Rocky Flats
Environmental Technology Site

BUILDING 776/777 CLOSURE PROJECT
DECOMMISSIONING OPERATIONS PLAN

REVISION 1

July 1, 2003

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ADMIN RECORD

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RECORD OF MODIFICATIONS

Modification # and Type	Effective Date	Notes
Revision 0	11/3/99	Revision 0 contains 271 pages
Modification #1 (minor modification)	12/15/99	Appendix H has been inserted to provide for the addition of RCRA unit-specific closure information for SET #62. List of revised/new pages: 1. Cover page (revised to show total of 276 pages) 2. Page 2 (revised to track modifications to this DOP) 3. Page 8 (revised to show addition of Appendix H) 4. Pages 271-276 (added to provide RCRA unit-specific closure information)
Modification #2 (minor modification)	02/24/00	Section 4 has been revised to provide for the partial closure of a RCRA-regulated unit upon engagement of the consultative process and approval of the LRA. List of revised pages: 1. Page 41, Section 4.5.2 (second paragraph)
Modification #3 (minor modification)	03/03/00	RCRA unit-specific closure information for SETs 7, 11, 26, and 61 has been added to Appendix H. List of revised/new pages: 1. Cover page revised to show total of 287 pages. 2. Closure information sheets and drawings for SETs 7, 11, 26, and 61 added to Appendix H (11 pages)
Modification #4 (minor modification)	05/23/00	This modification to the DOP provides the framework for managing remediation wastes generated during decommissioning List of revised/new pages: 1. Cover page revised to show total of 287 pages. 2. Page 12 of the Executive Summary, third full paragraph - reference to development of site-wide strategy for managing remediation waste deleted (information added to OO-776-374, Management Requirements for Remediation Waste). 3. Page 75, Section 6.1, RCRA/CERLA Transition - reference to development of site-wide strategy for managing remediation waste deleted; reference to OO-776-374 added. 4. Page 84, Section 6.5, Waste Accumulation, Staging, Storage, and Treatment - deleted (information moved to OO-776-374). 5. Page 87, Section 7.2 - reference to development of a "sitewide strategy for managing remediation and to on-site treatment deleted (information moved to OO-776-374).
Modification #5 (minor modification)	09/13/00	Table 6 has been revised to add 7 container storage units, and RCRA unit-specific closure information for SET 55 has been added to Appendix H. List of revised/new pages: 1. Cover page (revised to show total of 290 pages) 2. Page 39, Section 4.5 – Seven container storage units added to Table 6. 3. Pages 288-290 - Closure information sheet and drawing for SET 55 added to Appendix H.

2

Modification # and Type	Effective Date	Notes
Modification #6 (minor modification)	02/22/01 CDPHE approval. 03/15/01 Document Control effective date	Table 6 has been revised to add mixed residue tank V-747A, and RCRA unit-specific closure information has been added to Appendix H for SETs 4,5,6, 10,11,18,21,22,27,29,34,35,36, and 52. List of revised/new pages: 1. Cover page (revised to show total of 337 pages) 2. Page 39, Section 4.5 – Tank V-747A added to Table 6. 3. Page 271, Appendix H cover sheet – added SETs 4,5,6, 10,11,18,21, 22,27,29,34,35,36, and 52. 4. Pages 291-337 - Closure information sheets and drawings for SETs 4,5,6,10,11,18,21,22,27,29,34,35,36, and 52 added to Appendix H.
Modification #7 (minor modification)	06/27/01	This modification to the DOP includes updates to sections 4.5.2 and 6.3 concerning RCRA closures and CERCLA treatment units, respectively. List of revised pages: 1. Page 3 (revised to track modifications to this DOP) 2. Pages 4-10 (updated Table of Contents) 3. Page 41, Section 4.5.2 (revised language) 4. Page 83, Section 6.3 (revised language) 5. Page 84 (revised typos in section numbers 6.3 and 6.4)
Modification #8 (minor modification)	05/01/02	This modification adds RCRA unit-specific closure information to Appendix H for SETs 60, 61, 63, 64, 66, 69, and 78. Revised closure information sheets are added for sets 4, 6, 29, 35, and 36. The ITDC has been added to SET 83, and a number of typos and incorrect references have been corrected. List of revised/new pages: 1. Cover page – revised to show total of 357 pages 2. Page 3 – revised to track modifications to this DOP 3. Page 38, Table 6 – corrected SET number for Room 433 4. Page 75, Section 6.1 – revised procedure reference 5. Page 78, Section 6.2.4 – deleted paragraph referencing HASP 6. Page 83, Section 6.3 – revised procedure reference 7. Page 84, Section 6.3.1 – revised language 8. Page 88, Section 7.2 – revised procedure reference 9. Appendix A – updated descriptions for sets 5, 38, 59, and 83 10. Appendix H – added new closure information sheets for sets 60, 61, 63, 64, 66, 69, and 78. Revised sheets for sets 4, 6, 29, 35, and 36. Updated Appendix H cover sheet.
Modification #9 (minor modification)	10/01/02	This modification adds RCRA unit-specific closure information to Appendix H for SET 82. List of revised/new pages: 1. Cover page – revised to show total of 360 pages 2. Page 3 – revised to track modifications to this DOP 3. Appendix H – added new closure information sheet and drawing for set 82. Updated Appendix H cover sheet.
Modification #10 (minor modification)	06/10/03	Minor modification #10 includes administrative changes, and accompanies the major modification to include the demolition plan for Building 776/777 as Appendix I to the DOP. All references in the DOP to a future modification for the demolition plan have been replaced by references to Appendix I.

Modification # and Type	Effective Date	Notes
Major modification for Demolition Plan	07/01/03	The DOP is being reissued as Revision 1, to include both minor modification #10 and the major modification for the addition of the Demolition Plan as Appendix I. Appendix J includes the Comment Response Summary for the Demolition Plan. Revision bars for modifications #1 - #10 have been retained for tracking purposes. Appendices A through E, G, and H have not been reissued with a "Revision 1" header, as they have not changed. Revision 1 includes an updated Appendix F (ARARs), and new Appendices I and J for the Demolition Plan and Comment Response Summary.

4

TABLE OF CONTENTS

Section — Page

EXECUTIVE SUMMARY 13

1.0 INTRODUCTION 15

2.0 BUILDING CLUSTER DESCRIPTION 17

2.1 Building History 20

2.2 Building 776/777 Fire 21

2.3 Current Status 21

2.4 Building Classification 22

2.5 Expected Condition of Buildings 776/777 and 730 at Start of Decommissioning 22

3.0 ALTERNATIVES ANALYSIS 23

4.0 PROJECT APPROACH 25

4.1 SET Descriptions 25

4.2 SET Prioritization 28

4.3 Building 776/777 Cluster Characterization 28

4.3.1 Scoping Characterization 28

4.3.2 Reconnaissance Level Characterization 28

4.3.3 In-Process Characterization 33

4.4 Building and Equipment Cleanup Levels 37

4.4.1 Radionuclides 37

4.4.2 Hazardous Waste 37

4.4.3 Beryllium Contamination 38

4.4.4 Polychlorinated Biphenyls 39

4.4.5 Asbestos Containing Material 39

4.5 Closure of RCRA-Regulated Units 39
4.5.1 Closure Options 39
4.5.2 Closure Documentation 43

4.6 Pre-Demolition Survey 43

4.7 Independent Verification 43

4.8 Endpoints 44

4.9 Size Reduction Methodologies 44

4.10 Decontamination Approach 46
4.10.1 Dusting, Wiping, and Scrubbing 47
4.10.2 Vacuuming 47
4.10.3 Strippable Coatings 48
4.10.4 Fixative Coatings 48
4.10.5 Scarifiers 49
4.10.6 Paving Breakers and Chipping Hammers 49
4.10.7 Grit Blasting 49
4.10.8 Carbon Dioxide Blasting 49
4.10.9 Chemical Decontamination 49

4.11 Building 776/777 Decommissioning 50
4.11.1 Expected Condition of Building 776/777 at Beginning of Decommissioning 50
4.11.2 Building 776/777 Decommissioning Sequence 50
4.11.3 Building 776/777 Gloveboxes, B-Boxes and Hoods 51
4.11.4 Building 776/777 Large Equipment 51
4.11.5 Building 776/777 Ventilation Systems 51
4.11.6 Equipment Buried Under Building 776/777 52

4.12 Building 730 Decommissioning 52

4.13 Waste Management 52

4.14 Work Controls 52

4.15 Effluent Controls 52

4.16 Authorization Basis 52

4.17 Performance Standard 53

4.18 Records Disposition 53

4.18.1 CERCLA Administrative Record 53

4.18.2 RCRA Operating Record 53

4.18.3 Project Record 53

4.18.4 Closeout Report 54

5.0 HEALTH AND SAFETY 55

5.1 Integrated Safety Management System 56

5.1.1 Defining the Scope of Work 57

5.1.2 Integrated Work Control 62

5.1.3 Work Planning 63

5.1.4 Work Authorization 65

5.2 Criticality Safety 70

5.3 Radiation Protection 70

5.4 Hazardous Material Protection 70

5.5 Radioactive and Hazardous Waste Management 71

5.5.1 Waste Management and Environmental Protection 71

5.5.2 Transportation 71

5.6 Conduct of Operations 71

5.7 Fire Protection 71

5.8 Industrial Safety 72

5.9 Quality Assurance 72

5.10 Emergency Preparedness 72

5.11 Preliminary Hazards Analysis 72

6.0 WASTE MANAGEMENT 77

6.1 RCRA/CERCLA Transition 77

6.2 Waste Types and Volumes 77
6.2.1 Hazardous Waste 79
6.2.2 Low-Level/Low-Level Mixed (LLW/LLM) Wastes 79
6.2.3 Transuranic/Transuranic Mixed (TRU/TRM) Wastes 79
6.2.4 Residues/Mixed Residues (RES/REM) 79
6.2.5 Polychlorinated Biphenyls 80
6.2.6 Asbestos Containing Material 81
6.2.7 Sanitary Waste 81
6.2.8 Wastewater 81
6.2.9 Waste Chemicals 81
6.2.10 Idle Equipment 83

6.3 Wastes Requiring Further Processing Prior to Off-Site Disposal 85
6.3.1 LLM/TRM Wastes Managed Under the Site Treatment Plan 86
6.3.2 TRU Sludges and TRU/TRM Oils 86

6.4 Waste Disposal 86

6.5 Waste Minimization and Recycling 86

7.0 APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS 88

7.1 Air 88

7.2 Solid Waste 88

7.3 *Deleted (Mod #4)* 89

7.4 Wastewater 89

7.5 Asbestos Containing Material 89

7.6 Polychlorinated Biphenyls 89

7.7 Migratory Birds 89

8.0 ENVIRONMENTAL CONSEQUENCES OF ACTION 90

8.1 Environmental Impact Issues 90

8.2 Relative Impacts 91

8.3 Geology and Soils 91

8.4 Air Quality 91

8.5 Water Quality 93

8.6 Human Health Impacts 93

8.7 Radiological Impacts to Workers and the Public 94

8.8 Non-Radiological Health Impacts 95

8.9 Occupational Hazards 95

8.10 Plants and Animals 95

8.11 Waste Management 96

8.12 Historic Resources 96

8.13 Noise 97

8.14 Socioeconomic Effects 97

8.15 Cumulative Effects 97

8.16 Mitigation Measures 98

8.17 Unavoidable Adverse Effects 98

8.18 Short-Term Uses and Long-Term Productivity 99

8.19 Irreversible and Irretrievable Commitments of Resources 99

9.0 QUALITY ASSURANCE 101

9.1 Background 101

9.2 Quality Criteria 101

10.0 IMPLEMENTATION SCHEDULE 109

11.0 PROJECT ORGANIZATION 111

9

11.1 Roles and Responsibilities 111
11.1.1 Internal Organizations 111
11.1.2 External Organizations 112
11.1.3 Working Relationships 113

11.2 Team Organization Structure 113

11.3 Team Processes 115

11.4 Responsibilities 115

11.5 Team Interfaces 116

12.0 COMMENT RESPONSE SUMMARY 118

13.0 REFERENCE INFORMATION 119

13.1 Acronyms and Abbreviations 119

13.2 Definitions 122

13.3 References 130

APPENDICES:

Appendix A Set Descriptions, Endpoints, and Hazard Matrix 133
Appendix B Ground Water Action Levels 187
Appendix C Building 776/777 Closure Project Administrative Record 191
Appendix D Building 776/777 Closure Project Schedule 193
Appendix E Weekly Waste Chemical Inspection Log 229
Appendix F Building 776/777 Closure Project ARARs 235
Appendix G Comment Response Summary 247
Mod#1 Appendix H RCRA Unit-Specific Closure Information Sheets 271
- SET 62 273
Mod#3 - SETs 7, 11, 26, 61 277
Mod#5 - SET 55 288
Mod#6 - SETs 4, 5, 6, 10, 11, 18, 21, 22, 27, 29, 34, 35, 36, 52 291

- SETs 60, 61, 63, 64, 66, 69, 78 ..... 338 | Mod#8
- SET 82 ..... 358 | Mod#9

Appendix I Demolition Plan 361

Appendix J Comment Response Summary for Demolition Plan 388

LIST OF TABLES

Table 1. Historical Timeline 20
Table 2. Alternatives Analysis Summary 24
Table 3. Extent of Contamination and Hazards in Buildings 776/777 and 730 31
Table 4. In-Process Characterization Required for Contamination and Hazards in Buildings 776/777 and 730 34
Table 5. Release Criteria 38
Table 6. Building 776/777 RCRA-Regulated Units 40
Table 7. Proposed Size Reduction Techniques 45
Table 8. Strippable Coatings 48
Table 9. Integrated Safety Management System 58
Table 10. Training Implementation Matrix for Decommissioning Work 67
Table 11. Preliminary Hazards Analysis 73
Table 12. Building 776/777 Waste Inventory 78
Table 13. Estimate of Wastes to be Generated During Decommissioning 78
Table 14. "Excluded Chemical" Areas in Building 776/777 83
Table 15. Building 776/777 Idle Equipment with Hazardous Materials Inventory 84
Table 16. Material Recycling Options 87
Table 17. Comparison Summary of NEPA Relative Impacts 92

LIST OF FIGURES

Figure 1. Closure Planning Phases for Type 2 and Type 3 Buildings in the Building 776/777 Cluster 16
Figure 2. Building 776/777 Additions 18
Figure 3. Building 776/777 Cluster Facilities 19
Figure 4. Building 776/777 First Floor SET Locations 26
Figure 5. Building 776/777 Second Floor SET Locations 27
Figure 6. SET Prioritization 29
Figure 7. Ground-Penetrating Radar Survey Locations (Building 776/777) 32

Figure 8. Waste Decision Logic 47
Figure 9. Integrated Safety Management Process 56
Figure 10. Work Planning Process 60
Figure 11. Building 776/777 Closure Project Organizational Chain 113
Figure 12. Building 776/777 Closure Project Organization Structure and Functions 114

EXECUTIVE SUMMARY

The Building 776/777 Cluster is comprised of Buildings 701, 702, 703, 710, 712, 712A, 713, 713A, 730, 776/777, and 781, which are located within the Protected Area (PA) of the Rocky Flats Environmental Technology Site (RFETS). Closure of the Building 776/777 Cluster is necessary to meet the goals of the Rocky Flats Cleanup Agreement (RFCA), (Ref. 1), and the RFETS Closure Project Baseline (CPB). Three alternatives were considered for the near-term management of the Building 776/777 Cluster:

- Alternative 1 - Decommissioning
- Alternative 2 - No Action with Safe Shutdown Maintenance
- Alternative 3 - Reuse of the Facilities

The alternatives were evaluated for effectiveness, feasibility, and relative costs. Alternative 1 is the selected alternative. Decommissioning clearly supports the Rocky Flats Vision (Ref. 2) of safe, accelerated, cost-effective closure. This alternative has the lowest life-cycle costs and most rapid risk reduction, and it is integrated with Site operations. This alternative also maintains long-term protection of public health and the environment. Short-term impacts on the environment (i.e., impacts occurring during the interval of the action) can be physically and administratively controlled. There are no significant negative aspects to decommissioning the Building 776/777 Cluster at this time.

Currently, the buildings in the B776/777 Cluster are scheduled to be deactivated and decommissioned by the close of fiscal year (FY)06 and remediated by the close of FY07. These dates are subject to change, based on accelerated schedules currently under development. Environmental impacts resulting from the Building 776/777 Closure Project will contribute incrementally to potential site-wide cumulative impacts associated with the overall RFETS Closure Project. Given the existing industrial setting of the Building 776/777 Cluster, environmental impact issues associated with the project are relatively limited.

For planning purposes, the Cluster was divided into small manageable groupings of similar equipment and rooms that could be worked independently and within a one-year estimated time frame. A total of 84 groups, or SETs, were defined for the Cluster. Next, the SETs were prioritized to establish the order in which they would be decommissioned, taking into account such factors as physical constraints, personnel and environmental health and safety (H&S), operational/technical issues, management issues, costs, and waste generation issues. The Decontamination and Decommissioning Characterization Protocol (DDCP), (Ref. 3), was then used in conjunction with process knowledge to complete a reconnaissance level characterization (RLC) for each SET. Results were documented in the Reconnaissance Level Characterization Report (RLCR), (Ref. 4), which identified the presence of radiological and beryllium (Be) contamination, as well as hazards such as lead and other heavy metals, polychlorinated biphenyls (PCBs), special nuclear material (SNM) holdup, radioactive sources, and waste chemicals in many of the SETs located in Building 776/777 and Building 730. Following the RLC, endpoints (i.e., completion criteria) were developed for each SET and size reduction and decontamination methodologies were examined to complete the development of the decommissioning sequence.

Buildings with significant contamination or hazards (i.e., Type 3 buildings) and buildings without significant contamination or hazards, but in need of decontamination (i.e., Type 2 buildings), will be decommissioned in accordance with this Decommissioning Operations Plan (DOP). Buildings within the Cluster that are free of contamination (i.e., Type 1 buildings) will be decommissioned using Site procedures upon notification of the Lead Regulatory Agency (LRA), (i.e., the Colorado Department of Public Health and Environment [CDPHE]). As detailed in the RLCR, Building 776/777 is believed to be a Type 3 building, Building 730 is believed to be a Type 2 building, and the remaining buildings in the Cluster are believed to be Type 1 buildings. Therefore, the scope of this DOP is limited to Buildings 776/777 and 730. It is recognized that additional sampling and analysis will be required to verify the characterization of the Type 1 buildings. In the event sampling results indicate the presence of contamination and/or hazards in one or more of the Type 1 buildings, the building(s) will be re-typed and added to a subsequent decision document(s), which may include a modification to this DOP.

Mod #10 | The RFCA definition of decommissioning includes the demolition of building structures and disposition of building slabs. The demolition plan for Building 776/777 is provided in Appendix I through a major modification as defined in ¶127 of RFCA.

Mod #4 | Work performed under this DOP will be accomplished in conformance with the RFETS Integrated Work Control Program (IWCP), Integrated Safety Management System (ISMS), and applicable quality assurance (QA), radiological control, and waste management requirements.

Decommissioning activities will be documented in the Building 776/777 Closure Project Record, RCRA Operating Record, and the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA, Ref. 5) Administrative Record. Upon completion of decommissioning activities and final characterization, a Final Closeout Report will be prepared for review and approval by the LRA.

1.0 INTRODUCTION

Closure of the Building 776/777 Cluster is necessary to meet the goals of RFCA (Ref. 1) and the Closure Project Baseline. The Building 776/777 Closure Project is managed under the RFETS Closure Project Baseline, which contains the life-cycle schedule.

The overall project strategy is to prioritize closure activities, taking into account personnel, public, and environmental H&S; physical constraints; operational and technical issues; management issues; cost; and waste generation issues. As shown in Figure 1, closure activities for the Building 776/777 Cluster are divided into three phases: deactivation, decommissioning (including demolition and disposition of building slabs), and environmental restoration.

Currently, the buildings in the B776/777 Cluster are scheduled to be deactivated and decommissioned by the close of FY06, and remediated by the close of FY07. These dates are subject to change, based on accelerated schedules currently under development.

Deactivation activities are being completed in conformance with the Building 776/777 Closure Project Execution Plan (PEP). Buildings with significant contamination or hazards and buildings without significant contamination or hazards, but in need of decontamination, will be decommissioned in accordance with this DOP. Buildings within the Cluster that are free of contamination will be decommissioned using Site procedures following notification to the LRA.

The RFCA (Ref. 1) definition of decommissioning includes the demolition of building structures. The demolition plan for Building 776/777 is provided in Appendix I through a major modification as defined in ¶127 of RFCA.

Mod #10

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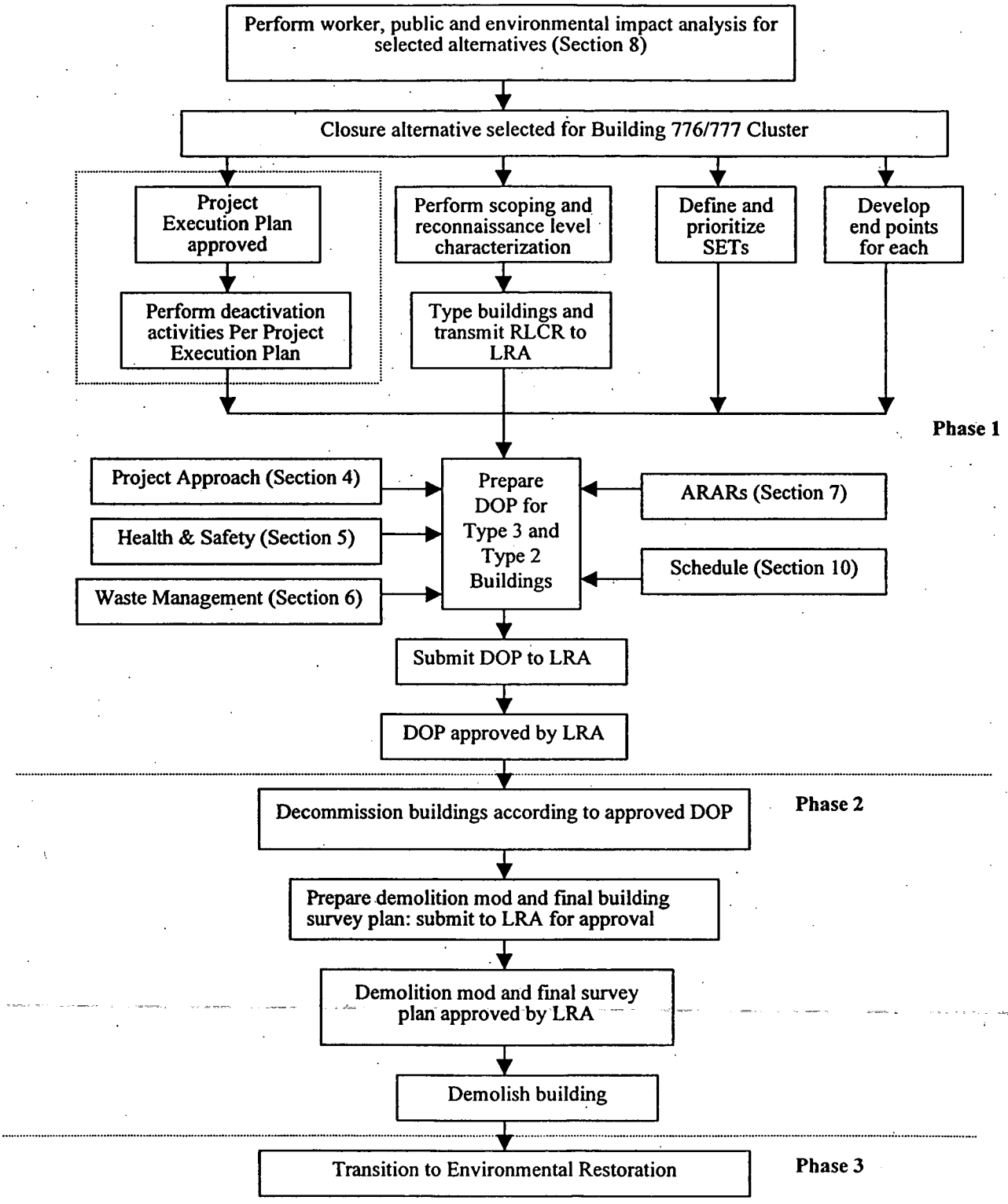


Figure 1. Closure Planning Phases for Type 2 and Type 3 Buildings in the Building 776/777 Cluster

16

2.0 BUILDING CLUSTER DESCRIPTION

Building 776/777 is a two-story structure with a partial basement and common wall separating Buildings 776 and 777. A tunnel located at the northwest corner of Building 776 connects to Building 771, an above-ground crossover on the east side of Building 777 connects to Building 779, and a hallway on the south side of Building 776 connects to Building 707.

The first floor of Building 776/777 has an area of 135,000 ft^2; the second floor, 88,000 ft^2; and the basement, 1,600 ft^2, for a building total of 224,600 ft^2. Since the building was first constructed, several additions have been made to the original structure (see Figure 2), including the east side of Building 777 (columns [cols.] 21-25, D-L); parts storage (cols. 19-23, L-P); assembly development (cols. 23-35, H-L); dock enclosures (Room 437); radiography, cleaning and plating facility (cols. 23-25, L-P); high pressure gas test facility (southeast corner of Building 777); two-story office addition (southeast side of Building 777); fabrication (cols. 1-3W, A-P); autoclave facility; and the Betatron vault. In addition, a second roof was added to cover the majority of the original roof after a major fire in 1969.

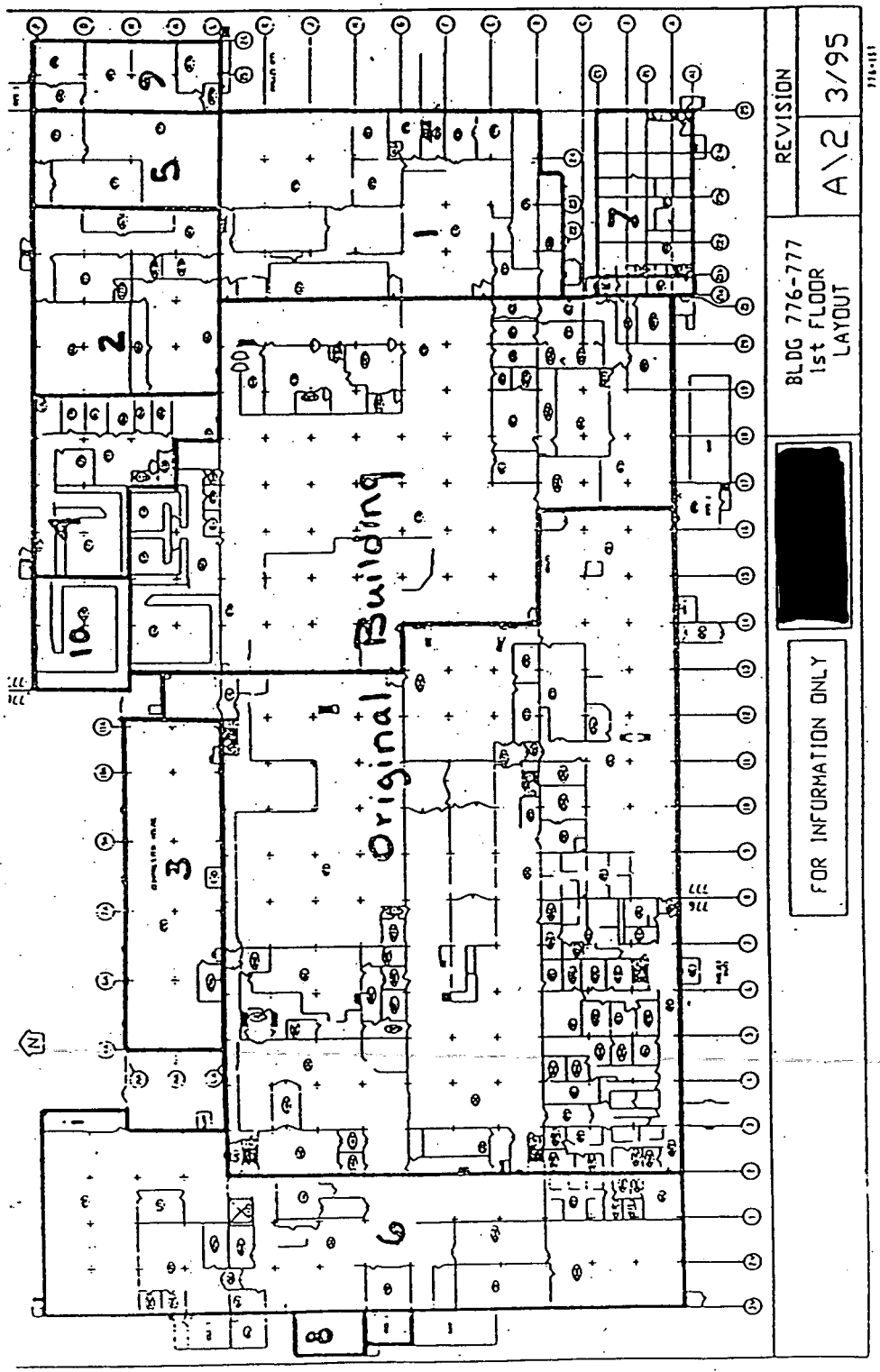
Buildings 776 and 777 share most utilities, including supply and control of potable water, eyewash and emergency body showers, cooling water, sanitary sewage, building heating and air conditioning, glovebox (GB) and vacuum air supply, emergency electrical power, and compressed air.

Buildings 776 and 777 also share some utilities with surrounding buildings. Measures for re-routing connections or providing temporary services will be included in the planning and engineering for Building 776/777 decommissioning activities. Following is a list of the shared utilities:

- Breathing air is provided from Building 707;
- Steam from Building 776/777 heats the water for the Building 778 locker rooms;
- Plant air is shared between Buildings 776/777, 779 and 771;
- Emergency power for the Building 776/777 criticality alarm panel (located in Building 750) is supplied from Building 708, which is also the Building 707 emergency generator;
- The classified telecommunications center for the Site is located in Building 777;
- The chainveyor between Building 707 and Buildings 776/777 is a common line provided with inert gas from both Building 707 and Buildings 776/777; and
- Building 776/777 provides electrical service and ventilation for the Building 771 tunnel and Building 779 crossover.

Support systems are located in the following buildings, which are also included in the Building 776/777 Cluster:

- Building 701 (research and development laboratory, 5,170 ft^2),
- Building 702 (pump house for B712, 924 ft^2),



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Figure 2. Building 776/777 Additions

- Building 703 (pump house for B713, 1,080 ft^2),
- Building 710 (steam reducing station, 352 ft^2),
- Building 712 (cooling tower, 2,425 ft^2),
- Building 712A (propane valve house, 90 ft^2),
- Building 713 (cooling tower, 2,475 ft^2)
- Building 713A (valve pit, 250 ft^2),
- Building 730 (plenum deluge tank pit, 698 ft^2), and
- Building 781 (helium compressor pit, 440 ft^2).

Figure 3 shows the location of the buildings that comprise the Building 776/777 Cluster.

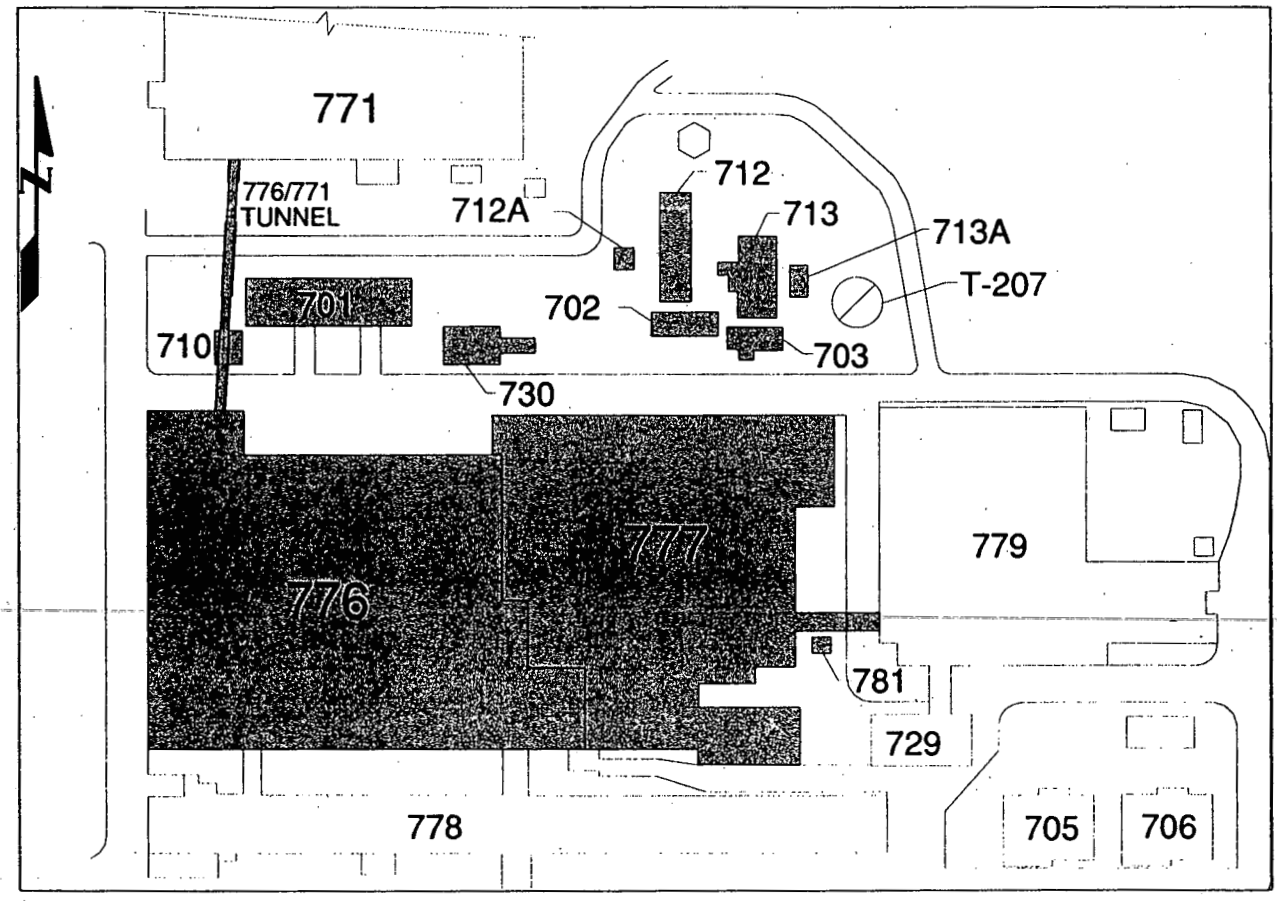


Figure 3. Building 776/777 Cluster Facilities

2.1 Building History

The Building 776/777 Cluster was constructed between 1955 and 1957. Beginning in 1958 and continuing through 1969, Building 776 was the main manufacturing facility for plutonium (Pu) weapons components and it housed a Pu foundry and fabrication operations. The main function of Building 777 was parts assembly. Following a major fire in Building 776/777 in 1969, the majority of the foundry and fabrication operations were transferred to Building 707. Although limited production operations were resumed in Building 776/777 when cleanup activities were completed, at that point, the main focus of the building was shifted to waste and residue handling, disassembly of retired weapons components, and special projects. Processes conducted in Building 776 included size reduction, advanced size reduction, pyrochemistry, coatings operations, and test runs of organic waste and combustibles in a fluidized bed incinerator (FBI). Building 777 operations included machining, product assembly and disassembly, testing and inspection of special weapons projects, and support operations, such as laboratories. Table 1 presents an historical summary of Building 776/777 Cluster operations.

