing (P1). Construction of the west wing included three large interconnected concrete sump pits in Rooms 156, 157 and 158.

In 1974 an above grade process piping system (see below) was installed to replace the old P2 and P3 lines. When this new above-grade system was installed, the P2 and P3 lines were filled with grout. In 1989, the below grade process waste piping system was upgraded. The sections of P1 that lie outside of Building 123 were removed. A new below grade piping system was installed in 1989 that went from the south west corner of Building 123 to Valve Vault 18. The 1989 section of the underground process waste piping was used until 1997.

Above Ground Section: In 1974 a process waste piping system was installed above-grade in Building 123. This above grade system tied into the P1 below grade system, and later was tied into the 1989 below-grade piping system. In 1995, approximately 40% of the above-grade piping were modified and upgraded. The above grade piping system was used until 1997.

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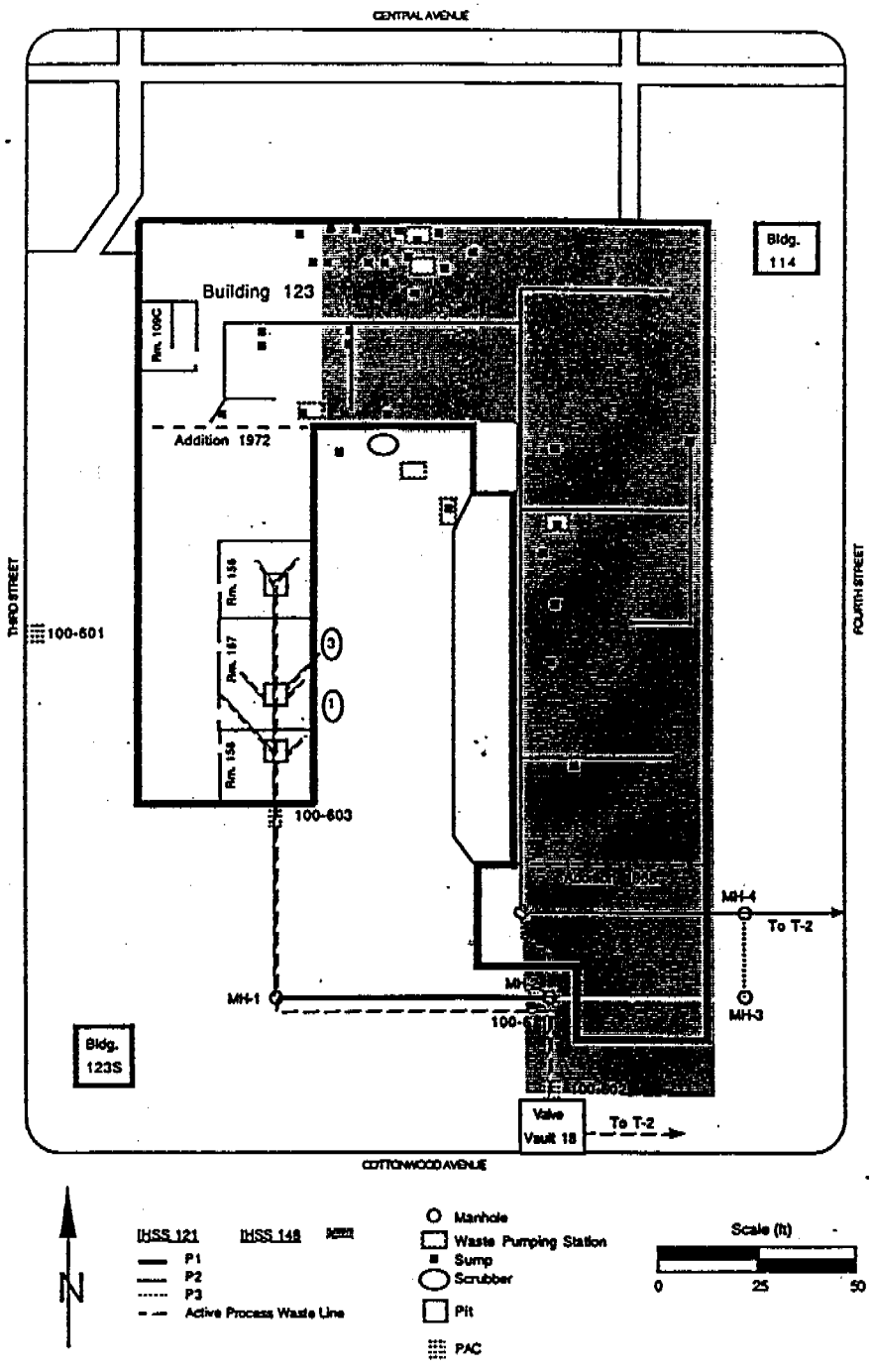

Figure 1-1 Location of Building 123 and Associated IHSS 121 and 148

6.0 CHARACTERIZATION

6.1 EPA WASTE CODES ASSOCIATED WITH THIS UNIT AND SAMPLING PARAMETERS

The following EPA Waste Codes were listed in the Part A application for RCRA Unit 40: D001, D002, D004-D011, D018, D019, D028, D029, D035, D040, F001, F002, F003, F005, F007, F008, and F009. However, not all of the above referenced waste streams have been identified as being disposed of in RCRA Unit 40 in Building 123. The WSRIC identifies the following process wastes as being disposed of in the process waste system:

- From 1987 to 1997, organic compounds such as Dibutyl-n-diethyl carbamoyl phosphate (DDCP) and toluene were used in very small quantities for Americium separation in Building 123;
- Acids: nitric acid, hydrofluoric acid, sulfuric acid, hydrochloric acid, acetic acid, formic acid, oxalic acid, and perchloric acid;
- Bases: ammonium hydroxide and sodium hydroxide;
- Radionuclides: various isotopes of plutonium, americium, uranium, and curium;
- Metals: Calcium, Magnesium, and Iron effluents, beryllium (trace amounts);
- Ammonium nitrate, ammonium thiocyanate, ammonium chloride, ammonium oxalate, ammonium hydroxylamine, ethylene glycol, Diethylenetriaminepentaacetate (DTPA) potassium permanganate, potassium permanganate, sodium nitrate and sodium carbonate.

After treatment, using either Option 1 or Option 3, a representative sample of the final rinse water will be taken in Building 428 near Tank #863 where a sampling tap is located. All liquid wastes from Building 123 flow into this tank. This sample will be tested for:

- The Target Analyte List for Metals, including Mercury (Table 6-1);
- Volatile Organics (as identified in Table 6-2); and
- Fingerprinting (pH, flash point, TSS, turbidity, etc.)

These sample parameters will account for all of the EPA Waste codes associated with RCRA Unit 40 except for F007, F008, F009. These listed waste codes are for cyanide wastes from electroplating operations. No electroplating operations utilizing cyanide were conducted in Building 123 and are therefore omitted from testing. Tables 6-1 and 6- 2 list the contaminants to be analyzed for, and their associated EPA Waste Codes.

Based upon process knowledge and application of the Contained-In Policy, materials from this unit (pipelines, pumps, sumps, etc.) must be managed as RCRA mixed waste and analyzed for characteristics unless Options 1 and 3, Rinsate or Debris Treatment standards, identified in this document are met.

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TABLE 6-1 MODIFIED TARGET ANALYTE LIST METALS AND ASSOCIATED EPA WASTE CODES

Aluminum, Al	Antimony, Sb	Arsenic, As D004
Barium, Ba D005	Beryllium, Be	Cadmium, Cd D006
Cesium, Cs	Chromium, Cr D007	Cobalt, Co
Copper, Cu	Iron, Fe	Lead, Pb D008
Lithium, Li	Magnesium, Mg	Manganese, Mn
Mercury, Hg * D009	Molybdenum, Mo	Nickel, Ni
Potassium, K	Selenium, Se D010	Silicon, Si
Silver, Ag D011	Sodium, Na	Strontium, Sr
Thallium, Tl	Tin, Sn	Vanadium, V
Zinc, zn		

Mercury is not part of the TAL metal list but was added because of its common usage in laboratories.