Building 776/777 contained an extensive GB network that supported various Pu production operations. Prior to the 1969 fire, the majority of the building space consisted of one large room. Subsequent to the fire, most GBs were removed from Building 776 and the large room was compartmentalized into several areas separated by physical barriers to confine radioactive material releases. A negative pressure ventilation system is used to prevent areas of least contamination from becoming contaminated by areas of higher contamination. The building is equipped with a series of high efficiency particulate air (HEPA) filters to control air emissions to the environment.

Table 1. Historical Timeline

Year	Event
1957	Construction of Building 776/777 Cluster was completed.
1958	The first significant machining of Pu began.
1964	Pu and carbon tetrachloride exploded during a briquetting operation in Building 776.
1965	The "GB drain line fire" occurred during maintenance on a plugged oil coolant drain line in Building 776/777. The fire was attributed to spontaneous combustion of Pu chips. The fire spread contamination inside the building. Affected areas were decontaminated and painted to fix contamination that was not removed.
1969	Waste operations began in Building 776, originally initiated for disposing of contaminated material from the 1969 fire.
1971	Clean-up activities for the 1969 fire were completed on October 18th.
1972	Pu fabrication operations in Building 776 were transferred to Building 707. Building 776 was converted to a waste storage and size reduction facility.
1989	Pu production operations ceased in November.

2.2 Building 776/777 Fire

On May 11, 1969, a major fire in Building 776/777 resulted in gross radiological contamination of Building 776/777 and portions of Buildings 771 and 779. The fire occurred in Room 134 in the north foundry line and propagated by way of the chainveyor system. The first floor operating areas of Buildings 776 and 777 were highly contaminated. The entire second floor of Building 776 was moderately contaminated from air-borne contamination through the floors and walls. The office areas in Building 776 were moderately contaminated from water-borne material, mainly on the floors. The roof of Building 776 was moderately contaminated in three areas. Two contaminated areas were localized around sanitary vent penetrations; the third, more extensive area extended from the exhaust duct to the edge of the roof. [1] The fire resulted in the relocation of some of the foundry, fabrication, and assembly operations to Building 707. During cleanup, some pieces of contaminated equipment, including presses, a rolling mill, casting furnaces and associated GBs were size reduced and buried under the floors in Building 776 (see Section 4.3.2.1 for further details).

After the fire, the major production operations in the building were reduced to machining operations on the south line in Building 776 and disassembly of retired weapons components and assembly operations in Building 777. In Building 776, the empty spaces resulting from the fire were converted to perform waste-related operations, focusing on waste reduction. Other operations conducted in the Cluster included Pu recovery operations in Building 776 and support operations, such as storage and laboratory work, in both buildings. These operations continued until production was curtailed at Rocky Flats in 1989.

2.3 Current Status

Routine operations are conducted in Building 776/777 16 hours per day, five days per week. However, stationary operating engineers, radiological control technicians, and security personnel staff the building 24 hours a day, seven days a week. The Shift Manager, Configuration Control Authority (CCA), or designee, provides initial emergency response and mitigation actions during off-shift hours and normal administrative functions on the weekends, holidays, and off-normal shifts. With the exception of Buildings 776/777 and 701, buildings and structures within the Cluster are not normally occupied and are usually under lock and key.

The majority of building personnel are involved in maintaining vital safety systems (VSS), performing Limiting Conditions for Operations (LCO) surveillances and RCRA inspections, repackaging special nuclear material (SNM), and managing waste.

The Building 776/777 Cluster contains RCRA regulated tanks systems, treatment units, and container storage areas, including rooms, vaults, and GBs. A complete listing of RCRA units is provided in Section 4.5. In addition, the Cluster contains the following six individual hazardous substance sites (IHSSs):

- 118.1 - Multiple solvent spills west of Building 730,
- 118.2 - Radiological contamination in soil,

[1] Information regarding roof decontamination and removal are provided in the Demolition Plan in Appendix I.

Mod #10

21

- 132 - Leaking underground laundry waste tanks,
- 144 - Radiological contaminated laundry waste water line break,
- 150.2 - Radiological contamination in soil (resulting from the 1957 and 1969 fires), and
- 150.7 - Radiological contamination in soil (resulting from the 1969 fire).

Building 776/777 currently stores approximately 3,200 waste containers. Of the 3,200 containers, 100 are sanitary waste, 650 are low-level (LLW)/low-level mixed (LLM) waste, 350 are transuranic (TRU)/transuranic mixed (TRM) waste, and the remaining 2,100 are residues (RES/REM). In addition, the building contains 279 contaminated GBs and B-boxes with interconnecting chainveyor lines, a size reduction vault, advanced size reduction facility (ASRF), FBI pilot unit, FBI production unit, horizontal and vertical accelerator, HEPA low specific activity counter, and a supercompactor.

SNM is being removed from vaults within the building to reduce the amount to below the safeguard termination limits. This activity began in FY98 and is planned for completion in FY99. SNM high holdup areas have been identified. Additional SNM holdup scans are planned and these areas will be remediated, as necessary.

2.4 Building Classification

The Decommissioning Program Plan (DPP), (Ref. 6), defines building types as follows:

- Type 1 buildings are free of contamination,
- Type 2 buildings are without significant contamination or hazards, but in need of decontamination, and
- Type 3 buildings have significant contamination or hazards.

Each building type has its own degree of regulation. The DPP serves as the RFCA (Ref. 1) decision document for Type 1 buildings, thus decommissioning may proceed based on RFETS procedures upon notification of the LRA. Types 2 and 3 buildings require a separate RFCA decision document. Based on the RLC performed in 1997 and 1998 (see Section 4.3.2), Building 776/777 is believed to be a Type 3 building, Building 730 is believed to be a Type 2 building, and the remaining buildings in the Cluster are believed to be Type 1 buildings. As a result, this DOP addresses the decommissioning of Building 776/777 and Building 730, only. However, it is recognized that additional sampling and analysis will be required to verify the characterization of the Type 1 buildings. In the event future survey data indicate that contamination and/or hazards are present in one or more of these buildings, they will be addressed in a subsequent decision document(s), which may include a modification to this DOP.

2.5 Expected Condition of Buildings 776/777 and 730 at Start of Decommissioning

The expected condition of Building 776/777 and Building 730 at the start of decommissioning is discussed in Section 4.11 and 4.12.

3.0 ALTERNATIVES ANALYSIS

Alternatives considered for Buildings 776/777 and 730 support the Rocky Flats Vision (Ref. 2), which requires buildings to be decontaminated for future use or decommissioned, as appropriate. The following three alternatives were examined:

- Alternative 1 - Decommissioning
- Alternative 2 - No Action with Safe Shutdown Maintenance
- Alternative 3 - Reuse of the Facilities

The criteria used to evaluate the alternatives were effectiveness, feasibility, and relative costs. The results of the alternatives analysis are summarized in Table 2.

Alternative 1, Decommissioning, is the selected alternative because it is the best alternative to meet the evaluation criteria. The Rocky Flats Vision of safe, accelerated, and cost-effective closure is clearly supported by the decommissioning of the Building 776/777 Cluster. This alternative results in the lowest life-cycle costs and most rapid risk reduction, and it is integrated with Site operations. This alternative also maintains long-term protection of public health and the environment. Physical and administrative measures can be implemented to control short-term impacts to the environment (i.e., impacts occurring during the interval of the action). At this time, there are no significant negative aspects to decommissioning the Cluster.

Alternative 2, No Action with Safe Shutdown Maintenance, does not achieve RFETS goals. This alternative does not accomplish accelerated closure, and it defers decommissioning to an unspecified date. This results in an increase in the life-cycle cost of closure. Inaction achieves the short-term protection of public health and the environment; however, this protection decreases over time, due to continued degradation of systems and equipment through aging. Furthermore, under this alternative the waste and debris requiring treatment and/or disposal and the risks associated with managing them are also deferred.

Alternative 3, Reuse, is not feasible because it is neither required nor beneficial. As with Alternative 2, implementation of this action will result in deferral, not elimination, of the decommissioning activities necessary for final closure.

23

Table 2. Alternatives Analysis Summary

Alternative	Description	Effectiveness	Feasibility	Relative Cost
1-Decommissioning	*Decommissioning* activities will follow specific plans approved by DOE and the LRA. Activities consist of decontamination, as deemed necessary; equipment dismantlement; size reduction; and demolition of building structures.	Decommissioning is effective in achieving the long-term goals of RFCA. The mortgage costs are eliminated, and the risks and hazards are significantly reduced.	Technology currently exists to achieve the objectives of this alternative. Integration with other Site activities can be accomplished.	Immediate decommissioning results in the lowest life-cycle costs. Once decommissioning is achieved, minimal landlord costs are incurred.
2 – No Action	*No Action* will maintain the 776/777 Closure Project in its current configuration. No additional equipment would be removed unless the present safe shutdown status of the Cluster is compromised.	*No Action* delays closure activities that must be performed to meet the goals of RFCA. Deferring closure could make funding available to other Site closure activities. However, *No Action* could increase risk to workers and the environment if the integrity of the facility is jeopardized.	*No Action* would disrupt the long-term plans for RFETS.	*No Action* results in higher costs than immediate decommissioning since landlord costs continue to be incurred until decommissioning begins.
3 – Reuse	*Reuse* of the 776/777 Cluster would maintain the facilities in their current configuration. A new mission for the facilities, in support of the present Site cleanup mission, would be assigned by the Site Utilization Review Board. Depending on the nature of this mission, removal of equipment may be necessary. No changes would be made before definition of the new mission.	*Reuse* of the 776/777 Cluster was evaluated by the RFETS Facility Use Committee, which determined there was no further mission for the Cluster. Use of the Cluster for an alternative off-site use was evaluated in accordance with the RFCA Preamble (Objective #7), and DOE Order 4300.1C, subparagraph (g), Disposal of Government-Owned Land Improvements. No further use was identified.	Because no new mission has been identified for the Cluster, implementation of this alternative is not administratively feasible.	This alternative results in the greatest life-cycle costs as the reuse mission would more than likely require expenditures for modifications to the buildings in addition to existing landlord/ surveillance costs. Furthermore, decommissioning costs (adjusted for future value) would still be required.

4.0 PROJECT APPROACH

The decommissioning planning process for the Building 776/777 Cluster has been completed and the costs and schedules are included in the CPB. During the course of the project, there will be cases where circumstances differ from those predicted. The flexibility to revise planned activities is essential to the successful management of this project.

The RFCA definition of decommissioning includes the demolition of building structures and disposition of building slabs. The demolition plan for Building 776/777 is provided in Appendix I through a major modification as defined in ¶127 of RFCA. Mod #10

4.1 SET Descriptions

For planning purposes, the Building 776/777 Cluster has been divided into small, manageable groupings of similar equipment and rooms that can be worked independently. The groupings are referred to as SETs. Eighty-four SETs were developed for the Cluster. The SETs are the foundation for the planning, prioritization, cost estimation, and scheduling of decommissioning activities.

SET descriptions are presented in Appendix A and SET locations are shown in Figure 4 and Figure 5. The SETs are categorized by six types: 1) GB, 2) tank, 3) equipment, 4) room, 5) room/equipment, and 6) building structure. Following is a general description of each SET type:

1) GB SETs include GBs, equipment in the GBs, associated external equipment and instrumentation, and piping from the GBs to the nearest cutoff point. In some cases, GB lines are very long and may be broken into as many as four SETs for that particular line.
2) Tank SETs include the tank, associated external equipment and instrumentation, and piping from the tank to the nearest logical cutoff point.
3) Equipment SETs include specific pieces of equipment, associated external equipment and instrumentation, and piping from the equipment to the nearest cutoff point.
4) Room SETs include all equipment and instrumentation not associated with GBs, tanks, or equipment SETs; tools, miscellaneous items, and piping not removed with GBs, or tanks; equipment SETs below eight feet, and interior walls.
5) Room/equipment SETs include all equipment (GBs, tanks, etc.) and instrumentation, tools, miscellaneous items, utilities below eight feet, and interior walls.
6) The building structure SETs include interior and exterior walls, floors, ceilings, and utilities above eight feet.

4.2 SET Prioritization

Once the SETs had been identified, an initial meeting was held to establish the order in which they should be removed. To ensure applicable areas of concern would be identified, representatives from engineering, operations, authorization basis (AB), maintenance, and utilities organizations attended the meeting. An historical subject matter expert (SME), the closure project team members, and representatives from DOE and the CDPHE also attended. The SETs were prioritized using a classical value engineering technique that ranks importance through use of a weighted matrix. The criteria for ranking SETs included physical constraints, safety, operational/technical issues, management, cost, and waste generation. The initial SET prioritization was then re-evaluated, factoring in the amount of funding available each fiscal year, pathways out of the facility, logistics, resources, and the decommissioning learning curve. The final results of the SET prioritization effort are shown in Figure 6.

4.3 Building 776/777 Cluster Characterization

The Building 776/777 Cluster was characterized using a three-step approach:

1) Scoping characterization,
2) Reconnaissance level characterization (RLC), and
3) In-process characterization.

The following paragraphs describe each step in more detail.

4.3.1 Scoping Characterization

During scoping characterization, existing records and documents were collected, then present and former Building 776/777 employees were interviewed to determine the physical, hazardous, radiological, and chemical conditions of the Cluster. Based on the information collected, the B776/777 Closure Project Manager conducted an RLC to document the configuration of equipment, piping, ventilation systems, and types and levels of contamination and hazards within the Cluster.

4.3.2 Reconnaissance Level Characterization

The purpose of the RLC is to establish a preliminary estimate of the types of contamination and hazards that are present. The RLC identifies the location and extent of radiological and Be contamination, and documents the presence of asbestos, lead and heavy metals, PCBs, SNM holdup, waste chemicals, radioactive sources, and physical hazards. The RLC for the Building 776/777 Cluster was performed from November 1997 through June 1998. During that time, process knowledge and detailed walkdowns were used to identify:

- Capital equipment,
- GBs and hoods,
- Tanks and their respective sizes,

28

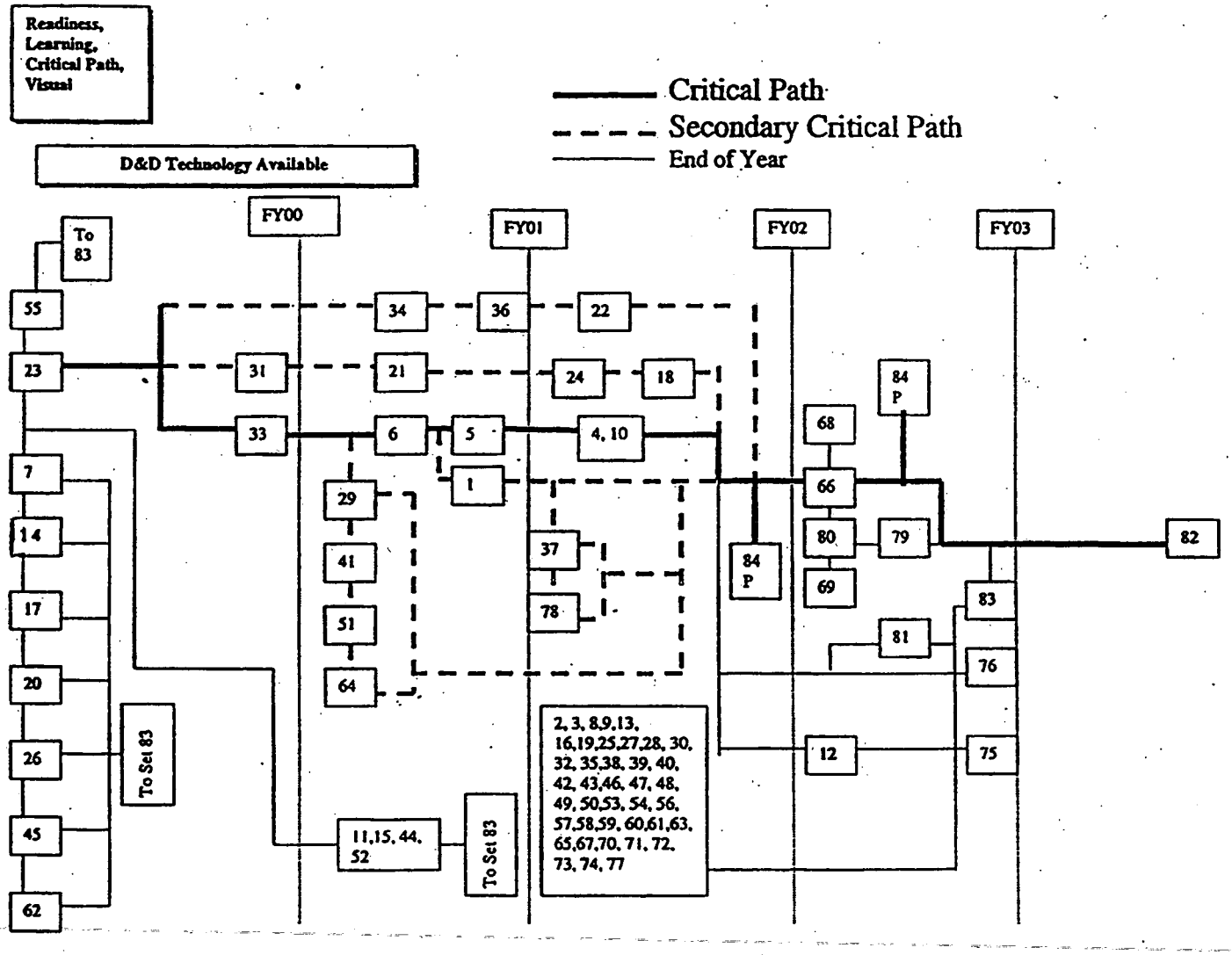


Figure 6. SET Prioritization

29

- Other equipment,
- Classified matter,
- Contamination areas and approximate contaminant levels,
- Locations of chemicals,
- Utility and process service connections including water, electrical, steam, and ventilation, and
- Documentation regarding building construction materials.

Results from the RLC for the Building 776/777 Cluster are documented in the RLCR, which was transmitted to the LRA in December of 1998. A summary of the contaminants and hazards found in Buildings 776/777 and 730 is presented in Table 3.

4.3.2.1 Equipment Buried Under Building 776/777

In February 1998, ground-penetrating radar was used in designated areas of Building 776/777 to confirm the presence of material cemented in original stairwells, under GBs, and buried under the floors after the 1969 fire. The radar images are on file with the Project Record. These areas are included in SET 84. Planning and engineering for this SET will be completed prior to decommissioning the SET. In-process characterization will be performed during the planning and engineering effort that will be used to plan the disposition of the areas of suspected buried equipment. Due to the sensitivity of this work, in-process characterization of buried equipment within the Building 776/777 structure will be provided to the LRA for review. Work packages, currently undeveloped, for removal of equipment buried or cemented within the building structure will be shared with the regulators per the consultative process. Under-building contamination will be addressed during environmental restoration. The decommissioning of this SET is not scheduled to begin until FY03.

Mod #10

Testimony from the 1969 fire indicated that some of the original stairwells under GBs were filled with contaminated debris, such as personal protective equipment (PPE), plastic, and other combustibles, then filled with concrete. Because ground-penetrating radar only identifies density changes, these stairwells were not investigated.

Fire testimony documentation also indicated that contaminated debris may have been buried in equipment pits in Building 776. In addition, the original construction drawings for the foundation showed numerous below-grade areas (i.e., equipment pits, underpasses, and sumps) that are no longer visible or accessible. Based on the construction drawings, the original below-grade areas were mapped to determine where equipment might be buried.

Ground-penetrating radar was used in Rooms 118 (SET 63), 134 (SET 67), 127 (SET 68), and the Carpenter Shop (SET 54). These areas are shown in Figure 7. A detailed characterization of these areas may be found in Appendix A of the RLCR. The floor under the FBI in Room 118 (Area C) was confirmed to have a definite change in density that is believed to be the rollers from the rolling mill and the saw used to cut the rollers. The results of the ground penetrating radar in Room 134 adjacent to the manual disassembly area on the ASRF (Area D) were inconclusive. This area will remain as a suspect area of concern for planning purposes during

Table 3. Extent of Contamination and Hazards in Buildings 776/777 and 730

CONTAMINANT	HAZARDS
Radiological Contamination*	B776/777 - *Building Structure*: The building floors, walls, roof, and ceilings are assumed to be contaminated to the levels that existed after the May 1969 Pu fire. *Equipment*: Pu production equipment surface contamination levels are stated in the RLCR. Equipment internal contamination levels are assumed to be $>10^6$ counts per minute (cpm). *Process Piping*: Process piping is contaminated to levels of the May 1969 fire. *Electrical Panels & Conduit*: Electrical panels and conduit on the first and second floors are posted as "Contamination Areas" due to the 1969 Pu fire. *Soil Contamination*: Soil contamination under the building is expected from two sources: Fire water used to extinguish the 1969 fire and ground water fluctuations resulting in seepage of contaminated ground water from surrounding IHSSs into the soil. *Ventilation*: Zone IA ventilation system contamination levels are assumed to be $>10^6$. *Buried Equipment*: Contaminated equipment was buried in various locations under the floor after the 1969 fire; contamination levels are assumed to be $> 10^6$ cpm. B730 - Radiological contamination remains from radioactive solutions previously stored in the B730 Pit.
Be Contamination*	B776/777 - Be contamination is present due to machining, welding, handling and storage of Be parts. B730 - None identified.
ACM**	B776/777 - Present or potentially present in floor and ceiling tiles, mastic under floor tiles and carpet, walls, piping and equipment insulation, and roof tar. B730 - None identified.
Lead & Other Heavy Metals	B776/777 - Lead is present or potentially present throughout the facility in the following items: lead aprons, lead tape, leaded glass, solder in printed circuit boards, lead shielding, leaded gloves, tank sludge, incandescent lights, and paint. Paint may contain other heavy metals in addition to lead. Mercury is present in sodium vapor lights, fluorescent lights, incandescent lights, thermostats, switches, magnahelics and other instrumentation. Barium is present in leaded glass and tank sludge. Chrome is present in FBI equipment and oil. Cadmium is present in sludge and oil in FBI tanks. Silver is present in tank sludge. B730 - None identified.
PCBs	B776/777 - PCBs are present or potentially present in fluorescent light fixtures, capacitors, oils, chlorinated solvents, and paint. B730 - None identified.
SNM Holdup	B776/777 - SNM holdup is present in Zone I and IA ventilation systems and GBs. B730 - None identified.
Chemicals	B776/777 - Waste chemicals will be removed during deactivation. The exceptions are excluded chemicals and chemicals that will be used for decommissioning. Chemical solutions in tanks and piping will be sampled or characterized based on process knowledge during deactivation. B730 - None identified.
Radioactive Sources	B776/777 - Selective Alpha Air Monitors, Continuous Air Monitors, and radiological instrumentation needed on a daily basis are the sources that will be in the building during decommissioning. B730 - None identified.

Source: Table 2 of the Building 776/777 Cluster Reconnaissance Level Characterization Report

* Survey results and maps identifying contamination locations are presented in the RLCR.

** Sample results are presented in the RLCR.

31

A – STAIRWELL UNDER SLAB (MAX. DEPTH 4.5')
B – POSSIBLE EQUIPMENT BURIAL AREA (DEPTH NOT DETERMINED)
C – 4-HIGH ROLLING MILL PIT (MAX. DEPTH 9'-4") – (EQUIP. PIT)
D – MARFORM PRESS PIT (MAX. DEPTH 23') – (EQUIP. PIT)
E – HYDROFORM PRESS ROOM (MAX. DEPTH 11'-11")
F – AUTOCLAVE (MAX. DEPTH 30') – (EQUIP. PIT)
G – WASHING MACHINE DRAINING PIT (MAX. DEPTH 8")
H – PAINT TRAP (MAX. DEPTH <1'-0")

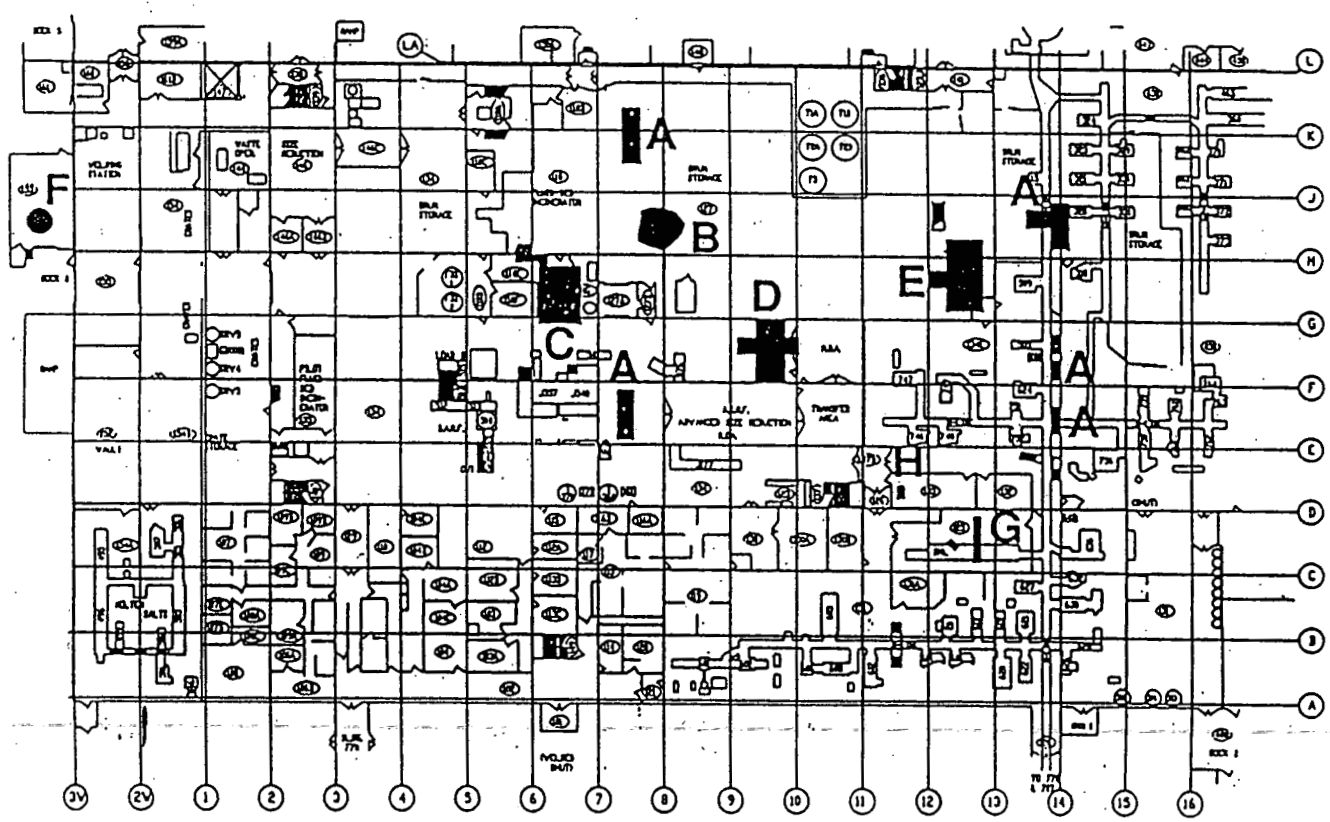


Figure 7. Ground-Penetrating Radar Survey Locations

32

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future Site remediation. The area adjacent to the existing basement in Room 127 (Area E) was the largest equipment pit, which appears to be sealed (approximately 1,600 ft^2). Based on the radar images, it appears no equipment or other material is buried in the area. The radar images also indicate that autoclaves are present beneath the Maintenance Carpenter Shop on the west side of Building 776 (Area F). Based on the drawings of this room, it appears the autoclaves are buried approximately 30 feet below grade.

It is believed the paint and solvent pit in Room 125 (SET 1), (Area G), and Room 133 (SET 2), (Area H), were filled to cover contamination. Since the pit in Room 125 is only eight inches deep and the pit in Room 133 is only 12 inches deep, it is believed equipment is not buried in these locations.

Another area in Room 127 (SET 68), (Area B), was investigated due to ongoing problems with the floor. During a maintenance job to repair the floor in late 1994, the concrete appeared soft. As the floor was scraped to remove paint, high levels of contamination developed along with a "puff" of air, and the maintenance crews encountered what they believed were metal plates. Based on the radar images of this area, there does not appear to be anything buried under the floor. However, the radar cannot penetrate a metal plate, so this area will be left as a suspect area of concern for planning purposes for future Site remediation.

4.3.3 In-Process Characterization

In-process characterization is required to prepare appropriate work authorization (WA) documents such as Radiological Work Permits (RWPs) required by the Site Radiological Control Manual (Ref. 7), and Activity Hazard Analyses (AHAs) required by the Integrated Work Control Program (IWCP) Manual (Ref. 8). Information collected for this purpose may also be used to further characterize the facility and provide background information for final building surveys.

In-process characterization is typically completed shortly before a work activity is initiated to ensure conditions have not changed since the planning stage. As work progresses and contaminants and hazards are eliminated, further characterization is completed to verify that contaminants and hazards have been removed to acceptable levels.

In-process characterization is based on process knowledge and field sampling and/or radiological surveys. Sampling and analysis activities are initiated through work packages for each SET prepared under the IWCP (see Section 5). Radiological surveys are routinely performed in radiological areas. Information collected during the RLC and pre-job walkdowns will be used to determine sampling and/or surveys requirements for each SET.

Recommended in-process characterization activities for Buildings 776/777 and 730 are presented in Table 4. The following paragraphs provide an overview of how in-process characterization will be performed for lead and other heavy metals, liquids, PCBs, asbestos, radiological contamination, and Be. Appendix A describes the specific characterization required for each SET, as well as the unique hazards that may be present in each SET.

Table 4. In-Process Characterization Required for Contamination and Hazards in Buildings 776/777 and 730

CONTAMINANT	HAZARDS
Radiological Contamination	B776/777 - *Building Structure*: In-process surveys are required to confirm the contamination levels. *Equipment*: In-process surveys and final equipment assays are required to determine if equipment will generate LLW or TRU waste, or if it can be free-released. *Process Tanks and Piping*: Process knowledge and in-process samples from solutions being drained from tanks and building systems during deactivation will confirm contamination levels within the piping and will be used to determine if additional information is needed to support decommissioning activities. *Electrical Panels & Conduit*: In-process characterization is required to confirm internal contamination levels. *Soil Contamination*: Environmental restoration personnel will assume responsibility for developing characterization plans for soil contamination. *Ventilation*: SNM holdup scans will be used to select decontamination/waste disposal methods for Zone I and IA ventilation systems. *Buried Equipment*: Contaminated equipment was buried in various locations under the floor after the 1969 fire; contamination levels are assumed to be > 10^6 cpm. B730 - In-process surveys are required to confirm contamination levels.
Be Contamination	B776/777 - In-process surveys are required to confirm Be contamination levels in storage, handling, and production areas. B730 - In-process surveys are required to confirm Be contamination levels.
ACM	B776/777 - In-process sampling may be required to determine if asbestos is present in roof tar and cement block insulation. Mapping will be used to determine if asbestos is present in ceiling and floor tiles. If materials cannot be mapped to known asbestos containing material, material will be sampled. Pipe and equipment insulation are assumed to contain asbestos; no additional sampling is required to determine if insulation contains asbestos. B730 - No in-process surveys will be required.
Lead & Other Heavy Metals	B776/777 - In-process sampling may be required to determine the presence of lead and other heavy metals in incinerator equipment and insulation. Sampling for lead and other heavy metals in paint may be required per guidance in Section 4.3.3.1. Sodium vapor, incandescent and fluorescent lights containing heavy metals will be managed as hazardous waste and do not require further sampling. Items known to contain lead and other heavy metals (i.e. leaded gloves) will be managed as hazardous waste, and no additional sampling is required. B730 - No in-process surveys will be required.
PCBs	B776/777 - Characterization may be required to determine if PCBs are present. If equipment is painted and is destined for distribution in commerce (for recycling or reuse) characterization for PCBs in the paint will be required. PCB liquids, PCB items, or others waste known to contain PCBs at greater than 50 parts per million (ppm) will be managed as PCB waste. B730 - No in-process surveys will be required.
SNM Holdup	B776/777 - No in-process sampling required in addition to the scans already planned to meet safeguards and security requirements for SNM removal. B730 - No in-process surveys will be required.
Chemicals	B776/777 - No in-process sampling is required. Most containerized chemicals will be removed during deactivation. Chemical solutions will be drained from tanks during deactivation. Newly discovered waste chemicals and/or those chemicals removed from excluded areas will be managed under the waste chemical program or as process waste, whichever is applicable. B730 - No in-process surveys required.
Radioactive Sources	B776/777 and B730 - No in-process characterization will be required.

Source: Table 6 of the Building 776/777 Reconnaissance Level Characterization Report

4.3.3.1 Lead and Other Heavy Metals

Lead and other heavy metals are present or potentially present throughout Building 776/777 in paint and in various equipment and insulation. Analysis for lead and other heavy metals in paint is not required in some cases. Available data from RFETS allows characterization of the non-radioactive lead based paint (LBP) debris generated in Building 776/777 as non-hazardous under RCRA, and amenable to disposal as sanitary waste per RFETS guidelines. However, as a best management practice, workers in the Building 776/777 Cluster will assume the debris contains lead unless either process knowledge (e.g., paint color) or analytical data (e.g., X-ray fluorescence, lead paint detector swabs) establish it is not a hazard to worker health.

Similarly, LBP debris in radioactive areas may be managed as LLW or TRU waste (i.e., non-mixed waste), except for high contamination areas where lead paint may have been liberally used as a fixative for radiological contamination. Paint debris from thickly painted high contamination areas will be managed RCRA hazardous LBP debris (i.e., LLM or TRM waste) unless total lead or Toxicity Characteristic Leaching Procedure (TCLP) measurements on a representative core of material establish the material is not RCRA hazardous waste.

Equipment known to contain lead or other heavy metals will be managed as hazardous waste and not sampled. The FBI insulation and equipment will be sampled for chromium. A chromium-based catalyst that was used in the FBI process has been removed, but there are visible stains from the catalyst on the insulation.

4.3.3.2 Liquids

Organic liquids drained from process systems will be characterized by process knowledge or sampled and analyzed for RCRA D-codes and F-listed solvents, TCLP organic constituents, pH, heavy metals, flashpoint, and PCBs, as appropriate. This data will generally be collected during deactivation in preparation for decommissioning.

Aqueous liquids drained from process and utility systems will be sampled in accordance with the requirements of the approved disposal facility. Liquids will be managed in accordance with RCRA/CHWA and associated implementing regulations.

4.3.3.3 Polychlorinated Biphenyls

In most cases, the location of PCBs was documented during the RLC. However, during decommissioning, PCBs may be found in fluorescent light fixture ballasts, capacitors, and paint. Ballasts and capacitors will be managed as PCBs if they are not specifically marked with the label "No PCBs." Intact ballasts that contain PCBs will be managed as "PCB bulk product waste" as defined by Toxic Substances Control Act (TSCA), (Ref. 9), and capacitors containing PCBs will be managed as "PCB items" as defined by TSCA.

PCBs in applied dried paint are considered PCB bulk product waste as defined by TSCA. Generally, under TSCA regulations, characterization for PCBs in applied dried paint is not required to enable disposal. The regulations permit the disposal of certain PCB bulk product waste, including applied dried paints, in a permitted solid waste landfill regardless of the PCB concentration, provided proper notification is given to the facility.

However, painted equipment that is destined for recycle or reuse and has a significant recovery value must be characterized for PCBs to meet TSCA requirements for distribution into commerce. If the PCB concentration in the paint on the equipment exceeds 50 ppm, the equipment must be decontaminated before being reintroduced into commerce. The decision to reintroduce the equipment into commerce or to dispose of the equipment is based primarily on a comparison of the cost to decontaminate the equipment versus the recovery value of the equipment. If the cost of decontamination exceeds the recovery value of the equipment, the equipment will be disposed of in a solid waste landfill in accordance with TSCA requirements, without the need to characterize the PCB concentration in the paint. Additional details on decontamination requirements related to the management of PCB bulk product waste are provided in the Environmental Leadership Team Environmental/Waste Compliance Guidance No. 25, entitled "Management of Polychlorinated Biphenyls (PCBs) in Paint and Other Bulk Product Waste During Facility Disposition" (Ref. 10).

4.3.3.4 Sampling and Analysis Methodology for Lead and Other Heavy Metals, PCBs, and Solvents

A request for sampling and analysis is made to the Analytical Projects organization using a sampling and analysis request form. Sampling and analysis methodologies are determined by the Analytical Projects organization and based on the most recent Occupational Safety & Health Administration (OSHA), National Institute of Occupational Safety and Health (NIOSH), and EPA procedures, as appropriate.

4.3.3.5 Asbestos Containing Material

Whenever possible, flooring, ceiling tiles, mastic under tile and carpet, and roof tar will be characterized by a "mapping" process, which consists of an examination of asbestos sample results of material from one area, and the application of those results to similar material in another area. Additional samples will be collected if mapping cannot provide sufficient information.

The pipe insulation in Building 776/777 was burned during the 1969 fire or removed during decontamination and replaced with asbestos insulation. Therefore, insulation in the facility will be managed as asbestos waste. No further sampling is required to determine if the insulation contains asbestos.

Most walls in the facility have been characterized based on construction drawings and physical walkdowns to verify materials. Transite walls will be managed as asbestos waste. In addition, asbestos has been found in the cement brick insulation in other buildings across the Site. Samples of cement brick insulation in Building 776/777 will be analyzed to determine if asbestos is present in the insulation.

In-process characterization for asbestos will be conducted using approved Site procedures based on CDPHE requirements.

4.3.3.6 *Radiological Contamination*

Radiological surveys will be conducted on equipment, waste, and structures throughout the decommissioning process. These in-process surveys will be performed in accordance with approved radiological safety procedures based on the current version of the RFETS Radiological Control Manual (Ref. 7). Radiological surveys on equipment and waste are required to determine disposal paths. Structures will be surveyed for removable and total contamination. In addition, volumetric and/or surface media samples may be obtained to further characterize the structures.

4.3.3.7 *Beryllium Contamination*

Areas where Be operations were performed have been documented in the RLCR. In-process characterization will be conducted in accordance with the Chronic Beryllium Disease Prevention Program (CBDPP), (Ref. 11).

4.4 Building and Equipment Cleanup Levels

The following paragraphs identify the cleanup criteria that will be used to determine when materials, media, equipment, floors, walls, and ceilings within the Building 776/777 Cluster may be considered non-radioactive, non-hazardous, non-Be contaminated, non-TSCA, and non-ACM, then either free-released or managed as sanitary waste. These release criteria are taken from the DDCP (Ref. 3), which describes the requirements for characterizing the radiological and chemical hazards associated with buildings and facilities. The release criteria are summarized in Table 5. Except where pre-empted by new statutory, regulatory, and/or Site requirements, the release criteria will be used to disposition waste during decommissioning.

4.4.1 Radionuclides

When radiological contamination is identified, 10 CFR 835 (Ref. 12) and DOE Order 5400.5 (Ref. 13) will be followed to ensure protection of workers, the public, and the environment. Radiological characterization measurements for free release will be collected and interpreted in accordance with the DDCP and associated Pre-Demolition Survey Plan (Ref. 14). If all radiological characterization measurements are below the Allowable Total Residual Surface Contamination (ATRSC) thresholds provided in Figure IV-1 of DOE Order 5400.5 (and summarized in Table 5), the related area or volume of material is considered sanitary waste and may be free-released. Mod #10

4.4.2 Hazardous Waste

If waste is mixed with or contains a listed hazardous waste, or if the waste exhibits a characteristic of a hazardous waste, it is considered hazardous waste in accordance with 6 CCR 1007-3, Part 261, Identification and Listing of Hazardous Waste (Ref. 15). Otherwise, the waste is considered non-hazardous.

If the waste is hazardous waste, it will be disposed of in compliance with 40 CFR Part 268, Land Disposal Restrictions (LDRs), (Ref. 16), and in conformance with the disposal facility's WAC.

Table 5. Release Criteria

Contaminant	Regulatory Driver	Free-Release Threshold		
Radionuclides[a] - values are above background concentrations in dpm/100 cm^2 [b]		Total Average [c, d]	Total Maximum [d,e]	Removable [d,f]
Transuranics	DOE Order 5400.5, Figure IV-1	100	300	20
Th-Natural		1000	3000	200
U-Natural		5000	15000	1000
Beta-Gamma emitters [g]		5000	15000	1000
Tritium		N/A	N/A	10000
RCRA Waste	6 CCR 1007-3, Part 261	No listed hazardous waste or characteristic hazardous waste is present		
Beryllium	RFETS Chronic Beryllium Disease Prevention Program (CBDPP)	Loose surface contamination concentrations are less than 0.2ug/100 cm^2		
PCB Bulk Remediation Waste	40 CFR 761.61 (Federal Register, Vol. 63, No. 124, June 29, 1998)	≤1 ppm (high occupancy areas)		
ACM	5 CCR-1001-10, Regulation No. 8	No sample in a sample set representing a homogeneous medium results in a positive detection (i.e., > 12% by volume)		

Notes:

a Where surface contamination by both alpha- and beta-gamma emitting radionuclides exists, the limits established for alpha- and beta-gamma-emitting radionuclides should apply independently.

b As used in this table, dpm (disintegrations per minute) means the rate of emission by radioactive material as determined by correcting the counts per minute measured by an appropriate detector for background efficiency, and geometric factors associated with the instrumentation.

c Measurements of average contamination should not be averaged over an area of more than 1 m^2. For objects of less surface area, the average should be derived for each such object.

d The average and maximum does rates associated with surface contamination resulting from beta-gamma emitters should not exceed 0.2 mrad/hour and 1.0 mrad/hour, respectively, at 1 cm.

e The maximum contamination level applies to an area of not more than 100 cm^2.

f The amount of removable material per 100 cm^2 of surface area should be determined by wiping an area of that size with dry filter or soft absorbent paper, applying moderate pressure, and measuring the amount of radioactive material on the wiping with an appropriate instrument of known efficiency. When removable contamination on objects of surface area less that 100 cm^2 is determined, the activity per unit area should be based on the actual area and the entire surface should be wiped. It is not necessary to use wiping techniques to measure removable contamination levels if direct scan surveys indicate that the total residual surface contamination levels are within the limits for removable contamination.

g This category of radionuclides includes mixed fission products, including the Sr-90 which is present in them. It does not apply to Sr-90 which has been separated from the other fission products or mixtures where the Sr-90 has been enriched.

4.4.3 Beryllium Contamination

If Be contamination is detected in the form Be powder, the contaminated material will be handled as a hazardous waste (EPA Code P015), subject to treatment standards under 40 CFR 268.40 or alternate release criteria will be proposed based on surveys and available information.

If loose surface contamination concentrations of Be exceed the action level for equipment release defined in Section 28 of the RFETS Occupational Safety & Industrial Hygiene Program Manual,

38

the contaminated material will be managed under the RFETS Chronic Beryllium Disease Prevention Program (CBDPP), (Ref. 11).

4.4.4 Polychlorinated Biphenyls

If a material meets the definition of "PCB bulk product waste," it may be disposed of as TSCA waste at a permitted solid waste disposal facility without further characterization. If the disposal facility is not an approved commercial PCB storage or disposal facility, the generator must provide written notification to the facility in accordance with 40 CFR 762.62.

If a material meets the definition of "PCB remediation waste" (i.e., potentially containing PCBs from historical releases), the free-release concentration is 1 ppm PCBs for high-occupancy areas, as determined in accordance with the requirements of 40 CFR 761.61, Subpart G. Higher release levels for PCB remediation waste are permissible, but carry specific restrictions on how the material may be dispositioned.

4.4.5 Asbestos Containing Material

ACM will be managed in compliance with 5 CCR-1001-10, Regulation No. 8. If any one sample of a sample set representing a homogeneous medium results in a positive detection (i.e., > 1% by volume), the material is considered ACM; otherwise the material is considered non-ACM.

ACM that is friable or will be made friable during demolition activities will be removed prior to demolition. An asbestos removal action will be considered complete when, based on five air samples ($\geq$1,199 liters/sample for a 25 millimeter filter or $\geq$2,799 liters/sample for a 37 millimeter filter), the average concentration of asbestos, as analyzed by transmission electron microscopy, does not exceed 70 asbestos fibers/mm^2.

4.5 Closure of RCRA-Regulated Units

RCRA-regulated units located within the Building 776/777 Cluster will be closed in compliance with the closure performance standards described in this section. Table 6 presents a list of the RCRA-regulated units in the Building 776/777 Cluster, including unit number and associated SET number, location, permit status, the type of closure currently planned for each unit. Closure activities for RCRA-regulated units located in the basement of Building 776/777 will begin during deactivation and continue through decommissioning.

4.5.1 Closure Options

Closure may be conducted in two stages: first by rendering a unit or portion of a unit "RCRA stable" (if a permitted or interim status unit) or "physically empty" (if a mixed residue tank), then by completing the activities associated with the closure options described below.

Table 6. Building 776/777 RCRA-Regulated Units

Room	RCRA Unit	SET	Description	Status	Proposed Closure Ø
134	776.1	67	Container Storage Area	Permitted	RCRA Stable/Removal
134 (ASRF)	776.1	66	Container Storage Area (ASRF)	Permitted	RCRA Stable/Removal
154	776.1	54	Container Storage Area	Permitted	RCRA Stable/Removal
159	776.1	57	Container Storage Area	Permitted	RCRA Stable/Removal
237	776.1	70	Container Storage Area	Permitted	RCRA Stable/ Removal
208	776.1	70	Container Storage Area	Permitted	RCRA Stable/ Removal
127	776.1	68	Container Storage Area	Permitted	RCRA Stable/Removal
127	776.2C	69	Process Waste Tank T-2A	Permitted	RCRA Stable/Removal
127	776.2D	69	Process Waste Tank T-2B	Permitted	RCRA Stable/Removal
127	776.2A	69	Process Waste Tank T-1A	Permitted	RCRA Stable/Removal
127	776.2B	69	Process Waste Tank T-1B	Permitted	RCRA Stable/Removal
134	776.3	66	ASRF (Treatment)	Permitted	RCRA Stable/Removal
118	44.01	62	Oil Storage Tank T-2	Interim Status*	RCRA Stable/Removal
118	44.02	62	Oil Storage Tank T-1	Interim Status *	RCRA Stable/ Removal
118	49.01	63	FBI Production Unit (Treatment)	Interim Status	RCRA Stable/ Removal
135	49.02	61	FBI Pilot Unit (Treatment), including Tanks T-1 & T-2	Interim Status*	RCRA Stable/ Removal
146	61	60	SRV (Storage)	Interim Status	RCRA Stable/ Removal
146	61	60	SRV (Treatment)	Interim Status	RCRA Stable/ Removal
134	74	64	SARF	Interim Status	RCRA Stable/ Removal
152	90.85	53	Container Storage (Vault)	Mixed Residue	RCRA Stable/ Removal
1	90.99	68	Container Storage (Basement)	Mixed Residue ⊕	RCRA Stable/ Removal
134	94.001	55	Tank SRV-3	Mixed Residue ⊕	Physically Empty/ Removal
134	94.002	55	Tank SRV-4	Mixed Residue ⊕	Physically Empty/ Removal
134	94.003	55	Tank SRV-5	Mixed Residue ⊕	Physically Empty/ Removal
134	94.005	66	Tank T-344	Mixed Residue ⊕	Physically Empty/ Removal
134	94.006	66	Tank T-345	Mixed Residue ⊕	Physically Empty/ Removal
134	94.007	52	Tank T-360	Mixed Residue ⊕	Physically Empty/ Removal
134	94.008	52	Tank T-370	Mixed Residue ⊕	Physically Empty/ Removal
146	94.009	60	Ball Mill Washer (Treatment)	Mixed Residue ⊕	Physically Empty/Removal
146	94.010	60	Collection Pan	Mixed Residue ⊕	Physically Empty/Removal
146	94.011	60	Annular Tank	Mixed Residue ⊕	Physically Empty/ Removal
432C	777.1	27	Container Storage	Permitted	RCRA Stable/Removal
430 (3)	777.1	25	Container Storage	Permitted	RCRA Stable/Removal
430 (2)	777.1	25	Container Storage	Permitted	RCRA Stable/Removal
483 (8)	777.1	47	Container Storage	Permitted	RCRA Stable/Removal
433	777.1	28	Container Storage	Permitted	RCRA Stable/Removal
208	777.1	70	Container Storage	Permitted	RCRA Stable/ Removal
448	777.1	32	Container Storage (NDT)	Permitted	RCRA Stable/Removal
416	777.1	13	Container Storage	Permitted (added in RCRA Permit Mod #00-02)	Clean Closure (documenting absence of contamination)

Mod #8

40

Room	RCRA Unit	SET	Description	Status	Proposed Closure ∅
416B	777.1	13	Container Storage	Permitted (added in RCRA Permit Mod #00-02)	Clean Closure (documenting absence of contamination)
427	777.1	16	Container Storage	Permitted (added in RCRA Permit Mod #00-02)	Clean Closure (documenting absence of contamination)
442	777.1	30	Container Storage	Permitted (added in RCRA Permit Mod #00-02)	Clean Closure (documenting absence of contamination)
462	777.1	40	Container Storage	Permitted (added in RCRA Permit Mod #00-02)	Clean Closure (documenting absence of contamination)
477/477A	777.1	42	Container Storage	Permitted (added in RCRA Permit Mod #00-02)	Clean Closure (documenting absence of contamination)
443	777.1	31	Container Storage	Permitted	RCRA Stable/Removal
430	95.015	26	Tank T-1	Mixed Residue ⊕	Physically Empty/ Removal
430	95.016	26	Tank T-2	Mixed Residue ⊕	Physically Empty/ Removal
131	90.49	8	Container Storage	Mixed Residue ⊕	RCRA Stable/ Removal
131	95.006	7	Tank 1103	Mixed Residue ⊕	RCRA Stable/Removal
131	95.007	7	Tank 1104	Mixed Residue ⊕	RCRA Stable/ Removal
131	95.008	7	Tank 1106	Mixed Residue ⊕	RCRA Stable/ Removal
134E	95.014	11	Tank T-7	Mixed Residue ⊕	RCRA Stable/ Removal
131	95.019	4	Tank DL-776	Mixed Residue ⊕	Physically Empty/ Removal
131	N/A	4	Tanks V-605 (2)	Mixed Residue ⊕	Physically Empty/ Removal
131	N/A	5	Tank V-614	Mixed Residue ⊕	Physically Empty/ Removal
131	N/A	5	Tank V-616	Mixed Residue ⊕	Physically Empty/ Removal
131	N/A	5	Tank V-618	Mixed Residue ⊕	Physically Empty/ Removal
131	N/A	5	Tank V-620	Mixed Residue ⊕	Physically Empty/ Removal
131	N/A	6	Tank V-626	Mixed Residue ⊕	Physically Empty/ Removal
131	N/A	6	Tank V-627	Mixed Residue ⊕	Physically Empty/ Removal
452	N/A	34	Tank V-022	Mixed Residue ⊕	Physically Empty/ Removal
452	N/A	36	Tank V-543	Mixed Residue ⊕	Physically Empty/ Removal
134E	N/A	11	Tank V-746	Mixed Residue ⊕	Physically Empty/ Removal
134E	N/A	11	Tank V-747	Mixed Residue ⊕	Physically Empty/ Removal
134E	N/A	11	Tank V-747A	Mixed Residue (identified 12/05/00)	Physically Empty/ Removal
134E	N/A	11	Tank V-748	Mixed Residue ⊕	Physically Empty/ Removal
134E	N/A	11	Tank V-749	Mixed Residue ⊕	Physically Empty/ Removal
134E	N/A	10	Tank V-752	Mixed Residue ⊕	Physically Empty/ Removal

Mod #5

Mod #6

* Interim status tank Units 44.01, 44.02, and 49.02 are governed by the terms and conditions of a Compliance Order on Consent and the Hazardous Waste Tank Management Plan (HWTMP), which required the tanks to be taken to a RCRA Stable status by March 31, 1998. This commitment was met.

⊕ Mixed residue tanks managed in accordance with the Mixed Residue Tank Plan (see Section 6.2.4).

∅ The type of closure for a unit may change from the type of closure listed; however, all closures will be conducted in accordance with this DOP.

N/A Mixed residue tank does not have a RCRA unit number.

4.5.1.1 Clean Closure

RCRA-regulated units may be "clean closed" either by documenting the absence of contamination or by decontaminating the unit. For units having a complete, detailed operating history, clean closure will be demonstrated when the following criteria are met:

41

- An administrative review of the RCRA Operating Record indicates hazardous or mixed waste was never spilled in the unit, or if a spill did occur, it was cleaned up and the spill area was decontaminated; and
- A visual inspection of the unit and associated ancillary equipment notes an absence of hazardous or mixed waste stains and/or residuals.

Units to be "clean closed" by decontamination will be flushed and washed with a suitable decontamination solution to remove visible waste residuals and contaminants of concern, then rinsed with clean water. The final rinsate will be tested to determine whether:

- The pH of the rinsate is between 6 and 9, and
- The concentrations of priority pollutants and heavy metals identified as being managed in the unit are below the Tier II action levels for ground water defined in Attachment 5 of RFCA [Ref. 1], and listed in Appendix B). Rinsate meeting the Tier II action levels for listed waste constituents associated with the unit and the LDR standards for characteristic waste will be deemed to be "no longer contained in" and will be managed as LLW.

For external surfaces, the final rinsate will not exceed a volume of two gallons per 100 ft^2 of surface area rinsed, and for internal surfaces, the final rinsate will not exceed a volume of 5% of the capacity of the tank system. If test results indicate the standard has been met, the unit equipment will be considered "clean closed." In the event the standard is not met, the LRA will be consulted to determine whether the results are protective of human health and the environment.

4.5.1.2 Unit Removal in Conjunction with "Debris Rule" Treatment

Alternatively, RCRA-regulated units may be closed by removal and treatment under the "debris rule." The "debris rule" applies to unit equipment or structures that have no intended use or reuse, and are slated for removal and discard. To meet the "debris rule" standard, decontamination will be conducted using the "abrasive blasting" physical extraction technology, or other appropriate technology identified in Part 268.45 of 6 CCR 1007-3 (Table 1, Alternative Treatment Standards for Hazardous Debris).

If, after "debris rule" treatment, the equipment or structure meets the standard for a "clean debris surface," and it does not exhibit a hazardous waste characteristic, it will no longer be considered a hazardous waste and will be managed as a solid waste.

In the event the standard is not met, the equipment or structure will be removed and managed as hazardous or mixed waste. Treatment residuals generated from extraction and/or destruction technologies used in the closure of units in the Building 777/776 Cluster (including rinsates) will be characterized in compliance with 6 CCR 1007-3, Part 262.11, and managed accordingly. Treatment residuals do not meet the definition of debris.

4.5.1.3 Unit Removal without Onsite Treatment

Unit equipment or structures that are not decontaminated to meet either the "clean closure by decontamination" or "debris rule" standard will be removed, size-reduced (if necessary), and packaged to meet the waste acceptance criteria (WAC) of the approved disposal facility. In the

42

event this waste cannot be shipped directly to a disposal facility, it will be stored in an approved on-Site storage unit until shipment can be scheduled.

4.5.2 Closure Documentation

Prior to the decommissioning of each SET, RCRA unit-specific closure information will be submitted to the LRA for review and approval as a minor modification to this DOP under ¶127 of RFCA. The unit-specific information will include drawings and/or photographs of the RCRA-regulated unit or units in the SET, applicable EPA Waste Codes, the selected closure option(s), and closure requirements. For clean closure of container storage units by documenting the absence of contamination in accordance with Section 4.5.1.1, a letter may be submitted to the LRA, in lieu of a minor modification to the DOP, detailing the results of the operating record review and visual inspection, and requesting concurrence that the unit has been closed. Mod #7

Consistent with Section 1.1.4 of the DPP, portions of a RCRA-regulated unit may be removed prior to submittal of the required unit-specific closure information upon engagement of the consultative process and concurrence of the LRA. In such cases, LRA concurrence will be documented in an RFETS Regulatory Contact Record, which will be filed in the Project Record. Mod #2

A description of the closure activities completed for each RCRA-regulated unit will be included in the Final Closeout Report, which will be prepared for the Building 776/777 Closure Project upon completion of decommissioning activities. All RCRA units will be closed prior to building demolition.

4.6 Pre-Demolition Survey

In-process characterization will be conducted to identify areas requiring additional decontamination before the building is demolished. The final characterization will be performed in areas that have been stripped out to verify the waste disposal path for building rubble. Per ¶60(a) of RFCA, the LRA may take samples and obtain duplicate, split, or sub-samples of any DOE samples.

The final building characterization will be conducted in accordance with the Project-Specific Characterization Plans for Building 776/777, which will be prepared prior to the initiation of demolition activities. The Characterization Plans will be submitted to the LRA for review and approval. A Final Project-Specific Characterization Report(s) will be prepared to document the results of the pre-demolition characterization and included in the Project's administrative record (AR). Per Sections 3.3.10 through 3.3.13 of the DPP, the Project-Specific Characterization Report(s) will be forwarded to the LRA for review. Mod #10

4.7 Independent Verification

An independent party, selected by DOE, will perform a verification assessment of the final survey methodology. This assessment will include a review of survey procedures, survey instrument calibration and operation procedures, and the Final Project-Specific Characterization Plans. Also, the independent party may obtain additional survey measurements for comparison with the RFETS measurements to ensure proper correlation of survey data. Mod #10

43

4.8 Endpoints

Once the characterization walkdowns were completed, detailed endpoints were developed for each SET. The endpoints determine the completion criteria for the SETs. Distinct activities required to deactivate, isolate and contain, dismantle, size reduce, and package waste for off-site shipment are included as endpoints. Although the endpoints were developed based on walkdowns, it is expected additional work will be discovered during decommissioning. The scope of work and associated endpoints will be adjusted as items are identified. The endpoints are intended to provide the basis for the activities and activity line items in the Work Breakdown Structure (WBS) and milestones on the project schedules. The endpoints are divided into three categories: deactivation, decommissioning, and project management. Appendix A contains a master list of decommissioning endpoints for each SET. Documentation of the endpoints ensures all parties understand what is involved in the decommissioning phase of the SET, and activities are signed off as they are completed as part of the IWCP process (see Section 5) to document that applicable criteria have been met. The endpoints or milestones listed in this DOP are provided for information only.

4.9 Size Reduction Methodologies

In Building 776/777, size reduction activities will involve 279 GBs, connecting stations, and centerlines, along with 44 tanks. The GBs and tanks are connected to the Zone I ventilation systems totaling several miles of ductwork and piping. The GBs are stainless steel enclosures with window mountings, glove port rings, bolted flanges, and various penetrations attached to the walls. The tanks range from five inches to a few feet in diameter and up to a few feet long. These vessels were fabricated in both single-wall and double-wall configurations. Zone I exhaust systems are made up of 6-inch to 36-inch diameter stainless steel ductwork and walk-in plenums containing HEPA filters.

For disposal, the GBs, tanks, and ventilation system hardware must be reduced in size to fit into waste containers for disposal. The primary containers for TRU waste are Waste Isolation Pilot Plant (WIPP) standard waste boxes (SWBs) and 55-gallon drums. During size reduction, items are cut into pieces that can be stacked efficiently in the waste containers.

A value engineering study performed by the Technology Steering Committee in July of 1998 evaluated a variety of size reduction techniques that may be used on equipment and GB systems in the Building 776/777 Cluster (Ref. 17). Results of this study are summarized in Table 7. The selected methods will depend on the individual areas and the type and location of equipment to be size reduced. In some cases, the preferred method may not be used due to safety constraints, such as criticality evaluations or area specific limitations in the Building 776/77 AB. Cutting methods will be finalized for each SET as the detailed IWCP work packages are developed. Due to the requirement to operate within a controlled work environment at Rocky Flats, changes in the methods to accomplish size reduction goals will be implemented using a phased approach. Certain methods (e.g., thermal cutting) have been recommended for use inside hard-sided containment. The following types of hard-sided containment are being considered for use: a new system in Room 121, the existing ASRF in Room 134, portable containment (i.e., bolt together) and a centralized size reduction facility. The graded approach to size reduction is summarized as follows:

Table 7. Proposed Size Reduction Techniques

Methods	Small Tools	Plasma Arc	Oxy-torch	Laser Cutter	Diamond Wire Saw	Wachs Cutter	Hydraulic Shears	Shear Baler	Water with Abrasives	Upgrade ASRF	ASRF	Arc Saw	Arc Air Slice	Arbor Press
Footnotes	I	A,R,H,F	A,R,H,F	A,H	C,R,S	P	R		A,C,S,H			A,H,F	A,H,F	
GBs							1	1	1	1				
Stainless with lead shielding	3	1		2	3		1	1	1	1	1	1	1	1
Stainless without lead shielding	2	1		2	3		3			1	1	1	1	1
Plexiglas with lead shielding	1						3							
Plexiglas with lead shielding	1									1	1			
Glass	1									1	1			
Lead	1									1	1			1
Gloves	1									1	1			
Filters	1									1	1			
GB supports	2	1	1	1		1	2		2			3	1	
Shielding														
Benelex	1													
Plexiglas	1													
Machinery														
Tool Steel														
<½"	3	1	1	2	3				1	1	1	1	1	
> ½" but < 3"	3	1	1		3				1	1	1	1	1	
> 3"	3	1	1		3				3	1	1	1	1	
Cast iron		1		2	3				2	1	1	1	1	
Carbon steel equipment bases		1	1	2	3				2	1	1	1	1	
Aluminum	2	2		1	3		1	1	1	1	1	1	1	1
Stainless steel > 3/8" but < 1"	3	1		3	3				1	1	1	1	1	
Granite	2		2		1				1				2	

LEGEND:

Blank	= Not applicable	Footnotes					
1	= Most preferred method	A	= Can be automated	C	= Possible criticality issue		
2	= Medium preferred method	R	= Can utilize remote control	S	= Secondary waste issue		
3	= Least preferred method	H	= Needs hard-sided containment	I	= Includes use for disassembly		
		F	= Fumes need to be dealt with	P	= Applies to pipe only		

- Develop a hard-side/soft-side containment that does not require supplied breathing air on a continuous basis and tooling that reduces handling fatigue.
- Develop a remotely operated size reduction system within hard-sided containment to remove the operator from the actual size reduction activities (e.g., cutting, packaging) and improve throughput of a single size reduction system. The safety goal is to completely remove the human operator from actual size reduction activities.

Both these approaches to size reduction in the Building 776/777 Cluster will incorporate technology improvements associated with an enhanced walk-in hard-sided containment system to reduce or eliminate Class "A" PPE. Technology improvements are primarily limited to currently proven and available equipment and processes. This will provide technology that will be available to meet existing goals for size reduction tasks in Building 776/777. The Technology Steering Committee will continue to work on the identified needs and define future improvements for RFETS decommissioning activities. In addition, the committee will provide guidance on integrating currently funded activities into Site closure projects and program.

4.10 Decontamination Approach

Material and equipment located in the Building 776/777 Cluster must be dispositioned into various categories of excess equipment and waste. During FY00 an Economic Disposal Plan will be developed in accordance with 1-MAN-009-PMM, Property Management Manual (Ref. 18). As illustrated in Figure 8, this logic is used to determine if a material is waste or property, and if it may be readily free-released as uncontaminated and non-hazardous material. If it is radioactive and/or hazardous waste, the material must be evaluated for whether, after packaging, it is TRU, TRM, LLW, or LLM waste. If it is TRU or TRM waste, the effort to be expended for decontamination and volume reduction to optimize its final configuration must be determined and documented. Once segregated, characterized, and packaged, the waste will be disposed of based on RFETS waste management requirements.

A recent study, entitled "Evaluation of Potential Cost Impacts from Volume Reduction and Decontamination for TRU Contaminated Systems and Equipment," (Ref. 19), provided the following conclusions on the economics of volume reduction and decontamination. First, for most systems, volume reducing to increase the average density of the filled waste containers provides insufficient waste management cost savings to justify the additional labor needed to cut items into smaller pieces to achieve the higher density. Second, decontaminating TRU-contaminated systems and equipment to LLW also does not appear to be cost effective for most systems. Finally, schedule delay costs add to the cost of decontamination or additional volume reduction and can be much larger than any other factor. An analysis of Building 779 Closure Project revealed the cost impacts due to schedule delays. A schedule slip of one day resulted in a cost increase of up to $85,000, which is the current rate of spending for the Building 776/777 Closure Project. Schedule delays in the decommissioning of other Pu buildings could run two to three times this amount. Schedule delay costs can dominate the economics of decommissioning for those systems on the critical path to a building's closure. For these systems, the most straightforward method of removal and disposition will be chosen.