TABLE 6-2 MODIFIED TARGET COMPOUND LIST OF VOLATILE ORGANIC COMPOUNDS AND ASSOCIATED EPA WASTE CODES

1,1,2,2-Tetrachloroethane	1,1,2-Trichloroethane F002	1,2-Dichloroethene (total)
1,2-Dichloropropane	1-1-1-Trichoethane F001/F002	1-1-Dichloroethane
1,1-Dichloroethylene D029	1-2-Dichloroethane D028	2-Hexanone
Bromoform	Bromomethane	Carbon disulfide F005
Carbon tetrachloride D019/F001	Chloroethane	Chlorobenzene D021/F002
Chloroform D022	Chloromethane	cis-1,3-Dichloropropene
Dibromochloromethane	Ethylbenzene F003	Methyl ethyl ketone (butanone).....D035/F005
Methylene chloride F001/F002	Pyridine F005	Styrene
Tetrachloroethylene D039/F001/F002	Toluene F005	trans-1,3-Dichloropropene
Trichloroethylene D040/F001/F002	Vinyl Chloride D043	Xylenes (total) F003
Acetone F003	4-Methyl-2-pentanone	Benzene D018/F005

6.1.1 Above Ground Portion of RCRA Unit 40 in Building 123

Building 123 has always housed laboratory operations. Laboratories routinely generate organic compounds most of which (prior to 1987) were disposed of in the process waste system. Some of these chemicals would today be characterized as listed wastes. In 1987, administrative controls were established that prohibited the disposal of listed hazardous waste to the waste process system. In addition, satellite accumulation areas were established to manage all listed hazardous wastes generated in Building 123. Beginning in 1989, this system was used predominately as an elementary neutralization unit for D002 corrosive waste streams and was in use until the building ceased operations in 1997. The above ground pipeline system was upgraded in 1995 when approximately 40% of this system was replaced.

6.2 SOIL CHARACTERIZATION

Soil characterization of the Building 123 area will be conducted as part of the activities outlined in the Building 123 Proposed Action Memorandum. Soil characterization will include sampling and analysis of the soil beneath and surrounding Building 123. Following removal of the building superstructure, samples will be collected through the slab. The IHSS 124 and 148 SAP has been written to guide characterization activities in these areas. The SAP incorporates a review of existing records to establish the location of potentially contaminated areas and to define sampling protocol. The RFETS Statistical Applications Group will be used to ensure that statistically valid and representative samples of each waste stream are taken. Current planning indicates a need for approximately forty-six (46) soil samples beneath the slab of Building 123 and from areas surrounding underground, abandoned OPWLs. Samples will be collected from one to six feet in depths and are designed to locate contaminants that may have leaked from the lines. Samples will be analyzed for Volatile Organic Compounds (VOCs), Semi-Volatile Organic Compounds (SVOCs), Target Analyte List (TAL) Metals, radionuclides, and nitrates. Data quality requirements supporting the analysis effort will conform to criteria established in "Guidance for the Data Quality Objective Process" EPA QA/G-4 (EPA 1994). The Data Quality Objectives are listed in the "Building 123 and IHSS 124 SAP". (See RF/RMRS-97-023)

7.0 CLOSURE PERFORMANCE STANDARD

The closure performance standard specifies that hazardous waste facilities are to be closed in such a way as to (1) minimize the need for further maintenance at the facility, and (2) protect human health and the environment by controlling, minimizing, or eliminating potential releases of hazardous waste to the environment (6 CCR 1007-3, Section 265.111).