The following paragraphs describe the techniques most likely to be used if equipment and surfaces must be decontaminated. These techniques are listed in the Building 776/777 Complex Basis for Interim Operation (BIO), (Ref. 20). Techniques not currently authorized by the BIO may be introduced through an IWCP work package (Ref. 8), then evaluated by the Unreviewed Safety Question Determination (USQD) process (Ref. 21) prior to implementation.

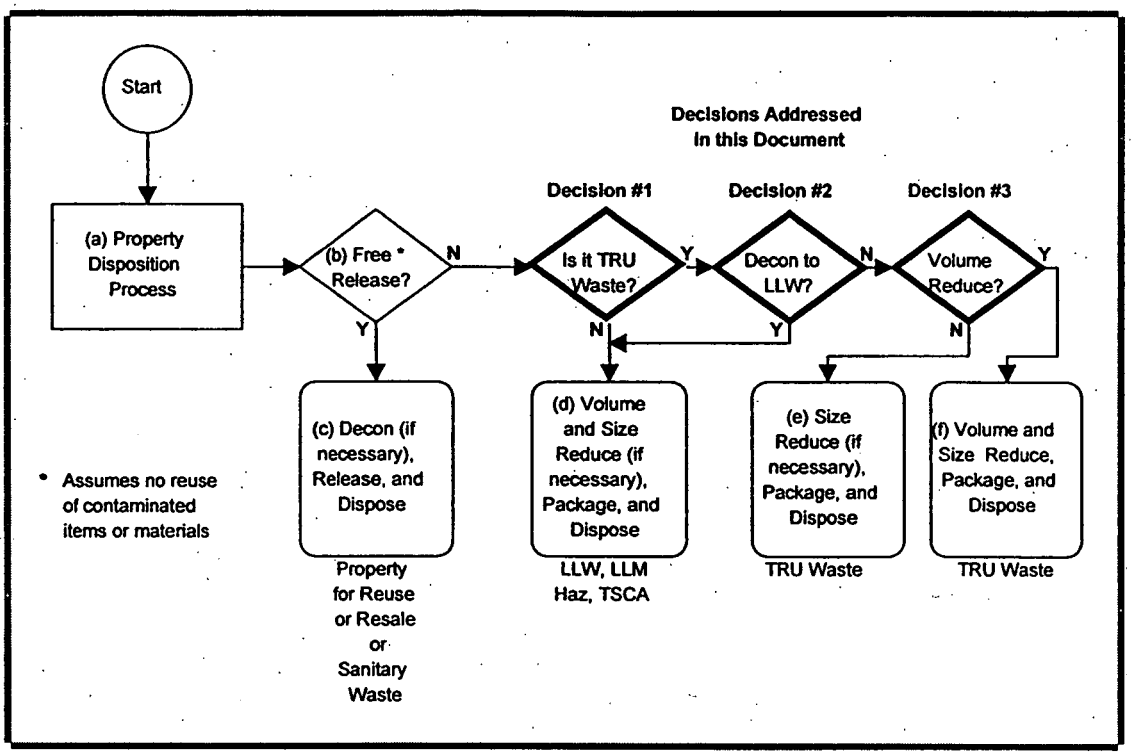


Figure 8. Waste Decision Logic

4.10.1 Dusting, Wiping, and Scrubbing

Dusting, wiping, and scrubbing involve the physical removal of dust and fine particles from building and equipment surfaces using common cleaning techniques. Typically, dusting is a dry technique where a dry cloth is used. Wiping involves the use of a damp cloth, which may be soaked with water, detergent, or solvent to assist in removing particulates. Scrubbing is similar to dusting and wiping except that pressure is applied to assist in removing the contamination.

4.10.2 Vacuuming

Vacuuming involves the physical removal of dust, particulates, and liquids with a suction device. Dust and particulates are removed using a commercial or industrial grade vacuum equipped with a HEPA filter. Liquids are removed using a "wet vacuum" equipped with an alternate filter system, because HEPA filters do not function properly with liquids.

4.10.3 Strippable Coatings

Strippable coatings may be applied to contaminated surfaces, then removed along with some of the contamination. Various agents can be used as strippable coatings for contaminated surfaces. Decontamination factors for the strippable coatings vary with the type of coating used. In general, strippable coating decontamination is only effective on smooth, non-porous surfaces.

Strippable coatings are applied using a mixture of two polymers that chemically react to form the coating. Usually, the contaminated layer is pulled off, containerized, and disposed of as contaminated waste. The polymers used in the mixture are often hazardous materials. Care must be taken when collecting the coatings to assure the quantities of radioactive material do not exceed the packaging requirements. The two strippable coatings being considered are identified in Table 8.

Table 8. Strippable Coatings

Coating Mixture	Coating Reaction
Polymer mixture	In the polymer mixture, contaminants are entrained in the mixture as the polymer reacts then stabilizes. The contaminated layer of polymer is pulled off, containerized, and disposed of as radioactive waste.
Nontoxic, water-based copolymer	The nontoxic, water-based copolymer is considered self-stripping because as the formula polymerizes, it cracks, flakes, and falls off, taking the loose surface material with it. The loose flakes are containerized with no additional processing prior to disposal.
Note: Combustible strippable coatings have not been considered.	

4.10.4 Fixative Coatings

Various agents may be used as coatings on contaminated surfaces to fix the contaminants in place and decrease or eliminate exposure hazards. The fixed contaminants are left in place to reduce potential spreading during other phases of closure. Fixatives will be used on a case-by-case basis, as identified during preparation of individual IWCP work packages.

One fixative coating technique that may be used involves a two-step process. An initial capture coating is applied using a misting technique. The capture-coating mist is similar to a gas and removes airborne contamination from the application area. The capture coating eventually settles onto exposed surfaces and becomes tacky. A second, durable coating is then applied using a mixture of two compounds that chemically react to form the coating. The two compounds have hazardous material classifications. One compound reacts violently with water and the other reacts violently with acids. Upon decomposition, either may emit noxious gases.

4.10.5 Scarifiers

Scarifiers physically abrade both coated and uncoated concrete and steel surfaces. The scarification process removes the top layers of contaminated surfaces to reach the sound, uncontaminated surfaces. For steel surfaces, scarifiers can completely remove contaminated coating systems, including mill scale. This leaves a surface of bare metal. A scabbling scarification process may be used to achieve the desired profile and results for contaminated concrete. A needle-scaling scarification process may be used for steel decontamination. Vacuum attachments may be used to reduce the spread of contamination associated with the scarification process.

4.10.6 Paving Breakers and Chipping Hammers

Paving breakers and chipping hammers are used to physically remove contamination and surface material by mechanical impact. Although paving breakers and chipping hammers are primarily used in demolition activities, they may also be used to remove surface contamination up to six inches thick, resulting in a rough remaining surface.

4.10.7 Grit Blasting

Grit blasting, also referred to as sand blasting or abrasive jetting, uses abrasive materials suspended in a medium (e.g., compressed air, water, or a combination of air and water) to pulverize and grind out surface contaminants. Typically, blasting results in a uniform abrasion of the surface. Typical abrasives include minerals, steel pellets, glass beads, glass frit, plastic pellets, and natural products, such as sand. A grit blasting system consists of a blast gun, pressure lines, abrasives, and an air compressor. Grit blasting systems are usually hand-held; however, remotely operated units are available.

4.10.8 Carbon Dioxide Blasting

Carbon dioxide (CO_2) blasting is a variation of grit blasting in which CO_2 pellets are used as the abrasive medium. Small CO_2 pellets accelerate through a nozzle using compressed air, shattering when they impact the surface. The resulting kinetic energy causes the shattered pellets to penetrate the base material and release the contaminant(s). The CO_2 fragments immediately sublimate, which adds a lifting force that aids in removal of the contaminant(s). Abraded debris falls to the ground, and the CO_2 (now a gas) returns to the atmosphere. The CO_2 blasting is effective with plastics, ceramics, composites, and stainless steel. This technique may not be effective on hard coatings that are firmly bonded to the base material.

4.10.9 Chemical Decontamination

Chemical reagents are widely used in the nuclear industry for decontamination. A major advantage of chemical decontamination is the production of few airborne hazards. Other advantages of chemical decontamination include:

- Use on inaccessible surfaces,
- Fewer work hours required,

49

- Process equipment and piping may be decontaminated in place, and
- Decontamination may be performed remotely.

Disadvantages include:

- Generation of large volumes of radioactive mixed waste, and
- Storage and collection concerns.

4.11 Building 776/777 Decommissioning

Building 776/777 will be decommissioned using a phased approach. The following paragraphs summarize the decommissioning activities that will be conducted to prepare the building for demolition. Demolition will proceed in accordance with the Demolition Plan provided in Appendix I.

Mod #10

4.11.1 Expected Condition of Building 776/777 at Beginning of Decommissioning

By the time decommissioning begins in Building 776/777, the majority of SETs will be deactivated and a few SETs will still be in a normal operating mode. Typically, in a deactivated SET, all classified material, loose combustibles, and hazardous materials have been removed and dispositioned; solutions in tanks, machines, pumps, and associated piping have been drained and dispositioned; and radioactive and chemical contamination has been controlled or fixed. Deactivation activities do not include draining utility and fire systems, disconnecting old electrical and ventilation systems, or deactivating alarms that are still in operation. This status is provided as general information only and is subject to change.

4.11.2 Building 776/777 Decommissioning Sequence

In general, the decommissioning sequence of the SETs in Building 776/777 will be as follows: GBs and B-boxes will be removed first so that Zone I ventilation can be removed. Process tanks will be removed during the same time frame as the GBs and used as "fill-in" work. After the GBs, B-boxes, process tanks, and Zone I ventilation systems have been removed, the remaining room decommissioning activities will take place. These include removal of interior walls, piping, ventilation, and electrical systems to approximately the eight-foot level or to the first tie point. At that time, samples may be taken beneath the paint on the floors and walls, between corrugated wall panels, and on the concrete decking on the first floor ceiling to identify the magnitude of fixed contamination. Depending on the sample results, additional decontamination may be required. Once the rooms have been emptied and sampling and/or decontamination has been completed, final radiological surveys will be performed on the floors and walls in preparation for building demolition. Engineering and administrative controls will be used to prevent the spread of contamination to uncontaminated and/or decontaminated areas. The demolition plan for Building 776/777 is provided in Appendix I through a major modification as defined in ¶127 of RFCA, with a 30 day public comment period. A 30 day public comment period was considered adequate because there was a 14-day informal public comment period, and several informal information exchanges with the stakeholders prior to the formal public comment period.

Mod #10

4.11.3 Building 776/777 Gloveboxes, B-Boxes and Hoods

Internal surfaces of GBs, B-boxes and hoods will be wiped down using materials such as disposable wipes and non-toxic cleaning solutions. Loose materials will be swept up, and a light abrasive material will be used, as required. More aggressive techniques, such as grit blasting, may be used depending on the levels and location of contamination.

Based on radiological survey measurements, a strippable coating may be applied to fix surface contamination during size reduction operations. Where appropriate, the strippable coating may be applied and removed several times to reduce surface contamination levels.

In some cases, lead shielding affixed to the exterior surfaces of the GBs will be removed to minimize the generation of mixed waste. However, on GB lines where wet cutting or machining operations were conducted using organic solvents, and where the interior metal cannot be decontaminated to meet "clean debris surface" standard, lead may be left in place.

Internal equipment and components will be removed before the size reduction of GBs, B-boxes, or hoods. Depending on the layout of the SET, the size of the components being size reduced, and their contamination levels, containment may be erected around the SET or equipment, or the equipment may be moved to a designated size reduction containment area.

The containment structure will be equipped with HEPA filtration to prevent the spread of contamination and to minimize worker exposure. Tie-ins to the existing building Zone I ventilation system may be used if the airflow is adequate. If not, a portable air mover fitted with HEPA filters will be employed.

Working inside a containment structure, workers will reduce the size of the component using a variety of pre-approved cutting techniques, including small hand tools, nibblers, and saws. Size reduction will minimize waste volume and allow packaging in approved shipping containers.

Contamination surveys will be performed in the work area as SETs are removed. Areas with contamination above acceptable levels will be decontaminated or fixatives will be applied to fix contamination. The choice to decontaminate or fix contamination will be made on a case-by-case basis during the development of individual IWCP work packages.

4.11.4 Building 776/777 Large Equipment

Several large pieces of equipment, including the supercompactor, horizontal accelerator, rolling mills, metal presses, and various tanks, will also be size reduced to allow packaging in approved shipping containers. Successful techniques used to size reduce GBs will be adapted when appropriate. In some instances, equipment may be size reduced in place, then transferred to another containment structure for further size reduction.

4.11.5 Building 776/777 Ventilation Systems

The ventilation systems will be removed after their services have been disconnected. Each portion of ductwork to be removed will be sleeved in plastic and cut or unbolted. Alternatively, the area may be enclosed in a containment structure. If the internal surface contamination is below packaging limits, the internal surfaces of the ductwork will be coated with a fixative. If the internal

surfaces are above the packaging limits, the internal surfaces will be decontaminated using wipes and abrasive cleaners.

The ductwork for each system will be removed starting at the point most remote from the HEPA filtration unit and fans for each leg of the system. The building ventilation fans will remain in service and throttled down to the maximum extent possible during removal of the systems. Temporary air movers with HEPA filters will be used when necessary.

4.11.6 Equipment Buried Under Building 776/777

Mod #10

Buried equipment (SET 84) will be characterized prior to demolition of the building structure. Planning and engineering for this SET will be completed prior to decommissioning the SET. The individual IWCP work package(s) will describe additional confirmation methods and removal methods. This SET is not scheduled for decommissioning until FY03. Additional information on the disposition of the areas associated with Set 84, including buried metal and concrete, is discussed in the Demolition Plan in Appendix I.

4.12 Building 730 Decommissioning

Mod #10

Building 730 is an underground process waste pit containing four Zone II plenum deluge tanks. Two of the four tanks have been filled with foam. These tanks were previously used to store solvents. When the pit is no longer needed to support the Building 776/777 ventilation system, the mechanical and electrical systems will be removed, the tanks decontaminated, and fixative applied. At the completion of these activities the tanks and structure will be transferred to ER for removal.

4.13 Waste Management

The waste management strategy for the Building 776/777 Closure Project is summarized in Section 6.

4.14 Work Controls

Work Controls are established through the Integrated Safety Management System (ISMS), as discussed in Section 5.

4.15 Effluent Controls

Specific air effluent controls are discussed in Sections 7.1 and 8.4. Water effluent controls are discussed in Sections 7.4. Spill response controls are discussed in Sections 5.5.1 and 5.10.

4.16 Authorization Basis

Mod #10

The Building 776/777 BIO (Ref. 20) will be the AB for closure activities. Specific operations to be covered by the BIO are decontamination of equipment and surfaces, dismantling and size reduction, and waste management. The BIO contains accident analyses and facility controls for deactivation activities. The BIO will be replaced with the Documented Safety Analysis (DSA) (expected to be approved in June 2003). The DSA will cover decommissioning and demolition activities.

4.17 Performance Standard

The performance standard for the Building 776/777 Closure Project is to conduct work in a manner that protects the worker, the public, and the environment. This will be accomplished by following established work practices and procedures described in Section 5 of this DOP, and by complying with the ARARs described in Section 7.

4.18 Records Disposition

Building 776/777 Closure Project records consist of the CERCLA Administrative Record, the RCRA Operating Record, the Project Record, and the Project Closeout Report.

4.18.1 CERCLA Administrative Record

Appendix C identifies the documents that constitute the Administrative Record (AR) for the Building 776/777 Closure Project. Upon completion of the public comment period, comments received from the public will be added to the AR file, along with the responsiveness summary and the LRA approval letter. LRA approval of this DOP constitutes approval of the AR file.

The following information repositories have been established to provide public access to the Building 776/777 Closure Project AR:

U.S. Environmental Protection Agency (EPA)
Region VIII
Superfund Records Center
999 18th Street, Suite 500
Denver, Colorado 80202-2466
(303) 293-1807

Citizens Advisory Board (CAB)
9035 Wadsworth Parkway
Suite 2250
Westminster, Colorado 80021
(303) 420-7855

Colorado Department of Public Health and Environment (CDPHE)
Information Center, Building A
4300 Cherry Creek Drive South
Denver, Colorado 80220-1530
(303) 692-3312

U.S. Department of Energy Rocky Flats
Public Reading Room
FRCC Library
3645 West 112th Avenue, Level B
Westminster, Colorado 80030
(303) 469-4435

4.18.2 RCRA Operating Record

RCRA records and closure documents will be maintained with the existing Building 776/777 RCRA Operating Record. Upon completion of the Building 776/777 Closure Project, the RCRA Operating Record will be transferred to Site Records Management for storage.

4.18.3 Project Record

Project-specific documents will be filed in the Project Record until final closure is complete, at which time the Project Record will be processed through Site Records Management and archived. The Project Record will contain characterization documentation, inventory sheets, project

correspondence, comment resolution, IWCP work packages, and additional information that is a direct result of the work involved in the project. Maintaining the Project Record is a Site requirement.

4.18.4 Closeout Report

A Closeout Report will be prepared for the Building 776/777 Closure Project after work has been completed and analytical data received. The report will consist of a brief description of the work completed, including any modifications or variations from the original decision document. The report will also contain analytical results, including the results of confirmatory sampling, as well as a description of the quantity and characteristics of the waste generated and how the waste is stored or disposed.

The expected outline for the Closeout Report is shown below. The format may change to meet the needs of the project.

- Introduction
- Remedial action description
- Dates and duration of specific activities (approximate)
- Verification that remedial action goals have been met
- Verification of treatment process (if applicable)
- Radiological analysis (if applicable)
- Waste stream disposition
- Site reclamation
- Deviations from the decision document
- Demarcation of waste(s) left in place
- Final disposition of wastes (actual or anticipated)
- Next steps (e.g., interim monitoring, transfer to Environmental Restoration Program)

5.0 HEALTH AND SAFETY

This section describes the work controls that will be implemented to assure worker H&S during decommissioning. The information in this section is intended to provide a general overview of work controls. DOE is the lead agency responsible for enforcement of H&S provisions.

As prescribed by DOE Order 440.1, Worker Protection Management for DOE Federal and Contractor Employees (Ref. 22), the Building 776/777 Closure Project must comply with the OSHA construction standards for Hazardous Waste Operations and Emergency Response, 29 CFR 1910, (Ref. 23) and 1926 (Ref. 24). Under these standards, a project-specific H&S Plan (HASP), (Ref. 25), has been prepared to address the safety and health hazards of each phase of operations. The HASP will be used in conjunction with the RFETS HSP Manual (Ref. 26) in planning and performing decommissioning activities. The HASP is not intended to be a stand-alone document, but as guidance to be used during the IWCP process and generation of the activity hazards analysis (AHA).

The DOE Order for Construction Project Safety and Health Management, 5480.9A (Ref. 27), also applies to this project. This order requires the preparation of Job Hazards Analysis (JHA) to identify each task, the hazards associated with each task, and the precautions necessary to mitigate the hazards. Finally, procedures for control of lead, Be, and toxic chemicals contained in the RFETS HSP Manual also apply.

To comply with the H&S standards specified, an Integrated Safety Management (ISM) process has been initiated and will be continuously implemented. As shown in Figure 9, the ISM process is structured around five core principles:

- Define the work scope,
- Identify and analyze the hazards,
- Identify and implement controls,
- Perform the work, and
- Provide feedback.

The objectives of the ISM and HSP are to:

- Protect employees, co-located workers, the public and environment from hazards during decommissioning.
- Ensure appropriate safety management is administered throughout decommissioning.
- Develop and maintain a high level of H&S awareness that is practiced by all levels of management, supervision, and employees.
- Meet the goal of zero lost time accidents for the entire decommissioning process.
- Foster excellent safety communications between all Site work groups that are affected by the decommissioning of the Building 776/777 Cluster to ensure the intent and goals of RFCA (Ref. 1) are met.
- Train project personnel to ensure they are capable of completing assigned tasks safely and in compliance with applicable environmental and safety regulations.

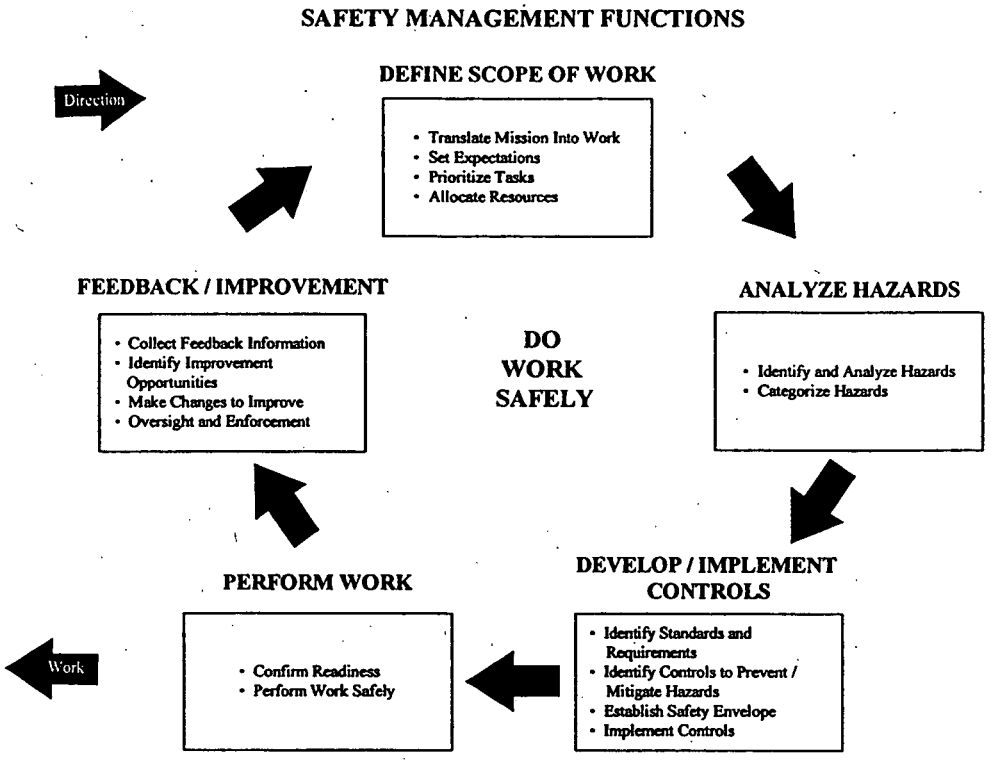


Figure 9. Integrated Safety Management Process

5.1 Integrated Safety Management System

Integrated Safety Management (ISM) is implemented through the Integrated Safety Management System (ISMS) Manual (Ref. 28). The IWCP incorporates ISM principles to prevent and/or mitigate identified work hazards.

Work will be executed following graded readiness demonstrations, which may range from pre-job briefings to Operational Readiness Reviews (ORRs). Safety Systems and Engineering will be consulted to establish the initial activity safety assessment and readiness demonstration scope.

ISM is accomplished by the commitment to the following seven guiding principles:

1) Line management is responsible for safety,
2) Clear roles and responsibilities,
3) Competence commensurate with responsibilities,
4) Balanced priorities,
5) Identification of safety standards and requirements,
6) Hazard controls tailored to the work being performed, and
7) Operations authorized.

Table 9 lists the programs and documents that will be used to apply the ISM process to the Building 776/777 Closure Project.

The work process consists of four major activities: defining the work scope, integrated work control, work planning, and work authorization. The work process is shown in Figure 10 and summarized in the following paragraphs.

5.1.1 Defining the Scope of Work

The work scope is initially identified in the Project Baseline Summary (PBS), then a schedule of activities and the duration are developed along with a basis of estimate (BOE) that establishes the cost and resources required. Once that is completed, an integrated building schedule is developed tying in the PBS and schedule.

5.1.1.1 Project Baseline Summary

The PBS is a formal document that defines a project at RFETS. Items included in the PBS are the authorized scope by FY, budget values for this work scope, milestones associated with work to be accomplished, ISM processes related to implementing the work scope, and the project WBS.

5.1.1.2 Primavera Project Planner

Primavera Project Planner (P3) is the standard scheduling tool used at RFETS. The lifecycle summary baseline schedule for each project (and the Site in totality) is administratively controlled through a formal configuration management system (change control) to ensure that completion dates for milestones and activities are changed only after the proper level of authorization has been obtained.

5.1.1.3 Basis of Estimate

The BOE identifies the resource requirements to complete an activity work scope. Also included in the BOE is the method used to derive the estimate (historical costs, estimator experience or vendor quote), and the quantity of items estimated (such as cubic meters of rubble, volume of liquids treated and number of surveillances). In addition, the calculations used to develop the estimates are included along with the specific basis (such as the method used to determined that three hours of mechanical engineering are required to perform a specific action). The database containing these BOEs (i.e., the Basis of Estimate Software Tool [BEST]) is also under the change control system.

5.1.1.4 Project Execution Plan and Decommissioning Operations Plan

The Project Execution Plan (PEP) is developed to describe the entire project, including landlord, SNM holdup removal, deactivation, decommissioning, and interfaces with other programs. The PEP includes details on project scope, technical approach, risk, methods of accomplishment, environmental requirements, stakeholder interface, organization structure, and financial information.

Table 9. Integrated Safety Management System

Five ISM Functions	Seven Guiding Principles						
	Line Management Responsibility	Clear Roles and Responsibilities	Commensurate with Responsibilities	Balanced Priorities	Identification of Safety Standards and	Hazard Controls Tailored to Work Being Performed	Operations Authorization
Define the Scope of Work	IWCP Site Documents Requirements Manual Activity Definition Process Baseline Change Control Process	IWCP Site Documents Requirements Manual Activity Definition Process Baseline Change Control Process	IWCP Site Documents Requirements Manual Activity Definition Process Baseline Change Control Process	Performance Measures Work Activity Definition RFETS CPB/ 10- Year Plan DOP Building 776/777 Priority List Building 776/777 Maintenance Priority Meeting Work Control Procedure	Activity Definition Process Activity Control Envelope JHA IWCP As low as reasonably achievable (ALARA) Review Criticality Safety Evaluation Transportation Safety Manual	Activity Definition Process Activity Control Envelope JHA IWCP ALARA Review Criticality Safety Evaluation Transportation Safety Manual	Authorization Agreement/ Facility Safety Analysis Report (FSAR)/ BIO Conduct of Operations (COOP) (Ref. 29) IWCP WA Procedure
Identify and Analyze the Hazards	IWCP Radiation Protection (RP) Manual Nuclear Criticality Safety Manual HSP Manual Nuclear Safety Manual Conduct of Engineering Manual (COEM) (Ref. 30)	IWCP RP Manual Nuclear Criticality Safety Manual HSP Manual Nuclear Safety Manual COEM	IWCP RP Manual Nuclear Criticality Safety Manual HSP Manual Nuclear Safety Manual COEM	Performance Measures Work Planning Process 776/777 Integrated Schedule	Activity Definition Process Activity Control Envelope JHA IWCP ALARA Review Criticality Safety Evaluation Transportation Safety Manual	Activity Definition Process Activity Control Envelope JHA IWCP ALARA Review Criticality Safety Evaluation Transportation Safety Manual	Authorization Agreement/FSAR /BIO COOP IWCP WA Procedure Pre-evolution Brief Plant Review Committee RWP

Five ISM Functions	Seven Guiding Principles						
	Line Management Responsibility	Clear Roles and Responsibilities	Commensurate with Responsibilities	Balanced Priorities	Identification of Safety Standards and	Hazard Controls Tailored to Work Being Performed	Operations Authorization
Identify and Implement Controls	IWCP Nuclear Criticality Safety Manual HS P Manual COOP Site Documents Requirements Manual Training Users Manual	IWCP Nuclear Criticality Safety Manual HSP Manual COOP Site Documents Requirements Manual Training Users Manual	IWCP Nuclear Criticality Safety Manual HSP Manual COOP Site Documents Requirements Manual Training Users Manual	Performance Measures Work Planning Process 776/777 Integrated Schedule	Craft Knowledge Walkdowns Engineering Standards Operational Safety Requirements/Technical Safety Requirements Dry Runs Procedure Verification and Validation	Activity Definition Process Activity Control Envelope JHA IWCP ALARA Review Criticality Safety Evaluation Transportation Safety Manual	Authorization Agreement/ FSAR/ BIO COOP IWCP WA Procedure Pre-evolution Brief Plant Review Committee RWP Readiness Demonstration
Perform the Work	IWCP RP Manual Nuclear Criticality Safety Manual HSP Manual Nuclear Safety Manual COOP	IWCP RP Manual Nuclear Criticality Safety Manual HSP Manual Nuclear Safety Manual COOP	IWCP RP Manual Nuclear Criticality Safety Manual HSP Manual Nuclear Safety Manual COOP	Plan of the Week (POW)/ Plan of the Day (POD)	Pre-evolution Briefing Work Control Process POW/ POD	Pre-evolution Briefing Procedures IWCP Operations Orders Training & Qualification	Shift Manager Process Management Assessment Program
Provide Feedback	Independent Assessment Program Occurrence Reporting Program Quality Assurance (QA) Program Management Assessment Program	Independent Assessment Program Occurrence Reporting Program QA Program Management Assessment Program	Independent Assessment Program Occurrence Reporting Program QA Program Management Assessment Program		Training Lessons Learned Fact Findings		

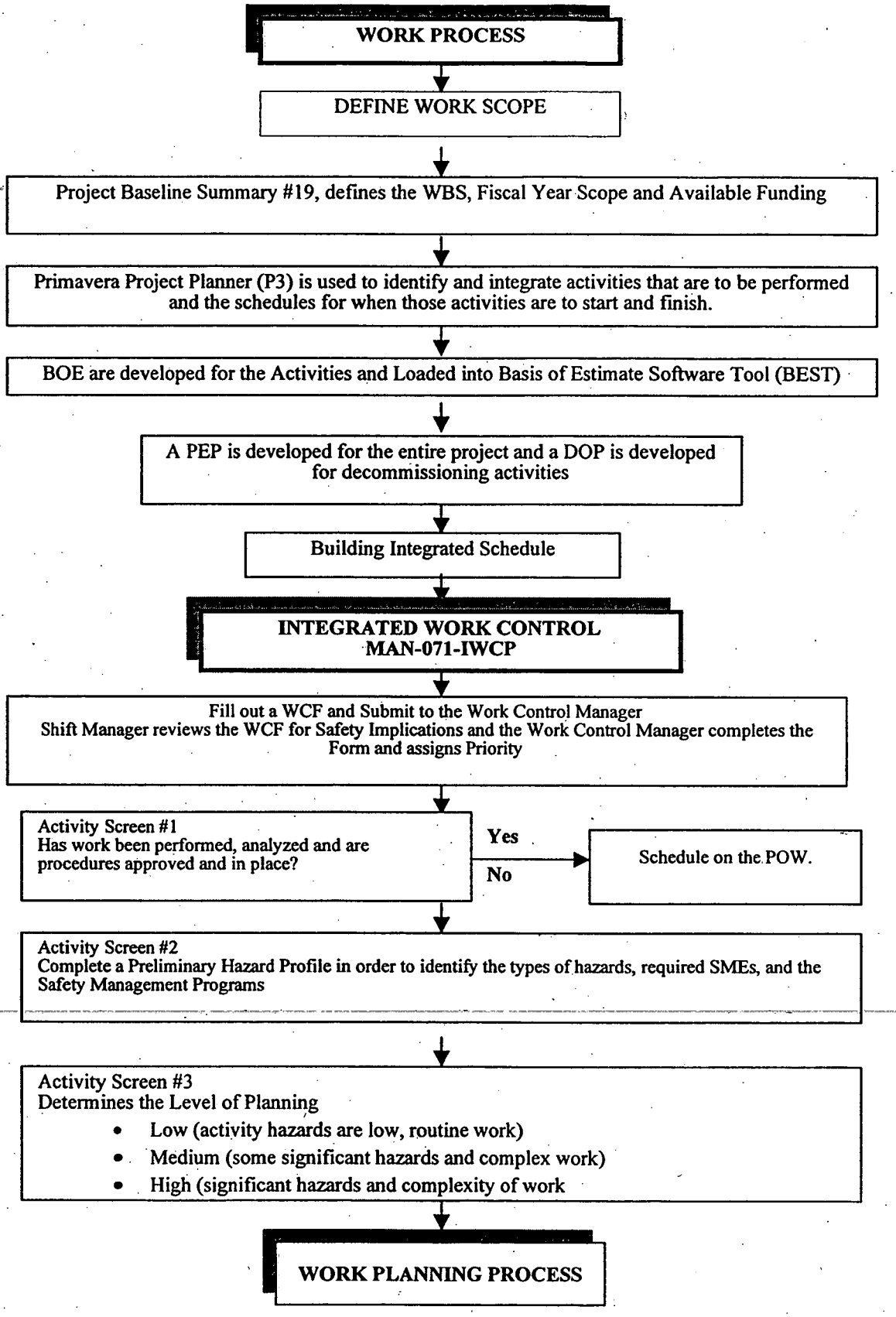


Figure 10. Work Planning Process

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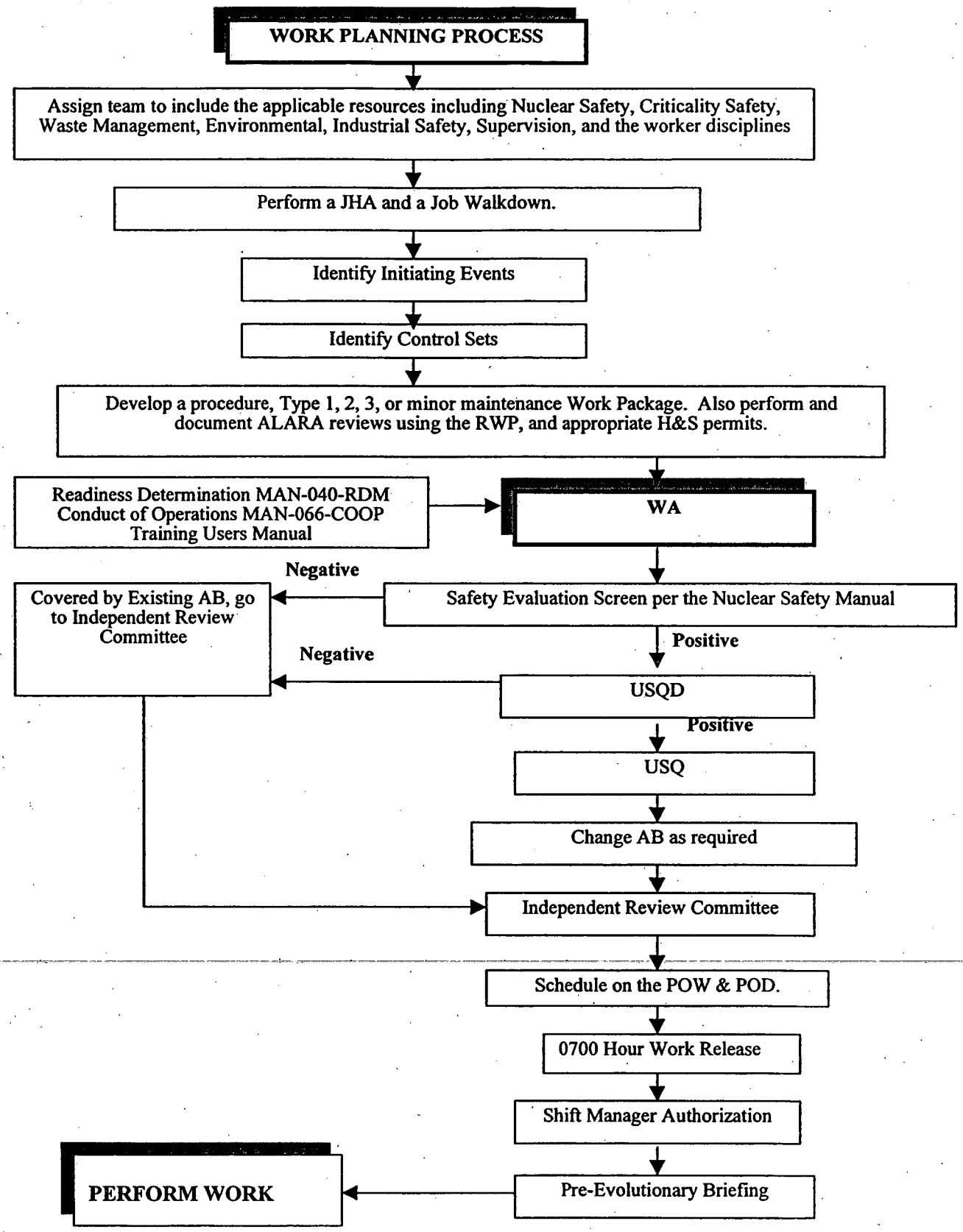


Figure 10. Work Planning Process (cont'd)

61

The Decommissioning Operations Plan (DOP) describes the requirements that must be met to complete decommissioning. The DOP includes a project description, alternatives analysis, project approach, waste management, health and safety, ARARs, environmental consequences, quality assurance, schedules, and organization.

5.1.1.5 Integrated Building Schedule

The integrated building schedule is a detailed schedule containing the actions that must be taken to meet the scheduled activities and milestones in the P3 lifecycle baseline schedule. This schedule is a current working schedule that is updated weekly (at a minimum) to reflect the completion of activities and to include or delete activities that were omitted or no longer required. The detailed activities in the integrated building schedule roll up to a summary activity in the P3 lifecycle baseline schedule.

5.1.2 Integrated Work Control

The IWCP Manual (Ref. 8) defines the method by which ISM is implemented on the job. It provides a single process through which all work on the Site is performed. It ensures the work is screened consistently against uniform criteria and hazards are appropriately analyzed and controlled.

5.1.2.1 Work Control Form

Work is identified and documented on a Work Control Form (WCF). All WCFs are tracked in a site-wide database. The WCF undergoes significant review and prioritization. A determination is made whether the work scope is minor maintenance, preventive maintenance, repair, or an emergency.

5.1.2.2 Activity Screening

An activity screening form (ASF) is used for the following activities: (1) new projects, activities, or subcontractor services, and (2) activities for which the hazards, processes, equipment, or controls have changed since the last time they were performed or for which the work control and planning documents require development or revision. The ASF is divided into three main parts: Screen 1, Activity Prescreen; Screen 2, Preliminary Hazards Profile; and Screen 3, Planning Process Screen.

Prior to starting Screen 1, the Activity Prescreen process, the responsible manager collects all available information related to the activity being planned. Once this information is collected, the responsible manger begins the ASF by documenting the project/activity title, description, and specific work location on the first page of the ASF. The responsible manager then completes the prescreen for the activity. The questions answered for Screen 1 on the ASF are used to determine if the activity can be performed using existing work execution documents with no further screens required. If additional screens are required, both Screens 2 and 3 are completed.

Screen 2, the Preliminary Hazards Profile, is used to determine the types of hazards involved with the work activity by answering questions relevant to the number of potential hazards

associated with the work activity. The overall number of hazards associated with the work activity are used as data input for scoring and answering Screen 3, the Planning Process Screen. In addition, the recommended safety management plans and relevant SMEs identified in Screen 2 may assist the responsible manager in completing the screens and in implementing the selected level of planning.

Screen 3, the Planning Process Screen, is used to select the required level of planning to be performed. This is graded to the hazards, uncertainty, and complexity of the work activity so the appropriate hazards assessment and controls development tools and techniques may be selected. The expectation is that implementation of those controls will result in the work activity being performed safely. After the appropriate level of planning has been selected using the ASF, the responsible manager and SMEs conduct the work planning activity.

5.1.3 Work Planning

The level of work planning required is determined by the results of the ASF. The ASF results are expected to be available for use before planning begins. Three options are available to the responsible manager for planning the work:

- A low planning level approach is used when activity hazards and complexity are low and the work is either routine or simple, and there is some experience at performing most, if not all, of the work.
- A medium planning level approach is used when the activity is somewhat complex, or the activity has not been performed by the project team in the past, and there are some significant hazards associated with the work or some uncertainty about the hazards.
- A high planning level approach is used when there are significant hazards associated with the activity (or significant uncertainty exists about the hazards) and there is significant activity complexity or the activity has not been performed by the project team in the past.

5.1.3.1 Planning Team

The makeup of the planning team depends on the uncertainty of the work activity, the hazards expected to be encountered during the performance of work, and the complexity of the work activity. The ASF provides the responsible manager with a first cut of SMEs who should be considered for membership on the planning team.

The responsible manager generally selects a team of no less than two and typically no more than 12 people. still These people will have a combination of individual and collective experience and education to:

- Provide a detailed analysis of the hazards inherent in the work activity;
- Use the appropriate level of work planning (e.g., low, medium, high) to establish an adequate set of controls for the safe performance of work; and
- Based on the results of the hazards analyses, determine and express the controls in a way that can be communicated to those performing the work.

The team may be comprised of personnel from the primary and principal subcontractors, including floor-level workers and SMEs, where appropriate. Depending on the rigor required for planning, the team may need to work together to take advantage of the synergism of the team (i.e., the deliberations and decisions about the hazards, the analyses, and the selection of controls take place while the team is together in one location). The LRA may participate in the planning process per Section 11.1.3 of this DOP. Upon completion of the planning process, the team membership, deliberations, and decisions will be documented and included in the Project Record.

5.1.3.2 *Job Hazard Analysis*

The planning team reviews the results from the Hazards Profile Screen from the ASF as a starting point for identifying all the hazards associated with the activity. The JHA identifies the hazards associated with each first- and second-level tasks, and document the results. A decision is then made to determine if this information is sufficient. If not, the team conducts an integrated hazards assessment, graded to the activity.

During performance of the hazards analysis, both normal and reasonably anticipated abnormal events are considered along with any pre-existing hazards analyses or safety (e.g., AB, HSP, nuclear safety analysis, auditable safety analysis).

5.1.3.3 *Initiating Events*

Initiating events and potential mitigating systems failures (i.e., "what-if" scenarios) that could cause a hazard to produce undesirable consequences are identified during the JHA. Some of the scenarios determined by the "what-if" technique may not be included in existing hazards or safety analyses, and may require additional analyses to determine the consequences and required controls (e.g., nuclear safety analyses, criticality safety analyses, chemical safety thresholds). The planning team engages the appropriate qualified personnel to perform these analyses. The team determines the proper controls from their consideration of the analyses and circumstances of performing the tasks.

5.1.3.4 *Control Set Identification*

The planning team identifies the controls for the hazards associated with each particular task from the hazard analysis. This includes identifying documents that implement the controls for each task. Some examples are procedures, operations orders, RWPs, and H&S plans. If an existing document can not be found, the team recommends a higher level standard or reference that can be used as a basis for implementing the control.

5.1.3.5 *Work Control Documents*

After identifying the hazard controls, initiating events, and control sets, the project team prepares an IWCP work package or procedure that contains the results from all the steps performed. Procedures are developed generally for long-term, continuous activities in accordance with 1-MAN-001-SDRM, Site Document Control Manual, (Ref. 31).

Type 1 IWCP work packages are used for activities that do not require engineering design. These activities are typically repairs, deactivation of equipment, or simple environmental remediation.

Type 2 work packages provide an interim step that simplifies that work that requires design by eliminating the need for developing another until the design phase is complete. This type of work package incorporates the elements of the Type 1 work package into the text.

Type 3 work packages provide the final method used to perform work requiring engineering design. They are phased in from a Type 2 work package after the applicable training and process development has been completed. This format incorporates the elements of the Type 1 and Type 2 work packages.

Minor maintenance, which is defined as minor and routine in nature is an accepted approach to performing maintenance in a more efficient manner without compromising safety. Minor maintenance activities require the ISMS approach, but in a graded and tailored manner.

The responsible manager convenes a team to perform an independent/peer review of the work control document using personnel who were not involved in the document preparation. The cross-table review team prepares a review report and submits it for review and approval by the responsible manager and program chief engineer. The responsible manager resolves and incorporates the cross-table review comments, and indicates his or her approval by signing the work package.

5.1.4 Work Authorization

Work is authorized after planned activities have been screened to ensure public, environment, and worker safety.

5.1.4.1 Readiness Determination

Activities are reviewed against a screening process that evaluates the work in terms of complexity, hazards, and scope. Work that is routine (i.e., where the facility has an established track record of successful accomplishment) may be performed without any readiness determination. However, work that is new or complex may require a review by facility or Site management to ensure it can be performed safely. RFFO delegates authority for readiness determinations to facility management or the Site integrating contractor, or retains the authority based on the level of significance of the activity. The LRA will be advised of the dates and times of readiness determination activities and may participate in the readiness determination process per Section 11.1.3 of this DOP.

5.1.4.2 Conduct of Operations

Conduct of Operations (COOP) is the Site core culture of formality and discipline, where individuals seek and accept ownership of assigned systems and equipment. Formality and discipline provide uniformity and excellence in accomplishing work. COOP is identified in MAN-066-COOP (Ref. 29). The purpose of the manual is to define the RFETS COOP program and to comply with DOE Order 5480.19, COOP Requirements for DOE Facilities.

5.1.4.3 Training

Training is one form of work control that must be considered and requirements determined during the work planning process. Training falls in one of two categories: regulatory required training and job-specific training. Site employees may obtain necessary training in several ways. Resources Management is responsible for ensuring that personnel who engage in any job have the required training prior to the onset of that work. Not only do workers need the required training before commencing work, but also for nuclear facilities, access will be denied to anyone who does not meet area access training requirements. Individual companies are responsible for determining qualifications for staff that plan work using the IWCP. Qualification packages, if needed, are developed and documented in accordance with 96- RF/T&Q-0005, Training and Qualification Program, in the Training Users Manual (Ref. 32). The Training User's Manual provides guidelines for developing a Training Implementation Matrix, which lists specific training requirements for the work to be performed. Additional details regarding worker training are presented in Section 9.2. Table 10 shows the Training Implementation Matrix for decommissioning work.

5.1.4.4 Safety Evaluation Screen

All work packages and procedures are reviewed against the facility AB to ensure the established control set is adequate to protect the workers and the public. The safety evaluation screen is a checklist used to identify activities that might be outside the AB and therefore might present an Unreviewed Safety Question (USQ).

5.1.4.5 Unreviewed Safety Question

Per DOE Order 5480.21 (Ref. 21), a USQD is performed to evaluate activities with the potential to challenge the limits of the AB. It is a more in-depth review of the activity than the safety evaluation screen. Activities determined to be USQs must be approved by RFFO before work can proceed. If it is determined that additional work and facility safety controls are required to manage the hazards, these are documented in a Justification for Continued Operation (JCO), which must also be approved by RFFO before the work is initiated.

5.1.4.6 Authorization Basis Revision

If a proposed new activity is substantial, the facility's AB may be revised to provide a clear documentation of the activity, related hazards, and necessary safety controls. The AB document will also be revised on an annual basis to incorporate any USQs and JCOs that have been established during the previous year.

Table 10. Training Implementation Matrix for Decommissioning Work

JOB TITLE		MANAGER	MTCE COORD	MTCE PLAN	MAC COORD	ADMIN ASST	MTCE SUPVSR	PIPEFITTER	ELECTRICIAN	PAINTER	D&D WORKER	MACHINIST	PROC SUPVSR	PROC SPEC	UTIL WORKER	CARPENTER	SHEET METAL	COMMENTS
TRAINING																		
Aerial Lift Training							x	x	x	x	x	x				x	x	
Alarms, Sounds, and Responses		x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	
Asbestos Awareness Briefing		x		x			x	x	x	x	x	x	x	x	x	x	x	
Asbestos Worker Initial Training / 32 hrs, #056-354-02							x	*	*	x						x	x	
Asbestos Worker Refresher Training / 8 hrs., #056-351-02							x	*	*	x								
Be Operations							x	x	x	x	x	x	x	x	x	x	x	
BIT-OJT							x						x					
Bldg Tours: 776/777		x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	
Building a Plastic House							x			x	x	x				x	x	
Computer Training: Unclassified		x	x	x	x	x							x					
Confined Space Entry							x	x	x	x	x	x				x	x	
Controller/Evaluator Training		x	x	x			x						x					
Crane and Hoist Inspection											*							
CTR Training and Reference			x															
DOT Awareness							x	x	x	x	x	x	x	x		x	x	
Electrical Safety - CPR qual							x		x		*							
Electrical Safety for Electrical Workers							x		x									
Electrical Safety for Non Elec Workers				x				x		x	x	x	x	x	x	x	x	
Emergency Response Organization (ERO)		x																
Environmental Laws and Regs Workshop		x																
Fall Protection							x	x	x	x	x	x	x	x		x	x	
General Employee Rad Training (GERT)					x	x												
General Employee Training		x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	
GERT/Rad Wkr Off Yr Brochure		x	x	x			x	x	x	x	x	x	x	x	x	x	x	
GBs							x	x	x	x	x	x				x	x	
GB Casual User							x	x	x	x	x	x	x	x		x	x	
GB Support Activities							x	x	x	x	x	x	x	x		x	x	
Hazard Communication Work Area Indoctrination		x	x				x	x	x	x	x	x	x	x	x	x	x	
Hazard Communications		x	x				x	x	x	x	x	x	x	x	x	x	x	
Hazardous Materials Awareness for First Responders		x																
Hazardous Waste Operations-24 hr			x															
Hazardous Waste Operations 40 hr		x					x	x	x	x	x	x	x	x	x	x	x	
Hazardous Waste Ops Refresher-8 hr		x	x				x	x	x	x	x	x	x	x	x	x	x	
Hazardous Waste Ops Supervisor		x					x						x					
Hearing Conservation		x	x	x			x	x	x	x	x	x	x	x	x	x	x	
Hoist Apparatus							x	x	x	x	x	x	x	x		x	x	
Incident Command		x																
Industrial Truck Safety Training								x	x		x	x	x	x		x	x	

JOB TITLE		MANAGER	MTCE COORD	MTCE PLAN	MAC COORD	ADMIN ASST	MTCE SUPVSR	PIPE FITTER	ELECTRICIAN	PAINTER	D&D WORKER	MACHINIST	PROC SUPVSR	PROC SPEC	UTIL WRKR	CARPENTER	SHEET METAL	COMMENTS
TRAINING																		
IWCP		x	x	x	x		x						x					
Ladder Safety				x														
Lead Awareness							x	x	x	x	x	x	x	x		x	x	
Lead in the Workplace							x	x	x	x	x	x						
Lockout/Tagout		x		x			x	x	x	x	x	x	x	x		x	x	
Medical/Physical		x	x	x			x	x	x	x	x	x	x	x	x	x	x	
Nuclear Criticality Safety for Fissile Material Handler														x				
Nuclear Criticality Safety OJT			x	x				x	x	x	x	x		x		x	x	
Nuclear Criticality Safety Support			x	x				x	x	x	x	x				x	x	
Nuclear Criticality Safety Supervisor		x					x						x					
Occurrence Reporting Workshop		x																
Painting a Plastic House										x	x							
Personnel Security Assurance Program													x	x				
Pu Facilities Training for Pu Handlers													x	x				
Pressure Safety Awareness		x		x			x	x	x	x	x	x	x	x		x	x	
Rad Con for Managers		x					x						x					
Radiological Glovebag Containment		x					x	x	x	x	x	x				x	x	
Rad Glovebag Containment JPM		x					x	x	x	x	x	x				x	x	
Radiological Worker II		x	x	x			x	x	x	x	x	x	x	x	x	x	x	
RCRA Compliance		x	x	x			x	x	x	x	x	x	x	x	x	x	x	
RCRA Tank Custodian Class		x											x	x				
RCRA Waste Management Class		x											x	x				
Radioactive Source Control Knowledge Exam		x																
Rad Safety Training for Uranium													x	x				
RCRA/Waste Generator Annual Trng Cklst		x					x	x	x	x	x	x	x	x	x	x	x	
RCRA/Waste Gen Annual Trng (Train the Trainer Workshop)							x											
Respiratory Protection: PremAire							x	x	x	x	x	x	x	x		x	x	
Respiratory Protection: Respirator Indoctrination User			x	x				x	x	x	x	x		x		x	x	
Respiratory Protection: Respirator Indoctrination Manager		x					x						x					
Respirator Fit		x	x	x			x	x	x	x	x	x	x	x		x	x	
Rocky FlatsQual Process Brochure		x					x						x					
Scaffolding Safety for Builders/Erectors							x				x					x		
Scaffolding Safety for Competent Persons							x											
TID													x	x				
Waste Generator All Areas Class		x					x	x	x	x	x	x	x	x	x	x	x	
Welding Safety							x	x									x	

5.1.4.7 Independent Safety Review.

An independent safety review is a comprehensive safety review performed by technically competent individual(s) or multidisciplinary independent committees to enhance the safety of nuclear facility operations and activities. The individual(s) or majority of committee members involved in the review shall be independent of the operation or item being reviewed. Requirements for an independent safety review are outlined in 1-52000-ADM-02.01, Rocky Flats Administrative Procedures Manual Operations Review Requirement, (Ref. 33).

5.1.4.8 Plan of Week

The POW is used to identify work that will be performed during the next week. A regularly scheduled meeting is held weekly to discuss those planned activities.

5.1.4.9 Plan of the Day

The POD is used to schedule, authorize, and control activities in the facility. It is an important forum for resolving conflicts in scheduling work and providing for discussion about planned activities. Each facility plans and schedules work activities with about a three-month horizon, then refines the planning about a week in advance and translates detail into the POD. The POD includes operations, maintenance, surveillances, inspections, and other activities.

5.1.4.10 Work Release

Once the POD has been established and approved by facility management, a meeting is held early in the shift to release work for the day. The Shift Manager chairs this meeting, during which he or she explains terminations in the facility, identifies radiological areas, and ensures the work to be performed is fully supported.

5.1.4.11 Pre-Evolutionary Briefing and Job Task Briefing

Pre-evolution briefings and job task briefings are performed to ensure that personnel preparing to conduct operations and other work understand what is to be performed, understand the hazards and controls, and have an opportunity to ask questions or raise concerns. The pre-evolution briefing is more formal than the job task briefing. It is a forum for accomplishing ISMS safety functions at the floor level. The pre-evolution briefing provides for feedback as well as for reviewing the scope of work, and reviewing the hazards and the controls to do the work safely. It is also a point in the work process where the required prerequisites are confirmed. A job task briefing is less formal than a pre-evolution briefing. It is conducted by the job foreman and serves as one method by which the ISMS process is implemented on the floor for non-complex, routine, and low hazard work activities. A pre-evolution briefing is documented; a job task briefing is not.

5.2 Criticality Safety

The criticality safety program establishes controls for building activities involving fissionable material. This program includes developing engineered and/or administrative criticality safety controls, monitoring compliance status with established controls that include occurrence investigation and reporting, and maintaining and controlling distribution of technical documents. The program ensures that the criticality safety organization must approve criticality safety controls either through new evaluations or through the Criticality Safety Limit Examination Programs for all activities involving the storage, relocation, and/or processing of fissionable material. The Criticality Safety Program will be implemented in accordance with the DOE's approved RFETS Implementation Plan for the Nuclear Criticality Safety Manual (Ref. 34).

5.3 Radiation Protection

The radiation protection program implements standards, limits, and program requirements for protecting individuals from exposure to radioactive materials. The program is based on the principle of ALARA (i.e., as low as reasonably achievable). Personnel are protected from radioactive materials through radiological surveillance, contamination control, and minimization of exposure. The program provides for personnel dosimetry, surveillance and maintenance of engineered radiation protection systems, the RWP, and area surveillance and posting. Radiological protection for planned activities is ensured through reviews of work control documents, pre-job surveys, and the use of PPE. Personnel exposures are formally tracked, recorded, and reported back to individuals. Radiological monitoring will be performed in accordance with the RFETS HSP Manual, Radiological Control Manual, and Radiological Safety Procedures (RSPs).

5.4 Hazardous Material Protection

Hazardous material protection is accomplished through the H&S Program. This program provides for industrial hygiene and safety (IH&S), which ensures personnel exposures to physical, chemical, and biological hazards in the work environment are controlled. The H&S Program philosophy fosters management accountability and worker involvement. It ensures that supervisors and safety professionals are required to review work areas and the building in general to identify H&S hazards. Program safety and technical reviews are integrated with work control processes to ensure non-radiological H&S hazards (i.e., physical, chemical, biological) are identified and appropriate measures are instituted to protect the worker, such as engineered systems, PPE, and monitoring equipment.

Standards for the hazardous material protection program are defined in 29 CFR Part 1910 (Ref. 23), the HSP Manual, and the Potentially Shock Sensitive/Explosive Chemical Characterization, Management, and Disposal Plan.

70

5.5 Radioactive and Hazardous Waste Management

The waste management, environmental protection, and transportation programs are responsible for radioactive and hazardous waste management at RFETS.

5.5.1 Waste Management and Environmental Protection

The waste management and environmental protection programs provide for managing radioactive and hazardous waste inventories; controlling building effluents; and managing waste generation, storage, treatment, and packaging. These programs, in complying with the standards set by waste management and environmental protection regulations, prevent hazardous and radioactive material spills by ensuring appropriate packaging, inspection, and storage of those materials. These programs aid in the detection of confinement degradation through leak detection practices and routine surveillance and inspection, and assist with appropriate response planning and preparation for events such as hazardous material spills.

5.5.2 Transportation

The transportation program specifies safe and compliant packaging requirements for both onsite and offsite transportation of radioactive and hazardous materials to prevent radioactive and hazardous material release, and to minimize accident consequences. Facility management is ultimately responsible for the safe and compliant packaging of material that is released for transport. The transportation program describes a process for the incorporation of packaging and labeling requirements into work control documents and defines training requirements for personnel involved in packaging and shipment of hazardous materials. Specific to the safe packaging of hazardous materials for shipment, the U.S. Department of Transportation (DOT) regulations define the minimum standards for protecting workers, the public, and the environment from a release of containerized hazardous materials. The RFETS transportation program is implemented through the Rocky Flats Transportation Safety Manuals (Ref. 35).

5.6 Conduct of Operations

The COOP Program (Ref. 29) provides an accurate, disciplined, and formal method for conducting facility operations. It promotes implementation of a set of standards that establish safe operations. Provisions of the program specify that all work is performed by appropriately trained personnel using adequate and controlled procedures, that work is properly supervised, that prior approval of all work is obtained from the Shift Manager or Configuration Control Authority (CCA), and that accountability exists for work performance. The program also provides processes for monitoring facility operations through functions such as log keeping, conduct of rounds, and internal surveillances.

5.7 Fire Protection

The fire protection program provides fire protection engineering, fire hazards analysis, fire prevention requirements (e.g., ignition sources, inspections, training, control of combustibles, transient fire loads, and hot work), and fire response. Fire response plans, training drills, as well

71

as inspection, testing, and maintenance of both engineered fire protection and notification systems ensure personnel safety, fire fighting capability and property loss minimization if a fire should occur. The fire protection program is implemented by the relevant sections of the HSP Manual (Ref. 26).

5.8 Industrial Safety

The industrial safety program contains provisions that implement federal regulations addressing standard industrial hazards. Precedents for controlling standard industrial hazards are well established through institutionalized standards, guidelines, and good practices. In addition, DOE has established its own standards that are identified in DOE Orders. Industrial safety is generally implemented in concert with the hazardous material protection and work control program requirements.

Standards for industrial safety are found in 29 CFR Part 1910 (Ref. 23), portions of 29 CFR 1926 (Ref. 24), and DOE Orders and implemented by the relevant procedures of the HSP Manual (Ref. 26).

5.9 Quality Assurance

The Quality Assurance Program (QAP) assures consistent and appropriate application of quality requirements to the performance of activities using a graded approach. Quality assurance is discussed in Section 10.

5.10 Emergency Preparedness

The emergency preparedness program provides the plans, procedures, and resources necessary to respond to Site emergencies. The program is based on a comprehensive understanding of the hazards and potential radioactive material and hazardous chemical release mechanisms present in the facility.

The program protects facility personnel through management planning, designation of an emergency response organization, and training and drills (site-wide and building-specific) for possible abnormal events including fires, hazardous material spills, inadvertent criticalities, and personnel accountability during facility evacuation. The program provides the necessary trained emergency response personnel to ensure worker and public safety during an abnormal event. Emergency preparedness program elements also include pre-planned actions, prompt and accurate emergency classifications, and timely notifications of the emergency preparedness organization.

The emergency preparedness program is implemented through the RFETS Emergency Plan (Ref. 36), as augmented by the Building 776/777 Emergency Response Operations procedure (Ref. 37).

5.11 Preliminary Hazards Analysis

A Preliminary Hazards Analysis (PHA) has been developed based on the generic activities that are planned decommissioning. The PHA is summarized in Table 11. The PHA documents the hazard identification process for operational activities anticipated to be performed during closure. This PHA will be used with the RLCR to generate detailed AHAs for individual job tasks.

72

Table 11. Preliminary Hazards Analysis

Major Work Task	Hazard	Cause	Preventive Measures (Evaluated on Case-by-Case Basis)
Perform asbestos and lead abatement and clean up activities	Exposure to asbestos airborne and surface contamination fibers that are lung hazards. Exposure to lead materials is hazardous to internal organs of the body.	Improper clean up techniques including: improper tent decontamination or PPE usage. Improper ventilation usage. Improper waste handling and disposal. Lack of adequate engineering controls. Improper characterization.	Obtain services of certified state abatement inspector to plan and supervise the abatement project Ensure all workers are trained as asbestos workers. Ensure all RFETS asbestos/lead prerequisites are met before job commencing. Develop and implement an AHA(s) for the job. Ensure all medical, training and PPE prerequisites are met. Ensure IH&S personnel perform the proper air monitoring sampling during the course of the job. Ensure all posting and clearance sampling is performed. Ensure that all areas are evaluated and properly characterized by SME or competent person.
Perform Be decontamination and cleanup activities	Exposure to Be contamination is a lung hazard. Improper use of equipment can cause extremity or limb damage to workers.	Improper clean up techniques including: Improper tent, decontamination or PPE usage. Improper ventilation usage. Improper waste handling and disposal Lack of adequate engineering controls	Ensure all workers are trained as Be workers Ensure all RFETS Be prerequisites are met prior to job's commencing. Develop and implement an AHA(s) for the job. Ensure all medical, equipment training and PPE prerequisites are met. Ensure the proper air monitoring sampling is performed during the course of the job by IH&S personnel. Ensure all posting and clearance sampling is performed.
Perform radiological decontamination operations	Exposure to radioactive materials internally and externally. Cell damage and damage to internal body organs may occur with over exposures to radioactive materials. Improper use of scabbling or other decontamination equipment can injure extremities or limbs of workers by causing gash or cutting wounds.	Improper cleanup techniques including: Improper tent, decontamination or PPE usage. Improper ventilation usage. Improper waste disposal and handling. Improper training in the use of decontamination equipment.	Ensure all workers are trained as Rad workers. Ensure all RFETS Rad worker prerequisites are met prior to job commencing. Develop and implement an AHA(s) for the job. Ensure all medical, equipment training and PPE prerequisites are met. Ensure the proper air monitoring sampling is performed during the course of the job by radiological operations personnel. Ensure all posting and clearance sampling is performed.

Major Work Task	Hazard	Cause	Preventive Measures (Evaluated on Case-by-Case Basis)
De-energize work areas and remove cables and wiring	Electrical shock to body, cutting of extremities of body parts using wire strippers or other hand tools, fall off ladder or scaffolding if used.	Lockout/Tagout (LO/TO) not used properly, all workers not informed of LO/TO status. Improper use of hand tools, ladders or scaffolding. Improper lighting in room may result in improper use of equipment Lack of As-Built drawings	Utilize LO/TO procedures properly (including verification that energy source has been isolated). Inspect all hand tools before use. Ensure all workers are trained in ladder, scaffolding and fall protection measures before using this equipment Develop and use task specific AHAs. Perform work area walkdown and conduct proper planning meetings and briefings. Follow all IWCP instructions. Ensure all worker training is current.
Move equipment out of rooms to work areas and transport using forklifts, pallet jacks or pick-up trucks.	Back injuries, pinching, and extremity damage by dropping or falling objects. Internal and external body injuries by vehicle impact. Eye injuries by poking or dust particles in eye hazards. Be exposure from contaminated surfaces under equipment.	Improper lifting techniques, job flow not planned properly, pre-job walkdowns not performed, vehicle alarm systems not working, buddy system not used, lack of attention to detail, worker fatigue, no use or improper use of PPE.	Perform pre-job walkdowns. Develop AHA for job tasks. Use buddy system. Ensure vehicle alarm and braking systems are working properly. Utilize PPE properly. Perform proper lifting techniques. Ensure proper job flow is used and job is not rushed. Do not attempt o move items that are stacked too high. Cover all sharp edges. Perform Be pre-job swipe sampling. Use of material handling equipment.
Cut out piping systems in rooms or work areas	Cutting of body limbs or body parts with mechanical equipment. Piping falling on feet, pinch points of rolling pipe, liquid splashes if piping is not drained. Rebound of pipe can cause body injuries. Radiological/chemical exposures.	Improper use of mechanical equipment including no training on specific equipment being used, piping not rigged or restrained properly, piping not drained prior to cutting. Improper engineering controls.	Proper training with cutting equipment. Develop and utilize AHA for job tasks. Rig and restrain piping properly. Utilize pipe caps after cutting to keep debris from falling out and cover sharp edges of pipes after cutting. Ensure piping has been properly taken out of service. Utilize proper PPE as described in the AHA and RWP.

Major Work Task	Hazard	Cause	Preventive Measures (Evaluated on Case-by-Case Basis)
Hoist, rigging and lifting forklift operation	Bodily injuries due to falling objects or pinching of workers due to space limitations.	No rigging plan, improper rigging techniques, improper worker body positioning.	Develop rigging plan. Comply with all RFETS standards for rigging. Develop AHA and implement. Perform pre-job walkdown and conduct pre-evolution briefing. Walkdown rigging path during all phases. Perform pre and post job inspections on all rigging equipment. Ensure all workers are properly trained. Follow all required steps in the IWCP.
Package waste into containers for storage and shipment. Segregate waste to meet WAC.	Pinching of extremities on container lids, barrels rolling on feet, back strains, foot injuries as vehicle wheels impact or roll onto extremities, cuts/gashes of hands by tooling.	Improper lifting and handling techniques, wrong tooling used to put lids on containers, pallet jack or forklift ramming into workers, job rushed or not planned properly. Package does not meet WAC.	Use of trained and certified waste generator as appropriate. Develop AHA and implement. Review lessons learned from previous waste handling operations. Develop proper tool list before starting job. Ensure all waste containers are properly staged before starting job. Ensure all building notifications are made before moving and handling waste. Follow appropriate RFETS requirements for waste handling and movement. Follow all IWCP requirements.
Cut out and remove GBs in rooms or work areas	Pinch points, foot and hand injuries, cutting of hands/arms, eye and head injuries, burning of skin or extremities. Release of radioactive/chemical contamination and inhalation.	Improper use of grinders or no guards on grinders, cramped working conditions, bad lighting, limited vision, breaking of leaded glass, plasma slag burns through clothing, improper use of PPE Improper use of fixatives. Improper use of respirator Improper engineering controls	Proper training with cutting equipment. Develop and utilize AHA for job tasks. Rig and restrain GBs properly. Use pipe caps on GB piping after cutting. Ensure GBs have been properly taken out of service before work starts. Use proper PPE as described in the AHA. Perform tooling and respirator inspections before each use. Follow all IWCP requirements.
Construct and use scaffolding to perform job tasks	Fall hazards, workers struck by falling objects, hand injuries.	No use of fall protections, improper training, no use of PPE, improper use of tooling, improper rigging and transport of scaffolding pieces, no scaffold inspections, scaffold collapse.	Proper training for scaffold erection and use. Fall protection and rigging training. Proper use of PPE. Develop AHA. Perform and document scaffolding inspections. Ensure all scaffolding is tagged properly. Ensure all toeboards and side rails or compensatory measures are in place.