For ease in achieving RCRA Closure Performance Standards, that portion of RCRA Unit 40 associated with Building 123 will be divided into three components: above ground piping; associated ancillary equipment (concrete sumps) and below ground piping. These units will be treated independently. RCRA Closure will not be completed until these components achieve the RCRA Closure Performance Standards, and are certified closed by an independent Colorado Registered Professional Engineer or until the units are remediated, as necessary, in accordance with RFCA.

Any of the three closure options described below may be used to achieve "RCRA Clean Closure." For example, the above ground piping may be closed using the Decontamination Option while the below ground might be closed using Debris Treatment.

To achieve "RCRA Clean Closure" of this unit, a selection of one of the following options will be made by DOE/Kaiser-Hill based on characterization data.

7.1 OPTION 1: DECONTAMINATION OF RCRA UNIT 40 ASSOCIATED WITH BUILDING 123

If this option is selected for either the above ground and/or the below ground portions of the unit, closure will consist of decontaminating the pipe and any associated ancillary equipment with a solution capable of removing the contaminants of concern and testing the final rinsate to verify treatment standards. This decontamination will be conducted in accordance with the Rocky Flats Environmental Technology Site RCRA Permit, Part 10 Closure, Section C, Clean Closure by Decontamination.

7.1.1 Closure Performance Standards for Above Ground Piping, Ancillary Equipment (e.g., Concrete Sumps) and Below Ground Piping Associated with RCRA Unit 40

Closure Performance Standards for decontamination identified in this section include, but are not limited to:

- The selection of an appropriate solution for decontamination. Selection of the decontamination solution was based on the types of wastes previously managed in the unit and the contaminants that are present. Water containing sodium carbonate and trisodium phosphate will be used as the decontamination solution;
- Flushing the system with a decontamination solution to remove any remaining trace amounts of acids or bases;
- The final rinsate closure performance standards for internal surfaces of tanks (as described in RFCA Permit, Part X Closures) will be used to evaluate the effectiveness of the decontamination; and
- The final rinsate volume will not exceed 5% of the capacity of the piping system.

The above ground and/or below ground and the ancillary equipment (e.g., concrete sumps) will be considered decontaminated and meet RCRA Clean Closure Performance Standards if:

- All visible waste residuals have been removed and;
- The final rinsate contains concentrations of priority pollutants (identified as being managed in the unit) and heavy metals (268.48 UHC listing) below the Tier 2 action levels as defined in Attachment 5 of the Rocky Flats Compliance Agreement (RFCA) and;
- The pH of the rinsate is between 6 and 9.

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7.1.2 Rinsate Performance Standards

Above Ground Piping System and Removable Ancillary Equipment

Once the rinsate solution meets the performance standards, as identified above and is certified by an independent engineer, all above ground portion of this unit will be removed and managed as LLW. This LLW will be stored on-site until it can be disposed in an approved facility (e.g., Nevada Test Site, Envirocare),

Non-removable Ancillary Equipment (e.g., Concrete Sumps)

Once the rinsate solution meets the performance standards, as identified above and is certified by an independent engineer, the concrete sumps meeting standards will be considered closed and no further work will be required. The floor slab will remain in place and will be evaluated by ER as to whether it will be removed or not.

Below Ground Piping System

Two options exist for the below ground portion of the process waste system:

1. The rinsate sample from the piping meet Tier 2 standards and performance standards are certified by an independent engineer. Clean closure of this unit will require no further activities; or

2. The rinsate sample does not meet Tier 2 standards and therefore the unit can not be Clean Closed. The unit will be deferred to ER for evaluation as part of the site-wide ROD.

Once the building is removed, the soil sampling program as described in the Soil Sampling and Analysis Plan to Characterize Individual Hazardous Substance Sites 121 and 148 at Building 123 (SAP) will be initiated. The purpose of the SAP is to identify any hazardous constituents present in the soil as a result of releases from either the waste process lines (active or inactive) or Building 123.