Major Work Task	Hazard	Cause	Preventive Measures (Evaluated on Case-by-Case Basis)
Perform radiological decontamination operations using scabbling machines, hydrolyzing techniques, hand wiping methods or by applying stripcoat decontamination paint	Injuries to hands and feet by gouging, cutting or impact; inhalation, ingestion or skin exposure to radioactive materials and ammonia vapors; electrocution; falls.	Improper or no training on equipment used for decontamination, improper work are ventilation, improper use of PPE, no job planning. No LO/TO of work area No fall protection	Conduct mock up training on decontamination equipment and stripcoat operations. Develop AHA for job tasks. Ensure work area is properly ventilated before apply stripcoat. Ensure LO/TO operations have been performed. Wear prescribed PPE as determined by IH&S and Radiological Protection. Utilize fall protection, when required. Follow all IWCP, AHA and RWP requirements.
Remove HVAC ductwork	Pinch points, cutting hands, fall from scaffold, release of contamination. Exposure to radiological/chemical contamination.	Improper use of cutting equipment. Non-existent of loose guard rail. Improper use of fixatives. Improper use of respirator. Improper use of ventilation	Proper training in us of tools and PPE. Scaffold inspection before use. Develop AHA for job tasks. Training in use of fixatives. Ensure all toeboards and side rails or compensatory measures are in place.
Perform final cleanup of building/structure	Trips, falls, head wounds, pinch points, punctures, contusions, skin contamination, inhalation of radioactive materials.	Housekeeping, falling objects, non-use of PPE, improper use of PPE, sharp edges or sharp objects not protected, no fall protection, improper ladder use.	Perform weekly housekeeping inspections. Utilize fall protection when applicable. Develop AHA for job task. Utilize PPE property and as described by IH&S and Radiological Protection. Follow all ALARA reviews, AHAs, RWP and IWCP requirements. Obtain confined space permits and training when required.
Perform final survey of building	Falls, head wounds, electric shock, abrasions, cuts, pinches.	No fall protections, improper use of instrumentation, working in tight spaces, tripping hazards, bad housekeeping, improper termination of wiring.	Develop AHA for job task. Perform pre-job walkdowns. Utilize fall protection when required. Complete ladder training as required. Utilize two-person rule when working in elevated locations (above 6 feet). Obtain confined space permits and training when required. Follow all AHA and RWP requirements.

6.0 WASTE MANAGEMENT

The following paragraphs present an overview of the waste management strategy for the Building 776/777 Cluster.

6.1 RCRA/CERCLA Transition

Wastes generated during decommissioning will be accumulated, staged, stored, and treated in accordance with this section of the DOP. During decommissioning the distinction between "process waste" and "remediation waste" will be maintained to ensure proper management. Process waste includes all liquid waste chemicals and wastes generated as a result of normal building operations or deactivation activities (e.g., containerized waste generated prior to approval of this DOP [November 5, 1999]; mixed residues; and liquids, sludges, and oils in tanks and ancillary equipment). Remediation waste is all waste, media, and debris generated from decommissioning activities performed under this DOP, all solid waste chemicals (no matter when generated), and residual liquids or sludges remaining in RCRA Stable or Physically Empty tanks. Mod #4

Hazardous and mixed wastes designated as process waste will continue to be managed in compliance with both the substantive and administrative requirements of RCRA, CHWA, CHWR, and the Site's RCRA Part B Permit. Hazardous and mixed wastes designated as remediation waste will be managed in accordance with the Applicable or Relevant and Appropriate Requirements (ARARs) presented in Section 7 of this DOP and with the remediation waste management requirements described in Procedure PRO-1167-Remediation, Management Requirements for Remediation Waste, 707/776/777 Closure Project. The ARARs and Procedure provide project managers and waste management personnel with a level of flexibility appropriate in managing hazardous and mixed wastes during decommissioning. Mod #8

6.2 Waste Types and Volumes

As discussed in Section 2, beginning in 1958 and continuing through 1969, Building 776/777 housed the Site's Pu foundry, fabrication operations, and parts assembly operations. Subsequent to the fire in 1969, the primary function of the building turned to waste and residue handling, disassembly of retired weapons components, special projects, and support operations, such as laboratories. As a result, a variety of regulated wastes are currently managed and stored in Building 776/777, and additional waste will be generated during decommissioning. Table 12 presents a list of the process waste stored in the building on June 1, 1999. Table 13 provides an estimate of the remediation waste types and volumes that will be generated during decommissioning.

Table 12. Building 776/777 Waste Inventory

Waste Type	Number of Packages
Sanitary	35
Non-Rad/Haz	3
Non-Rad/TSCA	2
LLW	297
LL TSCA	3
LLM	74
TRU	227
TRU TSCA	1
TRM	75
RES	1161
REM	540

Source: WEMS Package Inventory Report, 06/01/99

Table 13. Estimate of Wastes to be Generated During Decommissioning

Category	Sub-Category	Container Type	Volume (m^3)*	Proposed Destination
Radioactive Waste				
TRU/TRM Waste				
	Straight TRU	SWB/55 Gallon Drums	2,264	WIPP
	TRU Mixed (TRM)	SWB/Drums	520	WIPP
	TRU/TRM Liquids	Drums	5	Treatment-WIPP or Approved TSD
LLW/LLM Waste				
	Straight LLW (including asbestos)	Crates/Drums	4,969	Nevada Test Site (NTS), Envirocare
	Structural Rubble	Crates/Drums	3,400	NTS, Envirocare
	Contaminated Recycle Metal	Crates/Drums	1,100	Approved Vendor
	TSCA (PCBs)	Drums	1	Approved TSD
	LLW Liquids	Drums	4	Approved TSD**
	LLM	Crates/Drums	500	Approved TSD**
	LLM Liquids	Drums	6	Approved TSD**
Non-Radioactive Waste				
Hazardous Waste				
	RCRA Solids	Crates/Drums	40	Approved TSD
	RCRA Liquids	Drums	4	Approved TSD
TSCA				
	PCBs	Crates/Drums	1	Approved TSD
Sanitary				
	Routine Sanitary	Crates/Drums	809	Sanitary Landfill
	Special Sanitary (Asbestos, Be)	Crates/Drums	10	Approved TSD

* Waste volume estimates include demolished structures.

** Assumed to include on-Site treatment facilities (e.g., RCRA Unit 374.3).

6.2.1 Hazardous Waste

Most of the hazardous waste at RFETS results from routine operations, such as painting, parts cleaning, and equipment maintenance. Building 776/777 currently has a small inventory of hazardous waste in storage and additional small amounts of hazardous waste will be generated during decommissioning activities, resulting in less than 1% of the overall waste generated from the project. Hazardous waste is routinely shipped to off-site commercial facilities for treatment, recycling, and/or disposal.

6.2.2 Low-Level/Low-Level Mixed (LLW/LLM) Wastes

LLW and LLM wastes were generated in Building 776/777 and other RFETS facilities as a result of nuclear weapons component production processes, and they continue to be generated during routine operations in areas where radioactive materials are managed. LLW and LLM waste forms include combustibles, light metals, and liquids. Building 776/777 is currently used to store both LLW and LLM wastes, which will be repackaged, if necessary, and transferred to a treatment and/or storage area in preparation for shipment to Envirocare or the Nevada Test Site (NTS). Additional LLW and LLM waste will be generated during decommissioning. Approximately 55% of the waste produced during decommissioning activities will be LLW and about 18% will be LLM waste.

6.2.3 Transuranic/Transuranic Mixed (TRU/TRM) Wastes

Building 776/777 has an existing inventory of TRU and TRM wastes, which will be repackaged, if necessary, and transferred to a treatment and/or storage area in preparation for shipment to WIPP. Additional TRU/TRM wastes will be generated during decommissioning as GBs and B-boxes used in the fabrication, testing, assembly, coating and disassembly of weapon components and the associated Zone I ventilation systems are dismantled and stripped out. Approximately 17% of the waste generated during decommissioning is expected to be TRU and TRM waste.

6.2.4 Residues/Mixed Residues (RES/REM)

Building 776/777 has an existing inventory of solid and liquid RES and REM, which will be transferred to other RFETS facilities for treatment and/or repackaging in preparation for shipment to WIPP. Approximately 1,700 containers of RES and REM are currently stored in Building 776/777, and about 200 liters of liquid RES/REM remain as holdup in tanks and ancillary equipment. No new RES or REM will be generated during decommissioning.

Liquid REM contained in tanks and ancillary equipment is managed under the terms and conditions of the Mixed Residue Compliance Order on Consent (Ref. 38). The REM tanks in Building 776/777 (Ref. Table 6) are operationally empty. During decommissioning, these tanks will be physically emptied and/or closed according to the Building 776/777 Closure Project Schedule (Ref. Appendix D). During this time, liquids remaining in these tanks may be transferred from tank to tank, drained into four-liter bottles, and stored in gloveboxes for short

79

periods of time, or drained into portable collection carts and staged in various locations, pending transfer to Building 371, Building 374, or Building 774 for processing, or other appropriate unit for treatment. Prior to the transfer or draining of liquids, a request for authorization to temporarily store REM solutions will be submitted to CDPHE's project manager. The request will identify the tanks, gloveboxes, and portable cart staging locations needed to support liquid removal activities. During liquid transfer and draining activities, appropriate controls will be established to prevent the unauthorized mixing of incompatible wastes, including sampling, if necessary.

REM tank inspection frequencies vary, based upon the closure status and particular hazards associated with individual tank systems. Operationally empty tanks are inspected on a daily basis, and physically empty tanks are inspected quarterly. Other inspection frequencies may be determined appropriate on a case-by-case basis. Prior to implementing any change in inspection frequencies, a request for authorization will be submitted to CDPHE's project manager. Inspection frequencies will be documented in the Building 776/777 Operating Record, along with inspection log sheets for these tanks. Tanks will be inspected to verify the absence of a release and to ensure no new liquid or hazardous waste has been added to the tank system. For physically empty tanks, inspections will also verify physical or administrative controls are in place. In the event additional inventory is discovered in a tank, the responsible building manager will be notified and an action plan will be developed to determine the source of the liquid, or schedule a sampling event or other appropriate action to make a hazardous waste determination. If appropriate, the action plan may include draining the liquid from the system. The DOE, Contractor, or Subcontractor project manager will notify CDPHE's project manager of intended corrective actions. In the event of an actual release from a REM tank system, the Site's RCRA Contingency Plan will be followed.

Mod #8

The Mixed Residue Compliance Order on Consent (Ref. 38) will terminate as to each of the mixed residue tanks located in Building 776/777 in accordance with paragraph 66(i) of that Order when the LRA approves a minor modification for each tank as provided for in Section 4.5.2 of this DOP.

6.2.5 Polychlorinated Biphenyls

PCBs may be found in equipment oils, fluorescent light ballasts, dried applied paints, and capacitors. Equipment oils will be managed as "PCB liquids," intact ballasts and dried paints containing PCBs will be managed as "PCB bulk product waste," leaking ballasts and other waste containing PCBs as a result of a spill will be managed as "PCB remediation waste," and capacitors containing PCBs will be managed as "PCB items" in accordance with the substantive requirements of 40 CFR 761 (Ref. 39). A small amount of PCB waste is stored in Building 776/777. Very small amounts will be generated during decommissioning (i.e., <1% of decommissioning waste). This waste will be packaged and transferred to a storage area pending shipment to an approved treatment and/or disposal facility.

6.2.6 Asbestos Containing Material

ACM, in the form of pipe and equipment insulation, mastic, and floor and ceiling tiles, was used extensively in Building 776/777. As discussed in Section 4, ACM will be removed during decommissioning, and packaged and disposed of at an approved solid waste disposal facility. ACM contaminated with low levels of radioactivity will be sent to NTS and ACM contaminated with hazardous waste will be sent to Envirocare. Uncontaminated ACM will be disposed of in an approved sanitary landfill. ACM will constitute approximately 50% of the LLW generated during decommissioning.

6.2.7 Sanitary Waste

Sanitary waste is collected for recycle or disposal at an approved off-site landfill. Approximately 10% of the waste generated from decommissioning activities will be categorized as sanitary waste. This waste category may include Be waste that is not considered hazardous waste (i.e., Be that is not Be powder).

6.2.8 Wastewater

Wastewater generated from decommissioning activities will be collected and characterized to determine the appropriate disposal path. Domestic water; non-hazardous, non-radioactive, non-domestic water (i.e., cooling tower water and boiler blowdown); and non-hazardous, non-radioactive internal waste streams generated during decommissioning will be transferred to the Site sewage treatment plant for processing. Hazardous and/or radioactive wastewater that meets the acceptance criteria of the Building 374 treatment facilities will be collected and transferred to Building 374 for treatment. Hazardous and/or radioactive wastewater that does not meet the acceptance criteria of the Site sewage treatment plant or Building 374 treatment facilities will be managed in temporary units authorized by the CDPHE (Ref. Section 6.5). It is estimated that less than 1% of the waste generated during decommissioning will be categorized as wastewater.

6.2.9 Waste Chemicals

Pursuant to the Waste Chemical Compliance Order on Consent (Ref. 40), the waste chemical roundup was completed for the Building B777/776 Cluster in 1998. To minimize personnel exposure to radioactive contamination, Be, and asbestos, certain waste chemicals were identified as "excluded chemicals" in accordance with ¶22 of the Compliance Order and disposition of these chemicals was deferred to deactivation and/or decommissioning. As shown in Table 14, there are currently 16 areas where "excluded chemicals" are or may be stored.

Excluded chemicals and other chemicals used during decommissioning activities will be managed as follows:

- Areas used to store "excluded chemicals" are posted with signs identifying them as "CONSENT ORDER EXCLUDED AREAs" or they are described in a building Operations Order that includes a requirement to notify a named point of contact prior to entry (Ref. 41).

- No inspections that require entry into a High Contamination Area, Airborne Radioactivity Area, or inoperable glovebox or hood will be performed due to worker radiation exposure concerns and implementation of the ALARA radiation exposure principle. These are the same reasons that these chemicals are considered to be "excluded chemicals" under the Consent Order. Weekly visual observations will be made of each area used to store "excluded chemicals" by looking through windows into the room, glovebox, or hood. For areas where no windows are available, the inspection will be limited to the exterior of the area. Observations will be performed by facility personnel during normal routine facility operations. These visual observations will be non-intrusive in nature. Observations are intended to identify issues such as spills, leaks, swelling, tipped over containers, or other obvious safety or health problems without actual handling of the containers or opening waste chemical storage cabinets. Additionally, the documented weekly visual observations for all "excluded chemicals" will include a review of the Consent Order posting, including verification that the point of contact listed on the posting is current, and a review of whether entry has been or is planned to be made to the area(s). These observations will be documented on a weekly inspection log sheet, a copy of which is contained in Appendix E of this DOP. Any issues identified will be addressed and corrected in accordance with applicable Site procedures (Ref. 40).
- Potentially shock sensitive/explosive waste chemicals will be managed in accordance with the Potentially Shock Sensitive/Explosive Chemical Characterization, Management, and Disposal Plan. (Ref. 42).
- Safety-related documents allowing entry or work in an area containing "excluded chemicals" take into account the risks associated with the waste chemicals that may be stored in the area (Ref. 41).
- Liquid waste chemicals will be characterized in accordance with 6 CCR 1007-3, Part 262.11, and managed as process waste under RCRA/CHWA.
- Solid waste chemicals will be characterized to determine the appropriate ARARs and managed as remediation waste.
- Waste chemicals will be disposed of at approved disposal facilities.

In accordance with its terms, the Waste Chemical Compliance Order is hereby terminated as to each excluded area identified in Table 14.

Table 14. "Excluded Chemical" Areas in Building 776/777

Bldg.	Location	SET#	Reason for Exclusion	Status
776	Rm. 134W, TA & RDA	66	TA & RDA - High Contamination Areas	Chemicals present
776	Rm. 135, FBI GBs	61	Inoperable Gloveboxes	Unknown if chemicals present
776	Rm 146	60	High Contamination Area	Unknown if chemicals present
776	Rm. 146A	60	High Contamination Area	Unknown if chemicals present
776	Rm. 146C	60	High Contamination Area	Unknown if chemicals present
777	Rm. 125, GB550*160	1	Inoperable Glovebox	Chemicals present
777	Rm. 131, GB207-110	6	Inoperable Glovebox	Chemicals present
777	Rm. 430, GB207*758	24	Inoperable Glovebox	Chemicals present
777	Rm. 430, GB399	21	Inoperable Glovebox	Chemicals present
777	Rm. 430, GB451	22	Inoperable Glovebox	Chemicals present
777	Rm. 432B	27	High Contamination Area	Unknown if chemicals present
777	Rm. 452, GB034	34	Inoperable Glovebox	Chemicals present
777	Rm. 452, GB541	35	Inoperable Glovebox	Chemicals present
777	Rm. 452, Downdraft	35	Out of Service (Red Tag)	Unknown if chemicals present
777	Rm. 445, Hood #28	33	High Contamination Area, Out of Service (Red Tag)	Chemicals present
777	Rm. 445, Hood #29	33	High Contamination Area, Out of Service (Red Tag)	Chemicals present

6.2.10 Idle Equipment

Idle equipment containing hazardous materials is managed under the Idle Equipment Compliance Order on Consent (Ref. 43). The substantive requirements for the previously identified idle equipment listed in Table 15, and any idle equipment discovered during deactivation and decommissioning, are as follows:

- Fluids will be drained from idle equipment (e.g., oils, cutting fluids).
- Fluids will be characterized in accordance with 6 CCR 1007-3, Part 262.11.

Table 15. Building 776/777 Idle Equipment with Hazardous Materials Inventory

Room	Idle Equipment Number	SET#	Description	Material	Quantity
2nd Floor	776-0007	48	S-6 Kathbar Unit, EP-6 Economizer Pump Tank (NDT#2758), C-6 Conditioner Pump Tank, Accumulator Tank (NDT#2759), Conditioner Regenerator Tank	Condensate water, lead	Empty
2nd Floor	776-0010	48	Kathbar System, Units A&B	Condensate water, lead	Varies
118G	776-0018	81	FBI Production Unit, Tank (NDT#2476)	Methyl Alcohol	Empty
Outside	776-0045	81	Aboveground Diesel Fuel Tank	Diesel Fuel	Empty
ModLab	777-0003	49	Lapping Center	Beryllium	Empty
131	777-0018	4	Monarch Lathe (GB-605)	Oil, Carbon Tetrachloride & Pu Chips	Empty
131	777-0020	4	Machine Lathe (GB-612)	Carbon Tetrachloride	Empty
131	777-0021	5	Machine Lathe (GB-614)	Oil, Carbon Tetrachloride & Pu Chips	Empty
131	777-0023	5	Machining Box (GB-616)	Oil, Carbon Tetrachloride & Pu Chips	Empty
131	777-0025	5	Harding X-Lathe (GB-620)	Oil, Carbon Tetrachloride & Pu Chips	Empty
131	777-0026	5	Storage Box (GB-621)	Oil, Carbon Tetrachloride & Pu Chips	Empty
131	777-0027	6	Jig Bore (GB-626)	Oil, Carbon Tetrachloride & Pu Chips	Empty
131	777-0028	6	Small Lathe (GB-627)	Oil, Carbon Tetrachloride & Pu Chips	Empty
131	777-0029	6	Briquetting Press (GB-630)	Oil, Carbon Tetrachloride & Pu Chips	Empty
131	777-0031	6	Sheffield Sweep Gage & Storage Box (GB-632)	Carbon Tet., Freon TF, Lube Oils, Duct Sealers, Noucure 28 Catalyst or Polygel	Empty
131	777-0033	6	Five-Axis Mill (GB-636)	Oil, Carbon Tetrachloride & Pu	Empty
131, 430, 134A	777-0035	78	Carbon Tetrachloride Supply System	Carbon Tetrachloride	Empty
131, 415, 430, 437, 452	777-0037	78	TCA Supply System (Ultrasonic Cleaning Process)	TCA	Empty
134A	777-0038	11	Excello Lathe (GB-746)	Oil, Carbon Tetrachloride & Pu	Empty
134A	777-0039	11	Pneumo Lathe (GB-747)	Oil, Carbon Tetrachloride & Pu	Empty
134A	777-0040	11	Excello Lathe (GB-748)	Oil, Carbon Tetrachloride & Pu	Empty
134A	777-0041	11	Pneumo Lathe	Oil, Carbon Tetrachloride & Pu	Empty
134A	777-0042	10	Drill Press (GB-752)	Oil, Carbon Tetrachloride & Pu	Empty
430	777-0045	18	Equipment (GB-368)	TCA	Empty
430	777-0046	18	Freon Tank, Old Density Balance	TCA, Freon	Empty

84

Room	Idle Equipment Number	SET#	Description	Material	Quantity
430	777-0051	21	Ultrasonic Vapor Cleaner (including ancillary piping to first valve) (GB-426)	TCA	Empty
430	777-0054	22	Ultrasonic Vapor Cleaner (including ancillary piping to first valve) (GB-446)	TCA	Empty
430	777-0056	18	Ultrasonic Vapor Cleaner (including ancillary piping to first valve) (GB-465)	TCA	Empty
430	777-0057	24	Zeiss (GB-756)	Nyes Watch Oil, Carbon Tetrachloride	Empty
430	777-0058	24	Sheffield Sweep Gage (GB-758)	Freon TF, Lube Oil, Duct Sealers, Noucure 28 Catalyst or Polygel	Empty
437	777-0065	29	Grit Blasting Unit and Ultrasonic Cleaner (including ancillary piping to first valve) (GB-A2)	TCA, Metals from Blasting	Empty
437	777-0066	29	Ultrasonic Vapor Cleaner (including ancillary piping to first valve) (GB-A3)	TCA	Empty
440	777-0067	27	Ultrasonic Cleaner, TRIC Lines	TCA	Empty
447	777-0083	32	X-OMAT Processor Tank (NDT#2470)	Process Developer Replenisher	Empty
447	777-0084	32	X-OMAT Processor Tank (NDT#2471)	Fixer Replenisher	Empty
452	777-0090	35	Ultrasonic Vapor Cleaner (including ancillary piping to first valve) (GB-524)	TCA	Empty

- If the fluid is oil that has not been mixed with a hazardous waste, it will be managed as used oil for recycle, subject to the substantive requirements of 6 CCR 1007-3, Part 279. The substantive requirements include container labeling (i.e., USED OIL), container storage, and release response requirements.
- If the fluid is oil containing >50 ppm PCBs, it will be managed as a PCB liquid under the substantive requirements of 40 CFR 761.
- Drained equipment will be evaluated to determine final disposition as a product (i.e., transfer to Property Utilization & Disposal [PU&D]), scrap metal, or waste.

In accordance with its terms, the Idle Equipment Compliance Order on Consent is hereby terminated as to each piece of idle equipment listed in Table 15.

6.3 Wastes Requiring Further Processing Prior to Off-Site Disposal

Most of the remediation waste generated during decommissioning will be the same or similar to routine waste for which there is a clear disposal path. However, as described below, certain LLM waste and TRU/TRM waste will require further processing prior to off-site shipment and disposal. At this time, the only treatment processes planned for Buildings 776/777 and/or 730 are processes identified in the RCRA Part B Permit and debris treatment, as described in Section 4.5.1.2. In the event additional treatment system(s) must be added to treat remediation waste in Building 776/777 or 730, they will be managed in accordance with Procedure PRO-1167-Remediation, Management Requirements for Remediation Waste, 707/776/777 Closure Project, including, if applicable, submittal of a minor modification to this DOP. The LRA will be consulted when determining if a

Mods #7, #8

minor modification is necessary for remediation waste treatment, with the exception of generator treatment, as specified in the Procedure.

6.3.1 LLM Wastes Managed under the Site Treatment Plan

Mod #8

Non-LDR compliant waste streams for which treatment has not been identified are regulated under the Site Treatment Plan (STP).

The following non-LDR compliant LLM remediation waste may be generated during decommissioning:

- Radioactive lead solids,
- F-listed tanks and piping,
- Heterogeneous debris,
- Oils, liquids, and solids regulated by both TSCA and RCRA,
- Oils regulated by RCRA,
- Bypass and legacy sludges and wet slurries, and
- Waste chemicals including acids, bases, neutrals, and organic solutions.

Mod #8

Wastes identified as being regulated under the STP consent order will be statused in the quarterly STP progress reports as well as the annual STP Report to CDPHE.

6.3.2 TRU Sludges and TRU/TRM Oils

Certain TRU sludges in tanks and containers, and TRU/TRM oils will require processing to meet the WIPP WAC. The TRU sludges in tanks and containers include filter sludge (IDC 290), laboratory fluoride sludge (IDC 291), incinerator sludge (IDC 292), miscellaneous inorganic sludge (IDC 299), and sludge from the size reduction vault (IDC 340). These sludges will be dried and packaged for shipment to WIPP.

Some TRU/TRM oils that were used as coolants in machining operations in Building 776/777 are contaminated with solvents such as carbon tetrachloride and trichloroethylene. Currently, there is no disposal path for these oils.

Mod #4

Mod #7

6.4 Waste Disposal

Facilities accepting process and remediation waste must meet the requirements of the CERCLA "off-site rule" (Ref. 44). The primary purpose of the "off-site rule" is to clarify and codify the CERCLA requirement to prevent waste generated from remediation activities conducted under a CERCLA action from contributing to present or future environmental problems at off-site waste management facilities. Only facilities meeting EPA's acceptability criteria may be used for off-site management of remediation waste.

Mod #7

6.5 Waste Minimization and Recycling

Waste minimization and recycling will be integrated into the planning and management of the remediation waste generated during decommissioning. Project management will incorporate waste minimization practices into work procedures. Unnecessary generation of sanitary,

hazardous, LL/LLM, TRU/TRM, and TSCA waste will be controlled using work techniques that prevent the contamination of areas and equipment; preventing unnecessary packaging, tools, and equipment from entering radiological contaminated areas; and reusing contaminated tools and equipment when practical.

Standard decontamination operations and processes will be evaluated for waste minimization potential and suitable minimization techniques will be implemented. Property with radiological contamination or property containing hazardous materials may be reused or recycled onsite, offsite by other DOE facilities, or by publicly or privately owned facilities that have proper authorization for receiving it.

Recycling options that may be considered for decommissioning wastes are listed in Table 16. Materials will be recycled based on availability of appropriate recycle technologies, availability of approved facilities, and cost effectiveness. An estimated 3,900 m^3 of structural rubble (i.e., concrete) will be generated during decommissioning. Concrete that meets the free-release criteria prescribed by the RFETS DDCP will be recycled as fill material to contour the land when decommissioning activities are completed. Concrete not meeting the free-release criteria will be disposed of at an approved disposal facility.

Table 16. Material Recycling Options

Waste Stream	Recycle Option	Comments
"Clean" scrap metal (not radioactively contaminated and not considered hazardous in accordance with RCRA)	Recycled through approved scrap metal vendors or via contract.	Material must meet receiving facility's WAC.
Radioactively contaminated scrap metal	Recycled by means of metal melt process vendors or contract.	Material must not exceed contamination types and levels identified in the receiving facility's WAC.
Mixed scrap material (radioactively contaminated scrap metal mixed with hazardous constituents)	None	Currently trying to locate and approve facilities that can manage this type of waste.
Clean building rubble/debris	Proposed reuse as backfill; not yet an approved option.	Must meet criteria to be established in RFCA Standard Operating Protocol.
Clean wiring and other electrical components.	Recycled through approved commercial facilities.	Material must not exceed contamination types and levels identified in the receiving facility 's WAC.
Clean bulk plastics and glass	Recycled through approved commercial facilities.	Material must not exceed contamination types and levels identified in the receiving facility's WAC.
Used lead acid batteries	Recycled through approved commercial recycling facilities	Material must meet receiving facility's WAC.
Used oil	Recycled through approved commercial fuel blending facilities.	Material must meet receiving facility's WAC.

7.0 APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS

To the maximum extent possible, decommissioning activities must comply with the Applicable or Relevant and Appropriate Requirements (ARARs) under the Comprehensive Response Compensation and Liability Act (CERCLA) (Ref. 45). ARARs have been identified for the complete scope of decommissioning activities, including demolition. The ARARs are listed in Appendix F.

Pursuant to ¶16 and ¶17 of RFCA, the procedural requirements to obtain federal, state, or local permits are waived as long as the substantive requirements that would have been imposed by the permit process are identified. Furthermore, the method used to comply with the substantive requirements must be explained. The permits that will be waived for decommissioning activities in the Building 776/777 Cluster are the RCRA Part B permits for storage, treatment, and temporary units. The methods used to meet the substantive requirements imposed by the permit process are described in Sections 4.5, 6.1 through 6.6, and 7.3 through 7.5.

The following paragraphs describe how the ARARs will be applied to decommissioning activities in the B776/777 Cluster. They are intended to complement other descriptions in the DOP in a manner that satisfies the RFCA permit waiver requirements.

7.1 Air

Closure activities have the potential to generate particulate, radionuclide, fugitive dust, and hazardous air pollutant emissions. Subpart H of 40 CFR 61 contains the requirements for monitoring and reporting activities within DOE facilities that have the potential to emit radionuclides other than radon. Building 776/777 is subject to effluent monitoring of radionuclides due to holdup in ducts and GBs. 5 CCR 1001-3, Regulation No. 1, (Ref. 46) governs opacity and particulate emissions. Regulation No. 1, Section II, addresses opacity and prohibits stack emissions from fuel-fired equipment exceeding 20% opacity. Regulation No. 1, Section III, addresses the control of particulate emissions. Fugitive particulate emissions will be generated from demolition and transportation activities. Control methods for fugitive particulate emissions should be practical, economically reasonable and technologically feasible. During demolition activities, dust minimization techniques, such as water sprays, may be used to minimize suspension of particulates. In addition, demolition operations will not be conducted during periods of high wind. The substantive requirements will be incorporated into a control plan that defines the level of air monitoring and particulate control for the project.

5 CCR 1001-3, Regulation No. 3, (Ref. 47), provides CDPHE with the authority to authority inventory emissions. Regulation No. 3, Part A, describes Air Pollutant Emission Notice (APEN) requirements. If applicable, RFETS will prepare an APEN to facilitate the CDPHE inventory process.

7.2 Solid Waste

Mod #4 | Non-radioactive, non-hazardous wastes will be managed in compliance with the substantive requirements of CDPHE regulations pertaining to solid waste management and disposal (6 CCR

88

1007-2), (Ref. 48). Hazardous and mixed wastes designated as "process waste" will be managed in accordance with the substantive and administrative requirements of RCRA, CHWA, CHWR, and the Site's RCRA Part B Permit. Hazardous and mixed wastes designated as "remediation waste" will be managed in accordance with the substantive requirements of RCRA, CHWA, and the CHWR, which are listed in Appendix F of this DOP and included in Procedure PRO-1167-Remediation, Management Requirements for Remediation Waste, 707/776/777 Closure Project. Mod #8

7.3 *Deleted (Mod #4)* Mod #4

7.4 Wastewater

Wastewater generated from decommissioning activities will be collected and characterized to determine the appropriate disposal path. Domestic water; non-hazardous, non-radioactive, non-domestic water (i.e., cooling tower water and boiler blowdown); and non-hazardous, non-radioactive internal waste streams generated during decommissioning will be transferred to the Site sewage treatment plant for processing. Hazardous and/or radioactive wastewater that meets the acceptance criteria of the Building 374 treatment facilities will be collected and transferred to Building 374 for treatment. Hazardous and/or radioactive wastewater that does not meet the acceptance criteria of the Site sewage treatment plant or Building 374 treatment facilities will be managed in temporary units authorized by CDPHE (see Section 6.5).

7.5 Asbestos Containing Material

ACM will be managed in accordance with 5 CCR 1001-10, Regulation 8. Specifically, Section III, C.7.6, provides maximum allowable asbestos levels and sections C.8.2(b), (d) and (f) provide requirements for handling asbestos waste materials.

7.6 Polychlorinated Biphenyls

PCBs will be managed in accordance with the substantive requirements of 40 CFR Part 761, Disposal of Polychlorinated Biphenyls. Radiologically contaminated PCBs will be managed in conformance with applicable Federal Facilities Compliance Agreement (FFCA) requirements until a final storage facility is approved.

7.7 Migratory Birds

Closure activities may impact migratory birds protected by the Migratory Bird Treaty Act (Ref. 49), and the Fish and Wildlife Conservation Act (Ref. 50). Due to the variations in potential impacts depending upon the season and the nesting schedules for migratory birds, the substantive requirements of these federal statutes, as they apply to federal facilities, will be evaluated prior to conducting the actions associated with decommissioning. The substantive requirements identified during the evaluation will be implemented in accordance with the statues and associated regulations.

8.0 ENVIRONMENTAL CONSEQUENCES OF ACTION

The following paragraphs summarize the results of the environmental impact analysis, which was performed for the full scope of the Building 776/777 Closure Project. The environmental consequences of the entire project are considered from the beginning to ensure the cumulative impacts resulting from each stage of the project are acceptable. ES&H controls and monitoring for demolition are discussed in the Demolition Plan in Appendix I.