Any soil contaminants identified during sampling operations will be evaluated by Environmental Restoration Projects and will be used to update the ER Ranking List. This list will be used to determine whether or not soil remediation is required.

7.2 OPTION 2: MANAGED AS HAZARDOUS WASTE WITH NO ON-SITE TREATMENT

7.2.1 Manage Piping/Ancillary Equipment that can be Removed as Hazardous Waste

If this option is selected, all removable process waste system components will be managed as RCRA mixed waste with the EPA Waste Codes of F001/F002/ F005. The piping and removable ancillary equipment will be size reduced and placed into storage on-site at a TSDFs until shipment to an offsite TSDF for final disposition. All hazardous waste and/or mixed wastes generated from this project will be

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managed in accordance with all applicable state and federal regulations. Further description of waste management activities can be found in Section 10.

7.3 OPTION 3: DEBRIS TREATMENT OF THE ABOVE AND BELOW GROUND PORTIONS OF RCRA UNIT 40

If this option is selected for either the above ground and/or below ground portions of RCRA Unit 40, the process waste system will be managed as RCRA Hazardous Debris in accordance with 40 CFR 268.45. It is anticipated that this option would be selected only for the above ground portion of this unit.

7.3.1 Debris Treatment Closure Performance Standards

Hazardous debris will be considered decontaminated if the process meets the performance standards identified in the Rocky Flats Environmental Technology Site RCRA Permit, Part 10 Closure, Section D, Debris Rule Decontamination. Requirements identified in this section include, but are not limited to:

- Material must meet the definition of debris found in 40 CFR 268.45.
- Selection of a specified technology as identified in 40 CFR 268.45. Extraction or destruction technologies should be selected over immobilization technologies whenever possible. For decontaminating hazardous debris piping, tanks and associated ancillary equipment in Building 123 , chemical extraction using water washing and spraying will be selected. Water washing and spraying is defined as application of water sprays or water baths of sufficient temperature, pressure, residence time, agitation, surfactants, acids, bases and detergents to remove hazardous contaminants from debris surfaces and surface pores or to remove contaminated debris surface layers. Water containing sodium carbonate and trisodium phosphate will be used as decontamination solution.
- A volume of approximately three times the piping/tanks volume of this unit will be used to decontaminate the piping and ensure adequate residence time; and
- Clean surface debris standards as specified in 40 CFR 268.45 must be met.

All treatment residuals generated from extraction and/or destruction technologies used in the Closure of Building 123 (including rinsates) will be characterized in accordance with 40 CFR 262.11 and managed accordingly. Treatment residuals do not meet the definition of debris.

In the event that closure performance standards for debris are not met, the piping will be removed and handled as RCRA mixed waste.

8.0 SPECIFIC CLOSURE ACTIVITIES

Closure activities will be performed to achieve the objectives of the closure performance standard. (See RCRA Permit, Part 10 Closure, Section C-6, "Closure Performance Standards"). The activities will be conducted with decontamination and decommissioning activities covered by the Building 123 PAM, which includes remediation of the remainder of the building and abandoned OPWLs under the building.

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Closure activities will be implemented to ensure the protection of human health and the environment, and waste minimization.

The following sections outline the procedures necessary to close active process waste lines in Building 123, and the active underground line between Building 123 and Valve Vault 18.

8.1 PREPARATION OF ENGINEERING PACKAGES AND WORK PACKAGES

Engineering and work packages will be used to govern the deactivation and decommissioning activities. Engineering designs will be developed for removal and decommissioning activities. The engineering package will define the sequence of activities and methods of size reducing, dismantling, and packaging of the building materials. The packages are being prepared for the Building 123 project in three phases:

1. Deactivation of the building;
2. Demolition of the building; and
3. Characterization of underground contamination.

8.2 HEALTH AND SAFETY

The RFETS Health and Safety Practices Manual defines general health and safety measures to be followed at the Site. All closure activities will be conducted in accordance with the manual. In addition, a specific Health and Safety Plan has been written for Building 123 D&D activities, which specifically addresses D&D and RCRA Unit 40 closure activities. As Low As Reasonably Achievable (ALARA) principles will be followed regarding personnel radiation dosage and exposures to hazardous materials. Radiation Control Technicians will survey all rooms in the building for radiation, and the pipelines and sumps will be monitored for radiological contamination.

In accordance with Site Procedure I-74000-IWCP, September 4, 1996, Integrated Work Control Program (IWCP) work packages will be prepared to direct and control all work. The packages will be organized similarly to the engineering packages. Each work package will contain a Job Safety Analysis (JSA), which addresses all health and safety issues in detail.

8.3 TANK SYSTEM CLOSURE ACTIVITIES

8.3.1 Closure of System Components

Closure of the above ground and underground portions of RCRA Unit 40 is dependent upon the amount of contamination (if any) discovered in the final characterization. These units will:

1. Meet the rinsate standards (Option 1); or
2. Be removed, characterized and managed in accordance with all applicable rules and regulations (Option 2); or
3. Meet debris Treatment Standards (Option 3); or
4. Deferred to ER, in the event Tier 2 standards can not be met for underground piping, non-removable ancillary equipment (e.g., concrete sumps) and/or contaminated soils.

The WSRIC system documents that the process waste system in Building 123 has been used as an elementary neutralization unit from 1989 to date. There is little information regarding disposal practices prior to 1989. However, it seems clear that the majority of the discarded liquids were acids and bases. According to the WSRIC data, no listed wastes were disposed in the system since 1989.

Both the above ground and below ground portions of RCRA Unit 40 will be closed following an approved RCRA Closure Plan using one of the following options:

1. Pipelines and ancillary equipment (e.g., concrete sumps, secondary containment, etc.) will be decontaminated using a solution of water, sodium carbonate and trisodium phosphate. The rinsate will be tested to determine if it meets the Tier 2 - Table 2 "Groundwater Action Levels" identified in Attachment 5 of RFCA. If the rinsate meets these standards, then the system will be considered closed. If the rinsate is above the standards, the pipe will be removed. Underground piping, non-removable ancillary equipment (e.g., concrete sumps) and soil contamination that does not meet standards will be deferred to ER.

2. The process waste system can be removed and managed as Mixed Waste; or

3. The process waste system can be Debris Treated in accordance with 40 CFR 268.45 and exit RCRA once debris treatment performance standards are met.

8.3.2 Closure Scenarios Associated with Soil Contamination

Soil remediation is not within the scope of this RCRA Closure Plan. Soil contamination will be characterized, evaluated and remediated, as necessary, by ER in accordance with RFCA.

Contamination below RFCA Tier 2 levels

If analytical results indicate that the soil is below RFCA Tier 2 levels, the following actions will be taken:

- Underground pipelines will be filled with grout, capped and left in place.
- Sample results will be summarized and forwarded to ER for inclusion in the site-wide ER evaluation.

Contamination above RFCA Tier 2 Levels

If analytical results indicate that soil contamination is above the Tier 2 levels, the following actions will be taken:

- Underground pipelines will be filled with grout, capped and left in place.
- The site will be deferred to ER for further evaluation;
- All analytical data will be summarized in a sample report. This report along with copies of all analytical data will be submitted to ER for evaluation.
- ER will use the data to update the ER Rankling List.

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- The ER Rankling List will be used to prioritize soil remediation projects at Rocky Flats. As part of the RFCA Plant Closure, a risk assessment will be conducted. Remediation, if required, will then be conducted on the pipelines and soil in accordance with a CDPHE approved RFCA Decision Document.