Mod #10

8.1 Environmental Impact Issues

As described in earlier sections, Buildings 776/777 and 730 are located entirely within the Protected Area of the Site's Industrial Area (Ref. Figure 3). Initial investigations show that many interior surfaces, process drains, piping, GBs, filters, sumps, and other equipment are radioactively contaminated.

The proposed closure activities for Building 776/777 include asbestos abatement; decontamination of interior surfaces and equipment by vacuuming and wiping; disconnection of electrical power; draining of piping systems and equipment; removal of GBs and other equipment; further decontamination by wiping, washing, scabbling, and other methods; and dismantling and demolition of the buildings. Proposed closure activities for Building 730 include decontamination and removal of equipment. Given the existing environment and industrial setting, environmental impact issues associated with the Building 776/777 Closure Project are relatively limited. The proposed activities should not result in discernible long-term adverse effects to biological resources, including vegetation, wetlands, wildlife habitat, and state and federal sensitive (e.g., threatened and endangered) species populations or habitat. The buildings to be closed are not located in a floodplain and the proposed activities will not affect or be affected by any floodplain. No wild and scenic rivers, prime agricultural soils, parks, or conservation areas will be affected. The proposed activities will provide employment for a limited number of people, most from the current Site work force. Thus, the activities are unlikely to result in adverse socioeconomic effects. The removal of the buildings will not be noticeable off site and will not result in major visual changes.

Therefore, the discussion of impact issues focuses on other areas of potential environmental impacts in addition to potential worker and public impacts. These impacts are as follows:

- Mobilization of radioactive and other contaminants into soil, air, surface water, or ground water;
- The H&S of workers who may be exposed to radioactive, toxic or hazardous materials (including lead, asbestos, and PCBs), and the H&S of the public, resulting from normal closure activities as well as accidents;
- The physical removal of Building 776/777 as an historic structure eligible for the National Register of Historic Places and a secondary contributor to a potential Historic District comprised of Cold War Era facilities at Rocky Flats; and
- This project's contribution to site-wide cumulative impacts.

8.2 Relative Impacts

As summarized in Table 17 and discussed in this section and in Section 3, the different alternatives have relative impacts on the Site and the surrounding area. Information presented in Table 17 is based on the Cumulative Impact Document (CID) coverage of relative impacts on environmental consequences and DOE policy to the extent practicable. Supporting documentation for this table can be found in Section 3.

8.3 Geology and Soils

Decommissioning activities in the Building 776/777 Closure Project will disturb minor land acreage, most of which has been previously disturbed. There will be a short-term increase in soil erosion and siltation surrounding building drainage pathways. Small, temporary losses of soil productivity may occur from construction activities and vehicle movement. Volatile organic compounds and radionuclide contamination already exist in the Building 776/777 footprint and adjacent areas. Additional contamination of soil from closure activities will be kept as low as reasonably achievable because building structures will be decontaminated or contamination will be fixed before the structures are demolished. Potential soil contamination is discussed in the Demolition Plan in Appendix I, and will be included in the project-specific characterization plans and report.

Mod #10

8.4 Air Quality

Potential impacts to air quality resulting from the closure of Buildings 776/777 and 730 include:

- Asbestos,
- Be and radionuclide emissions resulting from the decontamination and removal of equipment and building material,
- Hazardous air pollutants from the removal of waste oil collection and organic solvent tanks, and
- Fugitive dust emissions resulting from transportation activities associated with the closure and demolition activities.

Air emissions from these activities will be controlled and monitored in accordance with the Site H&S Program and air quality ARARs presented in Section 7. Controls to be used for individual decommissioning projects will be selected during the planning and engineering phase of the IWCP process and described in the associated IWCP work packages.

Asbestos is present in several areas, primarily in the form of pipe insulation. This material will be removed in accordance with applicable state and federal regulations. There is minimal risk of an asbestos release to the air if the removal, transportation, and final disposition is in accordance with applicable regulations.

91

Table 17. Comparison Summary of NEPA Relative Impacts

Consequences	Decommissioning	No Action With Safe Shutdown	Reuse
1. Human Health *Consequences include radiological and non-radiological safety for workers and public*			
1.1 Radiological for workers and public	Annual exposures are expected to decline once the facility is decontaminated. Specific information is contained in section 8.5.	As the facility continues to age, the potential release of contamination within the building increases over time due to the levels 279 production GBs, connecting stations, and conveyors.	Significant radiological contamination exists from the 1969 fire, 279 production GBs, connecting stations, and conveyors.
1.2 Non radiological for workers and public	Hazards will increase until closure is completed, then fall below any substantial hazard level. Specific information is contained in section 8.6.	Hazards will continue to exist and as the facility ages additional hazards will increase. Be, lead, heavy metals, asbestos, and chemicals exist that would be extremely difficult to stabilize.	Hazards will continue to exist and as the facility ages additional hazards will increase. Be, lead, heavy metals, asbestos, and chemicals exist that would be extremely difficult to stabilize.
2. Worker Safety *Consequences include H&S issues for the worker and the environment*	Hazards will increase until closure is completed, then fall below any substantial hazard level.	Identified hazards will continue to exist. Breaches to equipment from age will cause release of contaminants subjecting the worker to additional hazards.	Identified hazards will continue to exist. Breaches to equipment from age will cause release of contaminants subjecting the worker to additional hazards.
3. Environment *Consequences include environmental, socioeconomic, and cumulative impacts*	These consequences will decrease once remediation is complete. The proposed activities should not result in discernible long term adverse effects to biological resources, including vegetation, wetlands, wildlife habitat, and state and federal sensitive (e.g., threatened and endangered) species populations or habitat. Specific information is outlined in sections 8.1, 8.2, 8.3, 8.7, 8.8, 8.10, 8.11, 8.12, 8.13.	Identified hazards will continue to exist and as the facility ages additional hazards will increase.	Identified hazards will continue to exist. Breaches to equipment from age will cause release of contaminants subjecting the worker and the environment to additional hazards.

Decontamination, size reduction, removal, and ultimate disposal of equipment and materials in Buildings 776/777 and 730 have the potential to release radionuclides and residual chemical vapors to the air. Decontamination and size reduction activities take place within containment (either GB, B-box, or hood) equipped with HEPA filters. In addition, the building room exhaust is equipped with HEPA filters.

Rad-National Emission Standards for Hazardous Air Pollutants (NESHAP) [40 CFR 61, Subpart H, (Ref. 51)] requires that air emissions be monitored from any source having estimated uncontrolled radioactive air emissions that exceed 0.1 mrem/ year effective dose equivalent to any member of the public. Many of the decommissioning activities have a potential for uncontrolled radionuclide air emissions that exceed the 0.1 mrem/year monitoring threshold. As necessary, monitoring will be performed utilizing the existing effluent stack monitors, the existing Radioactive Ambient Air Monitoring Program network, and/ or project-specific air monitoring methods described in the Site Integrated Monitoring Plan. Building ventilation will be modified to utilize existing monitored plenum systems to satisfy monitoring requirements, if necessary.

8.5 Water Quality

The Building 776/777 Closure Project activities are not expected to change storm water runoff, surface water flow characteristics, or ground water. This is because no buildings will be removed below ground level and for reasons discussed below.

Potential impacts to storm water runoff resulting from closure activities include the release of liquids via drains or doors that have direct access to the outdoor environment. It is unlikely this will happen since the IWCP/ISM process discussed in Section 5 will be used. Decommissioning activities that may lead to the release of liquids will be identified to ensure drains and/or doorways are appropriately blocked.

Techniques under consideration for decontamination of the Building 776/777 equipment include the use of water or steam to remove radiological contamination and loose debris. This decontamination technique would be used while the building shell and utility support systems are still intact. While this technique is effective in removing radiological contamination, it may also generate large volumes of potentially contaminated water and may even contribute to the spread of radiological contamination inside the building. Contaminated water will be sampled before release or transfer to Building 374. Ground water should not be affected since no work will be performed outside the facility or below ground level.

Because portions of ancillary structures off ground level (e.g., cargo containers) will be removed, some new bare ground is expected to be exposed to wind and water erosion, and surface water flow characteristics may be impacted. If appropriate, silt fencing or a similar protective device may be installed to prevent or minimize the possibility of water-borne soil leaving the immediate area and entering drainage ways.

8.6 Human Health Impacts

Because the nature of closure work is to remove or fix contamination in place, closure activities have the potential to expose involved workers, non-involved workers, and the public to radiological and other chemical contamination. Disturbance of contaminants or hazardous materials increases the

chance of the contaminants or materials to be dislodged, become airborne, and be inhaled by or deposited on humans.

8.7 Radiological Impacts to Workers and the Public

Radiological dose calculations for the public and workers are based on information in the Rocky Flats CID (Ref. 52). The CID radiological dose calculations are based on a 100,000 square foot generic Pu processing facility representative of Pu processing facilities at RFETS. In comparison to the generic facility, Building 776/777 is approximately 224, 600 ft^2. As a result, the dose rates to the workers and public in the CID have been proportionately scaled up to estimate worker and public health impacts for Building 776/777. No other adjustments are needed because the assumptions used for the CID calculations were similar to conditions for Building 776/777 closure (i.e., work crew sizes, activities, and schedules are similar in both cases).

For involved workers, closure activities in Building 776/777 are estimated to result in a total dose of 132 person radiation equivalent man (rem). This exposure is expected to result in less than one (0.05) latent cancer fatalities, assuming the same worker group of 24 people conduct both deactivation and decommissioning activities. This is a conservative estimate since work crews will be assigned so individual workers will be protected in accordance with the Site's 750 mrem per year individual dose administrative control level. Doses to co-located workers from closure operations in Building 776/777 alone have not been evaluated. However, the annual radiological exposure of a maximally exposed co-located (unprotected) worker as a result of site-wide closure activities is estimated at 5.4 mrem (a mrem is 1/1000 of a rem). The corresponding risk of a latent cancer fatality to this worker is two in 1,000,000 (CID, Section 5.8.1 [Ref. 52]).

Annual dose to the maximally exposed off-site individual from Site closure activities is estimated at 0.23 mrem, with a corresponding excess latent cancer fatality of 1 in 10,000,000. The annual dose to the public as a result of all activities in the RFETS Closure Project at the peak time of exposure (1997 - 2006), is expected to be a total of 23 rem for the 2.7 million people projected to be living within 50 miles of the Site in 2006. This annual dose of 23 person-rem is expected to result in less than one (0.01) latent cancer fatality in the entire Denver area population. Estimated annual dose to the maximally exposed off-site individual is well below the applicable standard of 10 mrem/year (CID, Section 5.8.2, [Ref. 52]).

Estimated doses to the maximally exposed offsite individual from the Building 776/777 Closure Project are expected to be a small fraction of the estimates for site-wide activities, as described above. For comparison purposes, the DOE annual limit for occupational exposure as a result of all activities and through all exposure pathways is 5,000 mrem (5 rem) per person. Natural background radiation in the Denver area results in an annual exposure of approximately 350 mrem per person. Exposures to workers and the public will be controlled and monitored in accordance with the RFETS Radiation Safety Program.

8.8 Non-Radiological Health Impacts

Non-radiological health effects from exposure to chemicals are measured by a hazard index. A hazard index greater than one is considered to be a basis for concern, and the greater the index is above one, the greater the level of concern.

For the full suite of Site closure activities, including closure of all buildings, a hazard index of 1.2 has been calculated for a co-located worker who is chronically exposed during working hours to all chemicals of concern simultaneously (as described in the CID, (Ref. 52]) over the entire period of Site closure. The corresponding cancer risk is five in 100,000 (CID Section 5.8.3, [Ref. 52]). For the full suite of Site closure activities, including closure of all buildings, a hazard index of 1.5 has been calculated for a member of the public who is chronically exposed every day for 70 years to all chemicals of concern (as described in the CID) simultaneously (a highly unlikely event). A more reasonable scenario of exposure to a single chemical showed hazard indices of well below one for each potentially released chemical. Analysis of potentially carcinogenic air pollutants indicates a cancer risk of three in 10,000,000 for the maximally exposed off-site individual (CID Section 5.8.4, [Ref. 52]).

Estimated non-radiological impacts from the Building 776/777 Closure Project are expected to be a fraction of those estimated for site-wide activities, as described above. Exposures to workers and the public will be controlled and monitored in accordance with the RFETS toxic/hazardous materials and chemical safety program.

8.9 Occupational Hazards

In addition to exposure to radiological and chemical hazards, workers at the Site are exposed to a variety of industrial hazards such as heavy machinery, repetitive motion tasks, and physical agents such as heat and cold. Using a general industry rate for construction to estimate injury and illness cases, Site closure activities are estimated to result in 584 cases of injury and illness during the peak activity period (1997 through 2006), (CID, Section 5.8.3, [Ref.52]). The portion of these cases estimated to result from the Building 776/777 closure alone would be less than the total Site figure.

The general industry rate of injury and illness is considerably higher than the historic incidence rate for the Site. Occupational hazards will be controlled, mitigated, and monitored in accordance with the RFETS occupational health and industrial safety programs.

8.10 Plants and Animals

Because the Building 776/777 Closure Project is located in the previously disturbed Industrial Area, impacts to plants and animals are expected to be minimal. Possible minor impacts to other vegetative areas may result as fugitive dust may distribute undesirable materials among existing plant species. Additional impacts may occur to vegetation due to increased traffic involving closure equipment. Increased traffic, both vehicular and pedestrian, could result in some vegetation disturbance.

Some mammals such as rats, mice, rabbits and raccoons are known to be residents of or visitors to the Industrial Area. These mammals will be displaced, and some mortality will occur as a result of closure activities. Bird nests attached to buildings planned for demolition will be destroyed. Due to

the proximity Building 776/777 to the segment of Walnut Creek drainage located in the Protected Area, this action may generate dust and sediment runoff that could reach the creek. The activities may therefore require consultation with the U.S. Fish and Wildlife Service for downstream impacts to the Preble's meadow jumping mouse habitat. The Preble's meadow jumping mouse is a federally-listed threatened species under the Endangered Species Act (Ref. 53). Mitigation measures will be determined in consultation with the U.S. Fish and Wildlife Service.

8.11 Waste Management

Environmental impact issues associated with waste management are related to human health issues, storage capacities, and transportation. In general, waste generated from the Building 776/777 Closure Project will include contaminated and uncontaminated equipment, tools, electrical conduit systems, piping systems, GBs, and facility structural materials.

Items not radiologicallly contaminated or those decontaminated to a free-release condition may be transferred for use at a different location within RFETS, for use at a different DOE facility, or sent to the PU&D organization for appropriate handling. Items that cannot be decontaminated to a free-release condition will be managed as waste, or reused onsite or at another DOE facility in accordance with applicable release criteria. On-site storage of mixed waste will be in accordance with approved Site procedures until the material can be shipped for off-site disposal. Waste will be characterized, stored, and disposed of in accordance with the requirements of approved Site waste management procedures that meets federal and state regulations.

Waste minimization will be practiced in the planning and management of the Building 776/777 Closure Project waste. Elimination and reduction of waste generated as a result of closure is a high priority. Standard decontamination operations and processes will be evaluated for waste minimization potential and suitable minimization techniques will be implemented.

8.12 Historic Resources

The impacts related to historical resources are the loss of Building 776/777 as an historic structure eligible for the National Register of Historic Places, and a secondary contributor to a potential Historic District comprised of Cold War Era facilities.

Sixty-four buildings within the Site's Industrial Area, including Building 776/777, have been identified as important to the historic role of the Site in manufacturing nuclear weapons components during the Cold War. Building 776/777 was originally constructed in 1951, with a number of additions between 1962 and 1974. While this building, like the others, is less than 50 years old, it is considered historically significant as an essential component of the weapons production activities at Rocky Flats.

Negotiations have been completed between DOE and the State Historic Preservation Officer (SHPO) concerning the appropriate mitigation measures that apply to these buildings. As a result, Building 776/777 will be subject only to documentation requirements (collection or creation of construction drawings and photographs), rather than preservation. However, the building may not be modified or damaged before completion of documentation, per standards accepted by the SHPO.

8.13 Noise

Closure and demolition of Buildings 776/777 and 730 are not expected to significantly increase noise levels in the Rocky Flats area. Most activities will take place inside the associated buildings so noise levels, if elevated over ambient levels, will be confined to the Building 776/777 Closure Project structures in which they are generated. Other less common activities, such as scabbling, abrasive blasting, and demolition by backhoe, hydraulic cutters, or other devices are expected to generate noise levels higher than ambient noise levels. Workers involved in these activities will use appropriate hearing protection devices. Outdoor activities will take place at a distance from unprotected workers and the public, and are not expected to increase noise levels to an unsafe level.

8.14 Socioeconomic Effects

Potential impacts from the Building 776/777 Closure Project will contribute to a net overall loss of employment in the long run. The current on-site work force in the building will either be drawn into the closure activities for the building (and potentially for the entire Site) or voluntarily terminate employment. In the short run, closure activities may increase the employment level due to increased needs. Additionally, a modest increase of purchases (raw materials, etc.) may result.

Under the worse case scenario, if the entire work force currently housed in the Building 776/777 Cluster opts to terminate employment, the overall impact will not have a significant adverse effect on the Denver Metropolitan area, including Boulder and Jefferson Counties, where the majority of the work force resides. The net effects of demolishing Buildings 776/777 and 730 are expected to be minimal.

8.15 Cumulative Effects

Impacts associated with the Building 776/777 Closure Project will contribute incrementally to potential site-wide cumulative impacts associated with the overall RFETS Closure Project. Cumulative impacts are impacts to the environment resulting from the incremental impacts of an action when added to other past, present, and reasonably foreseeable future actions. Significant impacts could result from several smaller actions that, by themselves, may not have significant impacts. The cumulative effects of Site cleanup efforts are described in the CID (Ref. 52). That document describes the short- and long-term effects from the overall Site clean up mission.

Cumulative impacts of the Building 776/777 Closure Project relative to the Site closure will include:

- Decommissioning activities associated with the Building 776/777 Closure Project will generate sanitary, hazardous, TSCA, LLW, LLM, TRU, and TRM wastes. Existing on-site interim storage for radioactive waste is limited and eventually, as site-wide closure progresses, additional storage capacity may be needed. The same is true for sanitary waste.
- Increased traffic volume, resulting from off-site shipments of Pu components and waste, may cause congestion problems, an increase in traffic accidents resulting in fatalities, and an increase in potential latent cancer illnesses related to motor vehicle emissions and fugitive dust.

- Adverse socioeconomic impacts from reductions in the Site's workforce will not substantially affect the surrounding region due to additional growth projected in the area.

Some cumulative impacts may ultimately be beneficial to the environment. Remediation is currently scheduled to follow demolition of buildings in the Cluster, which may result in the restoration of some of the Site to its original, natural condition.

- Removing human occupation, structures and paved surfaces and re-establishing native grasses and other vegetation could restore native plant communities and increase wildlife habitat, including threatened and endangered species.
- Cleaning up contamination will reduce health risks to human and animal populations.
- High profile structures that have dominated the Site and the local skyline for 45 years will be eliminated. The landscape will take on a less industrial and more open, rural appearance, similar to the rangeland that characterized the area before buildings on the Site were constructed.

8.16 Mitigation Measures

Mitigation measures are prescribed to reduce or avoid potentially adverse effects associated with a proposed activity. For the decontamination and closure of the Building 776/777 Cluster, mitigation measures will be considered in the areas of human health, worker safety, release of emissions and mobilization of contaminants, and cultural resources.

Closure will be conducted in accordance with applicable worker and public H&S programs; activities will be managed so that emissions and discharges are within applicable regulatory limits. Closure will take place within containment of existing buildings or temporarily constructed facilities (e.g., tents) with functioning drainage, air filtration, and other safety and environmental protection systems commensurate with risks inherent in the activities being conducted.

Precautions will be taken to ensure compliance with the Migratory Bird Treaty Act (Ref. 49), which prohibits destruction of birds or their nests, active or inactive, without a permit. Building demolition or dismantlement activities that would destroy nests will not be conducted during the nesting season, or measures will be taken to avoid affecting nesting birds prior to the nesting season. Activities that may effect nesting birds will be coordinated with Site ecologists. No closure activities will take place in or near the habitat of known threatened or endangered species.

No modification or damage to buildings determined to be eligible for the National Register of Historic Places will occur prior to completion of the documentation requirements in accordance with the standards set forth in the Memorandum of Agreement with the SHPO.

8.17 Unavoidable Adverse Effects

If conducted as proposed, the Building 776/777 Closure Project will have the following unavoidable adverse effects:

- Physical removal of an historic structure that is eligible for the National Register of Historic Places and a secondary contributor to a potential Historic District comprised of Cold War Era facilities;
- Short-term increases in air emissions and water discharges;
- Radiation and chemical exposures to workers, co-located workers, and the public, resulting in a small, but increased risk of adverse health effects;
- Possible industrial accidents, resulting in injury and illness; and
- Increased noise levels for the duration of closure activities.

8.18 Short-Term Uses and Long-Term Productivity

Unlike most projects that commit a site to a particular use for a period of time, the effect of closure will be to undo past commitments concerning use of the Site and open up a new and broad range of potential future uses. Closure does not commit the Site to a particular land use; rather, closure of the Building 776/777 Cluster will be one step in the process of ending one use and opening consideration for a variety of other possible future short- and long-term uses.

8.19 Irreversible and Irretrievable Commitments of Resources

Funds, labor, equipment, fuel, tools, PPE, waste storage drums, and similar items are resources that will be irretrievably committed to the Building 776/777 Closure Project.

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9.0 QUALITY ASSURANCE

9.1 Background

The work performed under this DOP shall be accomplished in accordance with regulatory, EPA, and contractual QA requirements. The regulatory requirements are 10 CFR 830.120, Quality Assurance Requirements (the QA rule). The EPA requirement is American National Standards Institute (ANSI)/ASQC-E4, (Ref. 54). The contractual requirement is DOE Order 5700.6C, Quality Assurance. The technical requirements are embodied in ten criteria that are virtually the same in 10 CFR 830.120 and DOE Order 5700.6C. The difference between the two documents is scope and enforceability. 10 CFR 830.120 applies to activities that have the potential to cause radiological harm and is enforceable through fines and penalties; DOE Order 5700.6C applies to non-nuclear activities and is a contractual obligation. ANSI/ASQC-E4 differs from the 10 CFR 830.120 and DOE Order 5700.6C in that it has more detailed requirements for data usability and assessment and control of computer hardware and software.

The application of these requirements to a facility that is undergoing project closure is graded and will diminish as the facility moves closer to the final project endpoint. The purpose of this section is to provide strategic principles and guidance on the application of QA requirements to a facility undergoing project closure where the safety significance of activities and the magnitude of risk associated with the facility are decreasing over time.

10 CFR 830.120, DOE Order 5700.6C and ANSI/ASQC-E4 are implemented through the QAP and the QAP Description (Ref. 55). The QAP Description defines the RFETS requirements that are employed to deliver consistent decommissioning services.

9.2 Quality Criteria

What follows is a discussion of each of the 10 criteria of the QA rule (10 CFR 830.120), DOE Order 5700.6C, and applicable elements of ANSI/ASQC-E4. A comment section is included, articulating guiding principles and examples for reducing the formality and intensity of application of quality requirements toward the completion of the Building 776/777 Closure Project.

Quality Criterion	Document/Procedure that Implements/Satisfies the Criterion
1) Quality Programs	K-H QAP Price Anderson Amendments Act Program (1-MAN-022-PAAAPROG) Management Control System (F&A-MCS-001) Preparation of QA Program Plans (1-C40-QAP-02.01) RMRS QAP Policy RMRS QAP Description (RMRS-QAPD-001)

Comments: A written QA program must be established, implemented and maintained to describe the organization, roles, and responsibilities of those managing, performing and assessing the adequacy of work. The QA rule and 5700.6C allow contractors latitude in grading the appropriate quality levels of control based on factors such as the form and magnitude of the (remaining) hazard, the life cycle stage of the facility, and the mission of the facility. As the scope and risk decrease during the closure process, the level of rigor and intensity of quality requirements may be adjusted and implemented via revisions to the applicable QA Program documents and implementing procedures.

2) Personnel Training and Qualification	K-H Training User Manual K-H Training Implementation Manual RMRS Training Manual (RF/RMRS 97-040) Instruction for Tracking/Scheduling Training and Qualifications and Retention of Records for Training (RMRS INSTR.003) Development, Use and Control of List of Qualified Individuals (RMRS INSTR.004) Identifying Training and Qualification Requirements (RMRS INSTR.005) Development and Use of Qualification Documents (RMRS INSTR.006) Development and Use of Training Implementation Plan (RMRS INSTR.007) Design/Development of Training Materials (RMRS INSTR.011) Operating Organization Requirements for Continuing Training Programs (RMRS INSTR.013) RMRS Qualification and Certification of QA Personnel (RMRS-QA-02.01)

Comments: Personnel performing work shall be trained and qualified based on project-specific requirements prior to the initiation of the Building 776/777 Closure Project. The K-H Training Users Manual and Training Users Matrix provide guidelines for contractors to implement training instructions for RFETS facilities. The documents listed above specify requirements for

qualification or certification of personnel performing specialized activities. The referenced programs are used to identify the positions that require formal qualification and certification (and continuing training). Examples of specific training classes identified for decommissioning workers are as follows: nuclear criticality safety and support, hazardous waste operations, waste generator, Be operations, and electrical safety. As job requirements change, the need for retraining to ensure continued job proficiency will be evaluated.

3) Quality Improvement	Site Corrective Action Requirements Manual (1-MAN-012-SCARM) Site Integrated Oversight Manual (1-MAN-013-SIOM) Site Lessons Learned/Generic Implications Requirements Manual (1-S27-ADM-16.18) Stop Work Action (1-V10-ADM-15.02) Occurrence Reporting Process (1-D97-ADM-16.01) Performance Indication and Trend Analysis (1-E93-ADM-16.18) Control of Non-conforming Items (1-A65-ADM-15.01) Control of Waste Non-conformances (2-U76-WC-4030) RMRS Corrective Action (RMRS-QA-.03.01) RMRS Conduct of Surveillance (RMRS-QA-10.02)

Comments: The processes used to detect and prevent problems and to ensure quality improvement are referenced here. As decommissioning activities are initiated, a graded approach will be used to determine the significance of issues and to determine which corrective actions will be managed in the Plant Action Tracking System. As systems, including VSS, components, and structures are declared out-of-service, the use of the Non-conformance Report process will be greatly reduced.

4) Documents and Records	Site Documents Requirements Manuals RMRS Document Control Program (RMRS RM-06.01) Correspondence Control Program (1-L43-IMS-001) Records management Guidance for Records (1-V41-RM-001) RMRS Records Identification, Generation and Transmittal (RMRS RM-06.02) RMRS Records Receipt, Processing, Retrieval and Disposition (RMRS RM-06.03) Administrative Record Document Identification and Transmittal (RMRS RM-06.04)

Comments: Documents that are used to describe how decommissioning activities are to be accomplished, documents that produce quality affecting data, and documents that support a RFCA (Ref 2) decision or deliverable will be Controlled Documents. A diminishing level of control will be implemented for documentation as the 776/777 Closure Project progresses. A records management program has been established to ensure that records are specified, prepared, reviewed, approved, authenticated, legible, transferred, collected, maintained, stored, retained, and indexed for accountability and retrievability (see Appendix C for list of generic Administrative Record, project and QA records).

5) Work Processes	Configuration Change Control Program IWCP Manual COOP Manual (Man-066-COOP) Site Documents Requirements Manual (1-MAN-013-SDRM) ISM Manual (1-MAN-016-ISM) Radiological Control Manual Radiological Safety Practices Manual HSP Manual Radiation Protection Program Procedure (1-Q50-RPP-0001) Preparation and Control of RMRS Documents (RMRS-QA-05.01) QA Review of RMRS Documents (RMRS - QA-05.02) RMRS QAP Description (App. 3)

Comments: Closure activities are performed according to approved planning and technical documents and according to the prescribed sequence defined during planning when appropriate and stated. The number of procedures/instructions for activities associated with the Building 776/777 Closure Project will be commensurate with the level of activity, complexity, risk and lifecycle stage of the closure. Additional references are included in this section for the use of computer hardware and software and assessment of data usability as prescribed in ANSI/ASQC-E4.

6) Design	Configuration Change Control Program Manual COEM (Design Process Requirements-COEM-DES-210) Computer Software Management Manual (1-MAN-004-CSMM) Operation Review Committee Requirements (1-52000-ADM-02.01) RMRS USQD Process (1-C11-NSM-04.05)

Comments: Sufficient engineering design control must be maintained to ensure that personnel can safely enter and work in the facility and that safety-significant systems, components, and structures (including engineered safety features) will function as intended. The general level of engineering verification and validation associated with engineering activities will be significantly reduced as the Project comes to closure. Peer reviews and one-over-one management reviews will be the norm.

7) Procurement	Procurement System Manual Acquisition Procedure for Requisitioning Commodities and Services (1-W36-APR-111) COEM (Engineering Standards for Procurement –COEM-DES-273) RMRS QA review of RMRS Documents (RMRS -QA-05.02) RMRS Evaluation of Suppliers (RMRS-QA-07.01)

Comments: The procurement of items and services for the Building 776/777 Closure Project will be planned and controlled to ensure that the quality of items and services is known, documented and meets the technical requirements and acceptance criteria of the Project. Towards the end of the Building 776/777 Closure Project, most procurements should be commercial buys that will not require suppliers to have special quality programs, meet acceptance criteria, or to provide documentation beyond that which comes with the item as a matter of course.

8) Inspection and Acceptance Testing	Inspection and Acceptance Test Process (1-PRO-072-001) COEM (Design Process Requirements – COEM-DES-210) Control of Measuring and Test Equipment (1-I97-ADM-12.01) Computer Software Management Manual (1-MAN-004-CSMM) Waste Inspection Procedures Manual RMRS QAP Manual RMRS QAP Description (App. 3)

Comments: Instruments used to demonstrate compliance with the facility's AB, (e.g., LCO surveillances), instruments necessary to operate safety systems, and instruments necessary to demonstrate acceptance criteria for closure activities will be calibrated in conformance with established schedules and acceptance criteria. The level of acceptance testing will be reduced as the level of engineering verification and validation associated with engineering activities diminishes. Waste inspection activities will be based on the requirements in the disposal facility WAC. Additional references are included in this section for the use of computer hardware and software and assessment of data usability as prescribed in ANSI/ASQC-E4.

9) Management Assessment	Site Integrated Oversight Manual (1-MAN-013-SIOM) RMRS Management Assessments (RMRS-QA-09.01) RMRS Corrective Action (RMRS-QA-03.01)

Comments: As the Building 776/777 Closure Project progresses, most of the assessments in the facility will be management assessments (versus independent assessments) and the level of assessment activity will be reduced. Management assessments will be performed to establish whether the prevailing management structure, policies, practices, procedures and data are adequate for ensuring that the quality of the results based on the necessary risk and performance indicators are obtained. Management assessment programs have been established for the following areas: management systems, QA, configuration management, training and qualification, EP, COOP, maintenance, RP, fire protection, waste management/environmental protection, nuclear safety, criticality safety, hazardous material protection, industrial safety, work control, procedures and occurrence reporting. The last large-scale assessment activity should be a Pre-Demolition Survey review, and final Project closeout documentation to confirm that the required closure steps have been completed.

10) Independent Assessment	Site Integrated Oversight Manual (1-MAN-013-SIOM) Independent Assessment Program Planning and Scheduling Independent Assessments Readiness Determination Manual (1-MAN-040-RDM) Conduct of Independent Assessment Activities RMRS Qualification and Certification of QA Personnel RMRS Conduct of Surveillances (RMRS-QA-10.02) RMRS Corrective Action (RMRS-QA-.3.01)

Comments: As the Building 776/777 Closure Project approaches completion, the level and intensity of independent assessments will diminish. Assessments will include evaluations to determine and verify whether technical requirements, not just procedural compliance are being implemented. At some point near closure no further independent assessments will be scheduled or performed; limited- scope facility-specific surveillances performed by QA representatives assigned to the facility will continue until shortly before final closure.

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10.0 IMPLEMENTATION SCHEDULE

PBS #19 contains a P3 schedule and BOE for completion of the Building 776/777 Closure Project. The current schedule is provided in Appendix D. The first SETs removed will be the building systems tied into Zone I ventilation (i.e., process tanks, GBs, and B-boxes). The Zone I ventilation is scheduled to be removed in FY04. Remaining room decommissioning activities will take place in FY04. The remaining building utilities, ventilation, and fire systems will be removed during FY05. The building shell will be removed in FY06.

As provided in the DPP, this schedule information is being supplied to add clarity to the DOP and to identify the general planned schedule if full funding is available. The schedule is not an enforceable part of the DOP and DOE or its subcontractors may alter the schedule without penalty and without prior notification or approval of the LRA. Schedule changes will be shared with the LRA in accordance with Section 1.1.1(1) of the DPP, entitled "Timely Sharing of Information," (Ref. 6).

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11.0 PROJECT ORGANIZATION

This section describes the Building 776/777 Closure Project organization structure, functions, and interfaces. As provided in the DPP, this information is being supplied to add clarity to the DOP and to identify reporting relationships and responsibilities. The organizational structure is not an enforceable part of the DOP and DOE or its contractors may alter the structure without penalty and without prior notification or approval of the LRA. Organization changes will be shared with the LRA in accordance with Section 1.1.1(1) of the DPP, entitled "Timely Sharing of Information," (Ref. 6).