9.0 DISPOSITION OF WASTE GENERATED DURING CLOSURE

Remediation and closure activities may generate a combination of radioactive, hazardous, and mixed wastes. Contaminated soil, pipeline, sumps and ancillary equipment are expected to be the major sources of waste. Wastes consisting of plastic, tools, personal protective equipment and other materials associated with demolition and remediation will also be a major source of waste. Contaminated waste will be handled by qualified waste packaging technicians who will work with decontamination specialists and radiation control technicians to identify and segregate the Hazardous or Low Level Waste. Waste packaging technicians will package and label the waste, and will arrange for radioactive waste to be certified. Liquid hazardous or radioactive waste generated after the process waste lines are no longer in service will be collected in drums and shipped to Building 374 for processing. Solid waste in drums or boxes will be managed by the Waste Disposal group in an appropriate storage area prior to off-site shipment.

9.1 ESTIMATE OF WASTE VOLUMES TO BE GENERATED

Table 9-1 describes the types, estimated quantities of waste to be generated, and how the waste will be handled and disposed.

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Table 9-1 Estimated Volume of Waste to be Generated if Options are Successful

Waste Forms	Waste Type	Disposition of Waste	Estimated Quantity
Option 1 Decontamination			
Process waste pipelines/ancilliary equipment	Low Level	LLW will be recycled at SEG, Oak Ridge, TN or sent to the Nevada Test Site.	800 Linear Ft. or 100-200 Cubic Ft.
Rinsate	Low Level Mixed	Building 374, WWTU	7,500 gallons
Plastic, paper, etc. decontamination or LLW handling	Low Level	Nevada Test Site	100-200 Cubic Ft.
Option 2 Handle as Hazardous Waste			
Process Waste Pipeline/ancilliary equipment	Low Level Mixed Waste	Approved TSDF	800 Linear Ft. or 100-200 Cubic Ft., ~~9 yd³~~ 7.4 yd³
Rinsate	Low Level Mixed Waste	Building 374, WWTU	200-1000 gallons
Plastic, paper, etc. that comes in direct contact with listed waste	Low Level Mixed Waste	Approved TSDF	< 100 Cubic Ft.
Option 3 Debris Treatment			
Process waste pipelines/ancilliary equipment	Low Level Waste	Nevada Test Site	800 Linear Ft. or 100-200 Cubic Ft.
Plastic, paper, etc. coming in to direct contact with listed waste	Low Level Mixed Waste	Mixed Waste will be stored on-site in a TSDF awaiting shipment to Envirocare or another approved TSDF.	< 100 cubic ft.

10.0 RECORD KEEPING

The following closure documentation will be maintained:

- A field logbook indicating the date, number, and type of sampling activities
- Analytical results
- Records of actions taken to decontaminate equipment or structures
- Work control packages developed to govern closure activities

Certification and other documentation indicating that closure was conducted in accordance with the closure plan.

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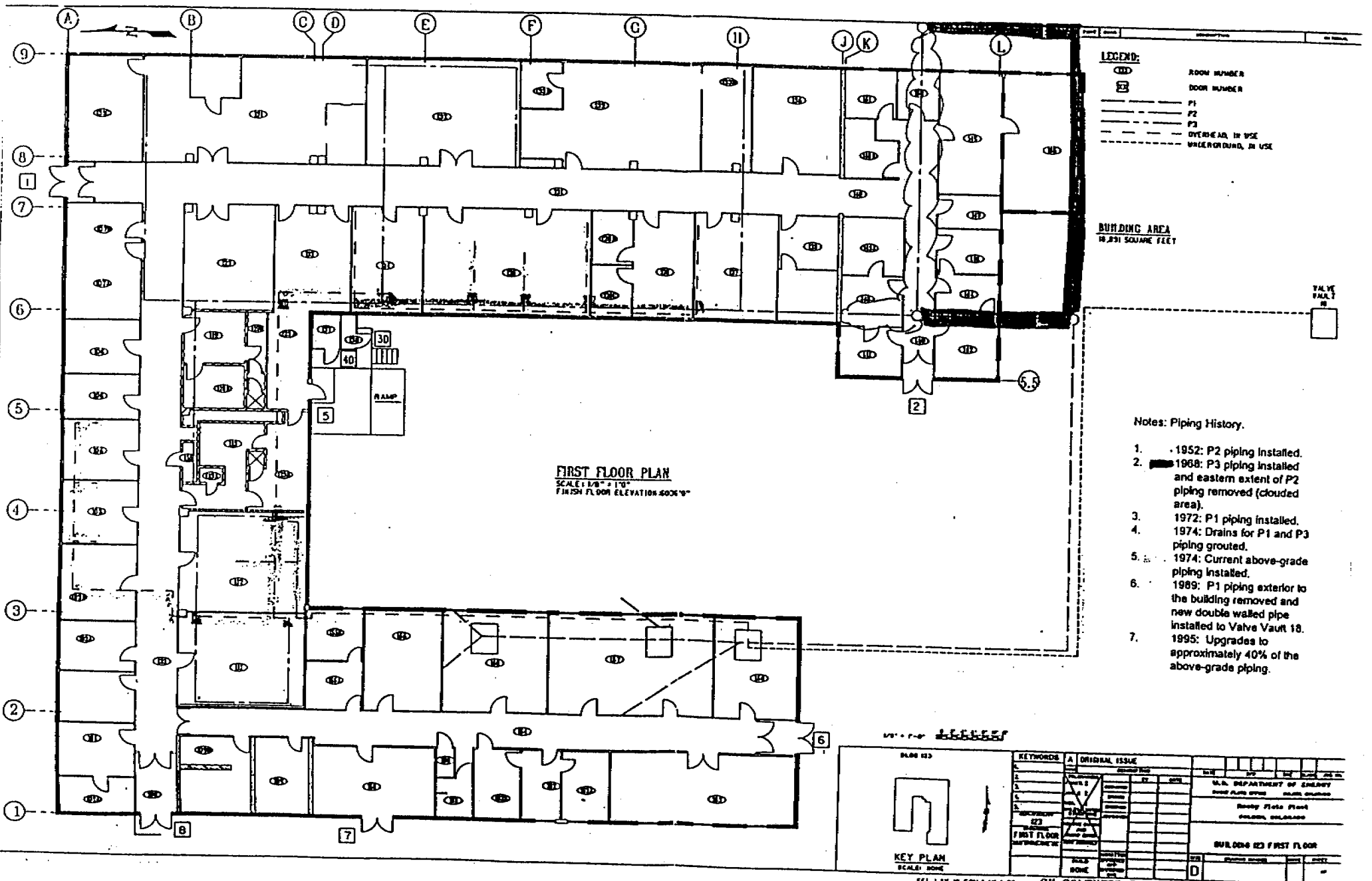
Attachment 1

First Floor Plan


LEGEND:
ROOM NUMBER
DOOR NUMBER
P1
P2
P3
OVERHEAD, IN USE
UNDERGROUND, IN USE
BUILDING AREA
FIRST FLOOR PLAN
RAMP
VALVE VAULT 18
Notes: Piping History.
1. 1952: P2 piping installed.
2. 1968: P3 piping installed and eastern extent of P2 piping removed (clouded area).
3. 1972: P1 piping installed.
4. 1974: Drains for P1 and P3 piping grouted.
5. 1974: Current above-grade piping installed.
6. 1989: P1 piping exterior to the building removed and new double walled pipe installed to Valve Vault 18.
7. 1995: Upgrades to approximately 40% of the above-grade piping.
KEY PLAN
ORIGINAL ISSUE
FIRST FLOOR
U.S. DEPARTMENT OF ENERGY
Rocky Flats Plant
BUILDING 123 FIRST FLOOR
CV COMPUTER GENERATED