11.1 Roles and Responsibilities

The general responsibilities of both internal and external organizations are described below.

11.1.1 Internal Organizations

The management approach of the Building 776/777 Closure Project provides for easily maintained schedule and cost controls. These controls assist the project manager to ensure that the targeted costs and schedule are met. The real-time controls identify changes as requirements dictate, not when the end of the milestone/project is reached and costs have already exceeded the target. This approach provides a format to meet DOE's philosophy, which puts worker safety first, constructs outcome-oriented projects, provides better management and control of finances, and focuses technology. The general responsibilities for the internal organizations are as follows:

Organization	Responsibilities
DOE	• Enforcement of government regulations; • Enforcement of H&S provisions; • Communications with Site external organizations regarding the closure program; • Oversight of closure operations; • Communications with contractor concerning external and RFFO inputs, including funding and overall direction; and • Interface with other regulatory agencies, stakeholders, and the public.
Contractor	• Communications with DOE-RFFO and the public regarding closure project status; • Integrated management of the closure project including program and subcontractor funding and guidance; • Approval and transmittal of appropriate documents to DOE-RFFO; and

Subcontractors	• Performance oversight. • Communications with contractor and employees regarding the performance and status of the closure project; • Demonstrating that alternate methods of performing closure activities comply with regulatory requirements; • Performing closure activities; and • Submittal of the closure documentation.

11.1.2 External Organizations

Three independent entities oversee and regulate environmental, health, and safety aspects of DOE activities at RFETS: CDPHE, EPA, and the Defense Nuclear Facilities Safety Board (DNFSB). These entities have executed a Memorandum of Understanding (MOU) with DOE to define their respective roles and responsibilities for oversight of activities conducted in the industrial area (Ref. 56). Individual roles and responsibilities are summarized below.

Organization	Roles and Responsibilities
CDPHE	• LRA for regulation, oversight, and enforcement of RCRA/CHWA requirements for hazardous and mixed wastes. • LRA for regulation or oversight of decontamination and decommissioning of fixed structures and equipment, including dismantlement, demolition, and closure of RCRA-regulated units. • LRA for oversight of LLW and regulation of LLM waste disposal on Site or elsewhere in Colorado. • LRA for regulation of RCRA corrective actions and lead oversight of CERCLA response actions.
EPA	• LRA for final selection of remedial alternatives under CERCLA.
DNFSB	• LRA for storage of source, SNM, and byproduct material and radioactive wastes not subject to NRC licensing or CDPHE/EPA regulation.

In that portion of the Site where each is the LRA, CDPHE and EPA have authority to direct DOE to either stop work or perform particular tasks required under RFCA when conditions present an immediate risk to public health or the environment.

112

11.1.3 Working Relationships

Internal and external organizations will use the consultative process described in ¶¶s 51 through 61 of RFCA (Ref. 1), and the principles articulated in Appendix 2 of RFCA and Section 1.1.1 of the DPP (Ref. 6) to establish and maintain effective working relationships with each other and with the general public. Per ¶70 of RFCA, CDPHE regulated decommissioning activities under CERCLA. To expedite the decommissioning process, the parties have agreed that CDPHE may exercise authority by participating in the IWCP process. For the purposes of this DOP, "participation in the IWCP process" means the LRA has an opportunity to discuss issues and ask questions, but it does not mean the LRA has approval authority for IWCP work packages. DOE and the contractor will advise CDPHE of IWCP meetings and roundtable review sessions, and will provide relevant information in a timely manner. CDPHE, DOE, and the contractor may use the roundtable review sessions as a forum for RFCA consultation. If this process does not address CDPHE's concerns and CDPHE believes the planned activities meet the criteria for issuing a "stop work" order under RFCA, CDPHE may issue such an order.

11.2 Team Organization Structure

Program management and control will function under an integrated scope, schedule, and cost control system that identifies responsibilities and interfaces. The project organization, under the direction of a project manager, is an integrated team of qualified individuals for each project. This team will consist of personnel from a number of subcontractors.

Figure 11 and Figure 12 depict the organizational structure of the project.

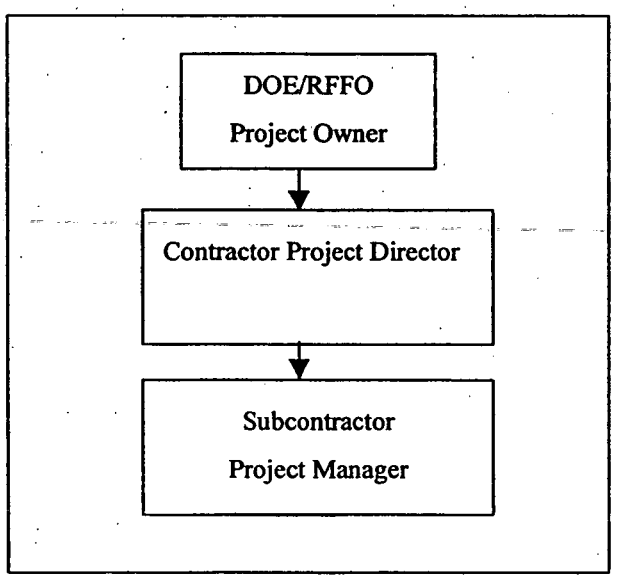


Figure 11. Building 776/777 Closure Project Organizational Chain

113

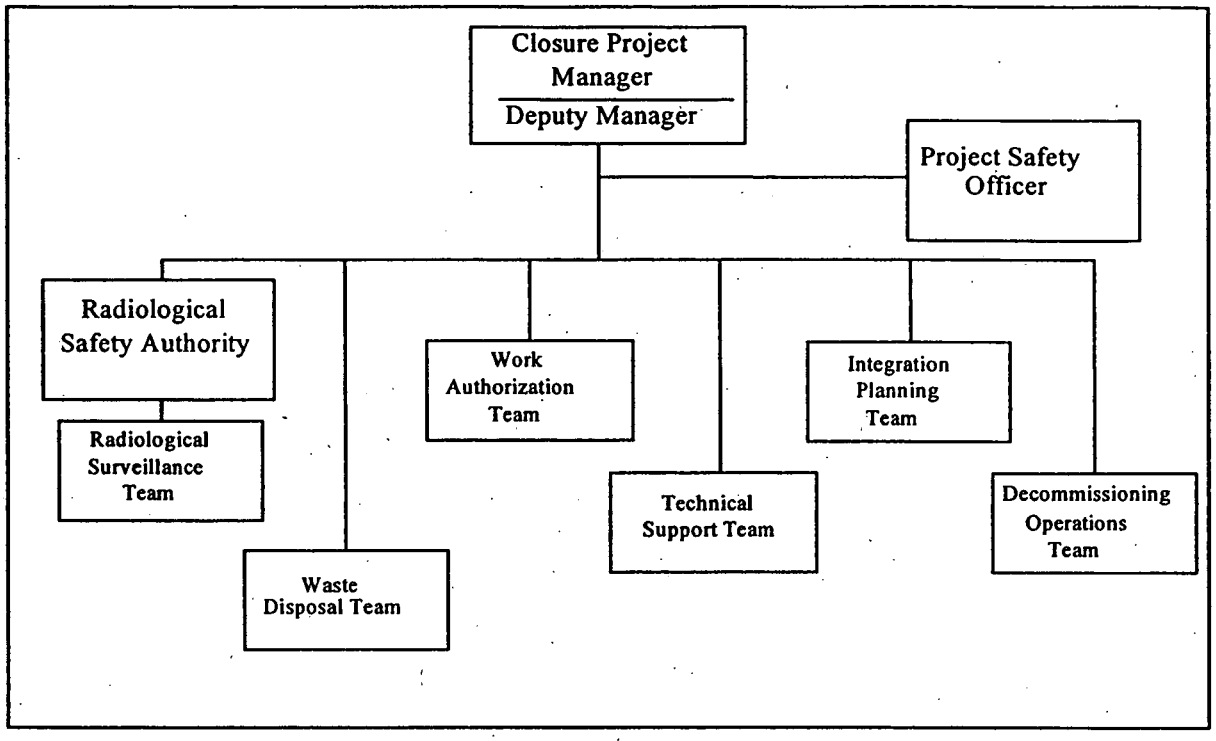


Figure 12. Building 776/777 Closure Project Organization Structure and Functions

The detailed roles and responsibilities of the positions are included at the end of this section. In brief, there is a clear line of responsibility from the Integrator to the Closure Project Manager, through the Work Release Manager, to the Execution Project Managers, and finally to the Enhanced Worker Teams.

- The Project Director is the primary Integrator among all programs and clusters for the Building 776/777 Closure Project. The Director ensures funding is available to accomplish desired tasks and validates schedules.
- The Subcontractor Closure Project Manager is the senior leader of the closure project and has the responsibility to set expectations for performance, establish principles of behavior, and provide the primary senior external interface for the closure project.
- The WA Team Leader is the focal point who maintains the safety and regulatory envelope for the project. This person provides the primary external interface to the site-level safety and regulatory direction and is the link to the COOP improvement. It provides the project constraints to the Project Execution Managers and then gives the day to day authorization to proceed with work similar to the function currently provided by a shift manager.
- The Integration Planning Team Leader is the primary interface to external organizations that are working on the Protected Area Execution Plan and the Ten-Year Plan. Within the closure project, this person has the responsibility to maintain the Project Closure Plan and to

coordinate the distributed planning resources. The plan includes the entire closure project, the Three-Year Plan, as well as the annual, monthly, and weekly plans. The resource requirements must be projected to allow adequate time for the Technical Support Manager to acquire the resources for distribution to the Project Team Leaders.

- The Project Team Leaders are responsible for executing the defined project work scope. The work scope definition comes from the Project Integration Manager. For example, a Project Team Leader would be assigned to GB removal or to excess equipment removal.
- The Technical Support Manager is responsible for filling a number of resource needs of the Project Team Leaders as predicted by the Integration Planning Team Leader. These resources include all technical aspects including nuclear safety, criticality safety, environmental safety, engineering, etc. This person is the focal point for setting resource priorities. The Closure Project Manager sets the absolute priorities.
- The Decommissioning Operations teams have the self-contained resources to complete the assigned project activity. Some resources will be temporarily assigned to the activity; however, it is the responsibility of the Technical Support Manager to assure that the necessary external resources are provided at precisely the right time. There will be several modes of self-direction depending upon the team experience. This includes self-identification of hazards. Specific resources required are detailed as part of the resource-loaded schedule.

11.3 Team Processes

The process used by the project team follow the CH2MHILL Project Delivery System methodology. These processes include:

- Develop the work plan.
- Obtain project endorsement.
- Authorize work performance.
- Implement work.
- Measure and report work performance.
- Control work to the plan.
- Change the plan if necessary.
- Document work performance and results.
- Communicate.
- Close the project.

11.4 Responsibilities

The contractor assigns responsibility to a person for each element of the WBS. The responsibility depends on the level of the WBS. Managers at the lowest level of the WBS have the responsibility

to plan and perform the work in the work package, and to report progress. They may authorize changes in the details of the work package that do not affect the CPB or performance measures. Changes that meet the Baseline Change Process thresholds must follow the Baseline Change Process as described in Planning and Integration (P&I) Work Instruction INST-002.

11.5 Team Interfaces

Interfaces with other projects include:

- Project No. 02 "Waste Management Project" that affects Building 776/777 consists of WPD #62 "Sanitary Waste Management" and includes management of LLW/LLM waste. WPD #4 "TRU/TRM Storage" includes Venting and Aspirating and management of TRU/TRM waste. WPD #7 "Waste Treatment Project" provides the necessary waste treatment capabilities. Venting and Aspirating drums may be required on an as needed basis. The size reduction airlock may be utilized for characterization and repackaging. Headspace (WIPP) gas sampling, evacuation of TRU and LLW drums, and some glove washing will occur.
- Project No. 06 "SNM Consolidation Project" that affects Building 776/777 consists of WPD #10 "Pu Storage Project and includes the scope of consolidating Pu.
- Project No. 08 "Pu Metals and Oxides Stabilization Project" that affects Building 776/777 consists of WPD #21 "SNM Processing" and includes the scope of ensuring compliance with HSP Manual (Ref. 26).
- Project No. 09 "Pu Liquid Stabilization Project" that affects Building 776/777 consists of WPD #15 "Residue Sampling" and includes characterization and storage of residues.
- Project No. 11 "Uranium Disposition Project" that affects Building 776/777 consists of WPD #17 "Uranium Decontamination" which includes decontaminating parts stored in Building 776/777.
- Project No. 12 "SNM Shipping Project" that affects Building 776/777 consists of WPD #22 "SNM Shipping Project" which includes the scope related to shipping material off site.
- Project No. 23 "Utilities and Infrastructure Project" that affects Building 776/777 consists of WPD #39 "Utilities Projects" which provides utility services. This effort will continue through deactivation and decommissioning. WPD #40 "Infrastructure Project" provides site-wide infrastructure.
- Project No. 24 "Safeguards and Security Project" that affects Building 776/777 consists of WPD #60 "Safeguards and Security Project" which provides safeguards and security support.
- Project No. 27 "Analytical Services Project" that affects Building 776/777 consists of WPD #41 "Analytical Services Project" which provides analytical laboratory support.

Interfaces with other Site organizations include:

- Site Operations and Integration
- Planning and Integration (P&I)

116

- Safety Systems and Engineering
- Environmental Systems and Stewardship
- Closure Projects

Interfaces outside of the Rocky Flats organizations include:

- CDPHE
- EPA
- Citizens Advisory Board (CAB)
- Defense Nuclear Facilities Safety Board (DNFSB)
- Rocky Flats Coalition of Local Governments (RFCOLG)

Interfaces with DOE include:

- RFFO

117

12.0 COMMENT RESPONSE SUMMARY

The responsiveness summary addressing public comments on the final draft version of this DOP (dated 7/7/99) is attached as Appendix G.

13.0 REFERENCE INFORMATION

13.1 Acronyms and Abbreviations

Following is a list of acronyms and abbreviations used in this DOP.

AB	Authorization Basis
ACM	asbestos containing material
AHA	Activity Hazards Analysis
ALARA	As Low As Reasonably Achievable
APEN	Air Pollutant Emission Notice
ARARs	Applicable or Relevant and Appropriate Requirements
AR	Administrative Record
ASF	Activity Screening Form
ASRF	Advanced Size Reduction Facility
ATRSC	Allowable Total Residual Surface Contamination
Be	beryllium
BIO	Basis for Interim Operations
BOE	Basis of Estimate
BEST	Basis of Estimate Software Tool
CBDPP	Chronic Beryllium Disease Prevention Program
CCR	Code of Colorado Regulations
CDPHE	Colorado Department of Public Health and Environment
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act (Superfund)
CFR	Code of Federal Regulations
CHWA	Colorado Hazardous Waste Act
CHWR	Colorado Hazardous Waste Regulations
CID	Cumulative Impact Document
COEM	Conduct of Engineering Manual
CO_2	carbon dioxide
D&D	decontamination & decommissioning
COOP	Conduct of Operations
CPB	Closure Project Baseline
cpm	counts per minute
DDCP	Decontamination & Decommissioning Characterization Protocol

DNFSB	Defense Nuclear Facilities Safety Board
DOE	U.S. Department of Energy
DOP	Decommissioning Operations Plan
DOT	U.S. Department of Transportation
dpm	disintegrations per minute
DPP	Decommissioning Program Plan
EP	Emergency Preparedness
EPA	Environmental Protection Agency
ER	environmental restoration
FBI	Fluidized Bed Incinerator
FDPM	Facilities Disposition Program Manual
FSAR	Facility Safety Analysis Report
FY	fiscal year
GB	glovebox
HASP	Health & Safety Plan
H&S	health & safety
HEPA	high efficiency particulate air (filter)
HSP	Health & Safety Practices (Manual)
HVAC	heating ventilation and air conditioning
ICMS	Integrated Chemical Management System
IDC	Item Description Code
IH&S	Industrial Hygiene & Safety
IHSS	Individual Hazardous Substance Site
ISM	Integrated Safety Management
ISMS	Integrated Safety Management System
IWCP	Integrated Work Control Program
JHA	Job Hazard Analysis
LCO	Limiting Condition of Operations
LDRs	Land Disposal Restrictions
LBP	lead based paint
LL	low-level (waste)
LLM	low-level mixed (waste)
LLMW	low-level mixed waste
LLW	low-level waste
LO/TO	lockout/tagout
LRA	Lead Regulatory Agency

mrad	millirad
mrem	millirem
NAAQS	National Ambient Air Quality Standards
nCi	nanocurie
NEPA	National Environmental Policy Act
NESHAP	National Emission Standards for Hazardous Air Pollutants
NIOSH	National Institute of Occupational Safety and Health
NPDES	National Pollutant Discharge Elimination System
NTS	Nevada Test Site
OSHA	Occupational Safety & Health Act
OU	operable unit
P&I	planning and integration
PBD	Project Baseline Description
PBS	Project Baseline Summary
PCBs	polychlorinated biphenyls
PEP	Project Execution Plan
PHA	Preliminary Hazard Analysis
POD	Plan of the Day
POW	Plan of the Week
PPE	personal protective equipment
ppm	parts per million
Pu	plutonium
QA	quality assurance
QAP	Quality Assurance Program
RCRA	Resource Conservation and Recovery Act
rem	radiation equivalent man
RFCA	Rocky Flats Cleanup Agreement
RFETS	Rocky Flats Environmental Technology Site
RFFO	Rocky Flats Field Office
RLC	Reconnaissance Level Characterization
RLCR	Reconnaissance Level Characterization Report
RSPs	Radiological Safety Procedures
RWP	Radiological Work Permit
S&H	safety & health
S&M	surveillance & maintenance

SHPO	State Historic Preservation Officer
Site	Rocky Flats Environmental Technology Site
SME	subject matter expert
SNM	Special Nuclear Material
Sr-90	Strontium-90
STP	Site Treatment Plan
SWB	standard waste box
TBC	to be considered
TCLP	Toxicity Characteristic Leaching Procedure
TRM	transuranic mixed (waste)
TRU	transuranic (waste)
TSCA	Toxic Substances Control Act
TSD	treatment, storage, and disposal
TU	Temporary Unit
UCNI	Unclassified Controlled Nuclear Information
USQ	Unreviewed Safety Question
USQD	Unreviewed Safety Question Determination
VSS	Vital Safety Systems
WA	Work Authorization
WAC	Waste Acceptance Criteria
WAD	Work Authorization Document
WBS	Work Breakdown Structure
WCF	Work Control Form
WIPP	Waste Isolation Pilot Plant
WPD	Work Proposal Document

13.2 Definitions

Activity. An activity, in terms of the scope hierarchy defined here, is the lowest level of scope the Site maintains in the CPB (P3 schedule, budget/funding baseline). Activities are statused on a monthly basis for reporting of accomplishments against the approved work plan. Any change to the activity scope, schedule or cost (budget or funding) profile is subject to review and approval by the appropriate RFETS Change Control Board prior to proceeding with the proposed change.

Applicable or Relevant and Appropriate Requirements (ARARs). ARARs are promulgated standards, requirements, criteria or limitations that will be met during closure activities to ensure the protection of human health and the environment and to ensure proper management of waste. A requirement under environmental laws may be either "applicable" or "relevant and appropriate."

122

Applicable requirements are those cleanup standards, standards of control, and other substantive requirements, criteria, or limitations promulgated under federal or state environmental or facility siting laws that specifically address a hazardous substance, pollutant, contaminant, remedial action, location, or other circumstance at a CERCLA site. Only those standards that are identified by a state in a timely manner and that are more stringent than federal requirements may be applicable. (40 CFR 300.5)

Relevant and appropriate requirements are those cleanup standards, standards of control, and other substantive requirements, criteria, or limitations promulgated under federal environmental or state environmental or facility siting laws that, while not applicable to a hazardous substance, pollutant, contaminant, remedial action, location or other circumstance at a CERCLA site, their use is well suited to the particular site. Only those standards that are identified by a state in a timely manner and that are more stringent than federal requirements may be applicable. (40 CFR 300.5)

Asbestos. Asbestiform varieties of chrysolite, amosite (cummintonite-grunerite), crocidolite, anthophyllite, tremolite, and actinolite.

Asbestos Containing Material. Material containing more than 1% asbestos.

CERCLA. The Comprehensive Environmental Response, Compensation, and Liability Act, 42 U.S.C. §9601 et. seq., as amended by the Superfund Amendments and Reauthorization Act of 1986, Pub. L. 99-499, and the Community Environmental Response Facilitation Act, Pub. L. No. 102-26; and the National Contingency Plan and other implementing regulations. (RFCA ¶25[m])

Closure. In the context of RCRA/CHWA hazardous waste management units, closure means actions taken by an owner or operator of a treatment, storage, or disposal unit to discontinue operation of the unit in accordance with the performance standards specified in 6 CCR 1007, §264.11 or §265.111, as appropriate. (RFCA ¶25[p])

Co-located Worker. A worker located 100 meters from the Building 776/777 Cluster. This value was chosen due to RFETS compact dimensions.

Deactivation. The process of placing a building, a portion of a building, structure, system, or component (as used in the rest of this paragraph "building") in a safe and stable condition to minimize the long-term cost of a surveillance and maintenance program in a manner that is protective of workers, the public, and the environment. Actions during deactivation could include the removal of fuel, draining and/or de-energizing of non-essential systems, removal of stored radioactive and hazardous materials, and related actions. As the bridge between operations and decommissioning, based upon Decommissioning Operations Plans or the Decommissioning Program Plan, deactivation can accomplish operations-like activities such as final process runs, and also decontamination activities aimed at placing the facility in a safe and stable condition. Deactivation does not include decontamination necessary for the dismantlement and demolition phase of decommissioning (i.e., removal of contamination remaining in fixed structures and equipment after deactivation). Deactivation does not include removal of contaminated systems, system components, or equipment except for the purpose of accountability of SNM and nuclear safety. It also does not include removal of contamination except as incidental to other deactivation or for the purposes of accountability of SNM and nuclear safety. (RFCA ¶25 [y])

Decommissioning. Decommissioning means, for those buildings, portion of buildings, structures, systems, or components (as used in the rest of this paragraph, "building") in which deactivation occurs, all activities that occur after the deactivation. It includes surveillance, maintenance, decontamination and/or dismantlement for the purpose of retiring the building from service with adequate regard for the health and safety of workers and the public and protection of the environment. For those buildings in which no deactivation occurs, the term includes characterization, surveillance, maintenance, decontamination and/or dismantlement for the purpose of retiring the building from service with adequate regard for the health and safety of workers and the public and protection of the environment. The ultimate goal of decommissioning is unrestricted use or, if unrestricted use is not feasible, restricted use of the buildings. (RFCA ¶25[z])

Decontamination. The removal or reduction of radioactive or hazardous contamination from facilities, equipment, or soils by washing, heating, chemical or electrochemical action, mechanical cleaning or other techniques to achieve a stated objective or end condition. (RFCA ¶25[aa])

Dismantlement. The demolition and removal of any building or structure or a part thereof during decommissioning. (RFCA ¶25[ab])

End-Point Criteria. The defined objective(s) or goal(s) that represent the agreed upon facility condition to be achieved during the closure process.

Enhanced Work Planning. A process that evaluates and improves the program by which work is identified, planned, approved, scheduled, coordinated, controlled, and executed.

Facilities. Buildings and other structures, their functional systems and equipment, and other fixed systems and equipment installed therein; outside plant, including site development features such as landscaping, roads, walks, and parking areas; outside lighting and communication systems; central utility plants; utilities supply and distribution systems; and other physical plant features.

Facility Disposition Process. The sequence of activities required to take a facility from its existing condition to final disposition. The goal of disposition is for the Site to accomplish all of the activities necessary either to demolish the building and dispose of the resulting waste or to release the building for reuse.

As discussed in RFCA Attachment 9, unless building specific conditions otherwise warrant, the following activities are typical, but not all inclusive, of those that will be performed for a building: (a) containerized waste and materials removed; (b) Liquid waste and processing systems drained; (c) RCRA units closed or have a closure plan integrated with building disposition plan; (d) all TRUM, defined as materials in excess of 100 nCi per gram, removed; (e) equipment, piping, ducts, GBs, and major electrical components removed (e.g., strip out), (f) radioactive hot spots and hazardous substances removed; and (g) easily removed contamination removed. (DPP, Section 2.1)

Graded Approach. A process that assures safety analysis and documentation preparation is commensurate with the magnitude of the hazards being addressed and the complexity of the facility and/or systems being relied on to maintain an acceptable level of risk.

Hazard. A source of danger (i.e., material, energy source, or operation) with the potential to cause illness, injury, or death to personnel, or damage to a facility or the environment without regard for the likelihood or credibility of accident scenarios or consequence mitigation.

Hazardous Waste. Hazardous waste is any solid waste that either exhibits a hazardous characteristic (i.e., ignitability, corrosivity, reactivity, or toxicity) or is named on one of three lists published by the EPA in 40 CFR 261, Identification and Listing of Hazardous Waste. To be considered hazardous, a waste must first meet EPA's definition of "solid waste," which includes liquids.

Individual Hazardous Substance Site (IHSS). Specific locations where solid waste, hazardous substances, pollutants, contaminants, hazardous waste, or hazardous constituents may have been disposed or released to the environment within the Site at any time, irrespective of whether the location was intended for the management of these materials.

Interim Measure. The RCRA/CHWA term for a short term action to respond to imminent threats, or other actions to abate or mitigate actual or potential releases of hazardous wastes or constituents.

Interim Remedial Action. The CERCLA term for an expedited response action performed in accordance with remedial action authorities to abate or mitigate an actual or potential threat to public health, welfare, or the environment from the release or threat of a hazardous substance from RFETS.

Involved Worker. Personnel performing work inside the Building 776/777 Complex.

Job Hazard Analysis. An analysis of procedurally controlled activities that uses developed procedures as a guide to address and consider the hazards due to any exposures present during implementation of (job) procedures, the use and possible misuse of tools and other support equipment required by the procedures, and the behavioral motivations of the people performing them. A type of hazard analysis process which breaks down a job or task into component steps, examines each step to determine what hazard(s) exist or might occur, and establishes actions to eliminate or control the hazard.

Lead Based Paint (LBP) Debris. LBP debris where the LBP and debris remain bonded; incidental separation of paint from debris does not trigger classification as hazardous waste requiring disposal at a RCRA TSD facility.

Low-Level Waste (LLW). LLW is any radioactive waste that is not classified as transuranic waste, high-level waste, or spent nuclear fuel. No minimum level of radioactivity has bee specified for LLW. LLW mixed with hazardous waste is referred to as low-level mixed (LLM) waste.

No Action with Safe Shutdown Maintenance. This alternative will maintain the 776/777 Cluster in shutdown mode. Building and equipment surveillance activities would be performed on a routine basis. No equipment or hazards would be removed from buildings in the cluster unless the routine surveys of buildings indicated a condition that would compromise the environment or public H&S. In this event, appropriate measures would be taken to mitigate the condition.

Off-Site Individual. A person located at the Site boundary (1999 meters).

Operable Unit (OU). A grouping of IHSSs into a single management unit. (RFCA ¶25[aw])

PCB Bulk Product Waste. Waste derived from manufactured products containing PCBs in a non-liquid state, at any concentration where the concentration at the time of designation for disposal was >50 ppm PCBs. PCB bulk product waste excludes PCBs or PCB Items; but includes: 1) non-liquid bulk waste or debris from the demolition of buildings and other man-made structures; 2) PCB-

containing waste from the shredding of automobiles, household appliances, or industrial appliances 3) plastics; preformed or molded rubber parts and components, applied dried paints, varnishes, waxes, or other similar coatings or sealants; caulking; adhesives; paper, Galbestos; sound-deadening or other types of insulation; and felt or fabric products such as gaskets; 4) fluorescent light ballasts containing PCBs in the potting material.

PCB Items. Any PCB Article, Article Container, PCB Container, or PCB Equipment, that deliberately or unintentionally contains, or has as a part of it, any PCB or PCBs. This category includes electrical equipment such as transformers, capacitors and switches.

PCB Remediation Waste. Waste containing PCBs as a result of a spill, release, or other unauthorized disposal, at the following concentrations: (1) materials disposed of prior to April 18, 1978, that are currently at concentrations $\geq$ 50 ppm PCBs, regardless of the concentration of the original spill; (2) materials which are currently at any volume or concentration where the original source was $\geq$ 500 ppm PCB beginning on April 18, 1978, or $\geq$ 50 ppm beginning on July 2, 1979; and (3) materials which are currently at any concentration if the PCBs are from a source not authorized for use under 40 CFR Part 761.

PCB remediation waste means soil, rags, and other debris generated as a result of any PCB spill cleanup, including, but not limited to the following: (1) environmental media containing PCBs, such as soil and gravel; dredged materials, such as sediments; settled sediment fines, and aqueous decantate from sediment; (2) sewage sludge containing <50 ppm PCBs and not in use according to §760.20(a) [relating to uses of sewage sludge regulated under Parts 257, 258, and 503 of 40 CFR]; (3) PCB sewage sludge, commercial or industrial sludge contaminated as a result of a spill of PCBs including sludge located in or removed from any pollution control device, and aqueous decantate from an industrial sludge; and (4) buildings and other man-made structures, such as concrete or wood floors or walls contaminated from a leaking PCB or PCB-contaminated transformer, porous surfaces and non-porous surfaces.

Physically Empty. The condition of a tank or ancillary equipment in which no liquid remains after verification by personnel who are familiar with the tank system or a by proven technology. For example, verification may be performed by draining at low points or by non-destructive testing.

Process Waste. Process waste is solid, hazardous, and mixed waste generated as a result of normal building operations and deactivation activities.

Project Baseline Summary (PBS). The PBS is a formal document that defines a project at RFETS from a DOE reporting structure standpoint. The PBS structure maintained by DOE is very similar to the PBD summary maintained by the operating contractor (see below). The primary difference is how DOE rolls the PBD up to the PBS level for reporting to DOE Headquarters.

Project Baseline Description (PBD). The PBD is a summary of the Work Planning Documents (WPDs) or Work Authorization Documents (WADs), as appropriate, that provides a broad overview of the project scope, assumptions, and other project specific summary items that collectively define the project. Items included in the PBD are the Project Purpose, Project Scope, WADs included in the PBD and a description of each, assumptions and conditions related to the project, the project execution strategy, specific safety plan for each WAD included in the PBD, Regulatory drivers, the

project schedule (where to find the currently approved project schedule), and the project cost plan (summarized by WAD).

Radiological Contamination. Radioactive material present in a location where it should not be present.

Radiological Sources. Radioactive material packaged for use exclusively for its emitted radiation.

RCRA Stable. A step toward RCRA closure, whereby wastes are removed from a RCRA-regulated unit and the possibility of future waste input is eliminated. For tank systems this means a tank and its ancillary equipment have been drained to the maximum extent possible using readily available means, with the objective of achieving less than one percent holdup, and with no significant sludge and no significant risk remaining. Physical means must then be used to ensure no waste is re-introduced to the system (e.g. lock out/tag out, blank flanges). (RCRA Part B Permit and Interim Status Closure Plan, Part X.E)

Remediation Waste. Remediation waste includes all solid, hazardous, and mixed waste; all media and debris containing hazardous substances or listed hazardous or mixed wastes, or exhibiting a hazardous characteristic; and hazardous substances generated from activities regulated under RFCA as RCRA corrective actions or CERCLA response actions, including decommissioning under an approved decision document. Remediation waste does not include waste generated from other activities (e.g., normal building operations and deactivation activities). (RFCA ¶25[bf])

Resource Conservation and Recovery Act (RCRA). The Resource Conservation and Recovery Act, 42 U.S.C. §6901 et. seq., as amended by the Hazardous and Solid Waste Amendments of 1984, the Federal Facility Compliance Act of 1992, and implementing regulations. (RFCA ¶25[ay])

Residues (RES). Pu-contaminated liquids and solids that were once held in reserve at Rocky Flats because they contain Pu in sufficient quantities to warrant treatment for recovery of nuclear material. Residues mixed with hazardous waste are referred to as mixed residues (REM).

RFCA Standard Operating Protocol (RSOP). Approved protocols applicable to a set of routine environmental remediation and/or decommissioning activities regulated under RFCA that RFFO may repeat without re-obtaining approval after the initial approval because of the substantially similar nature of the work to be completed. Initial approval of an RSOP will be accomplished through an interim measure/interim remedial action process.

Safety Analysis Report (SAR). A report that documents the adequacy of safety analyses for a nuclear/non-nuclear facility to ensure that the facility can be constructed, operated, maintained, shut down and decommissioned safely and is in compliance with applicable laws and regulations.

Safety and Health (S&H). As defined in this DOP, a conditional state in which both the public and workers are free from harm. It is also defined as the practice and application of techniques to help prevent illness, injury, death, and property loss as a result of unintentional and undesirable conditions and acts.

Safety Authorization Basis. The combination of information relating to the control of hazards at a facility (including design, engineering analyses, and administrative controls) upon which DOE depends for its conclusion that activities at the facility can be conducted safely.

Safety-Critical Items. Equipment, systems, or components that are necessary to prevent or mitigate the harmful consequences of hazardous materials release.

Sanitary Waste.

Routine Sanitary Waste. This type of sanitary waste is collected in dumpsters located throughout RFETS. Typically these wastes consist of soft or compactable items generated by office/administrative and cafeteria areas and do not required a Radiological Waste Release Evaluation prior to generation or disposal into dumpsters. Typical routine sanitary waste includes: packaging and general office refuse; food waste from cafeteria or offices; non-recyclable paper, cardboard and miscellaneous glass; metal rubber; and plastic items from routine office/administrative operations.

Special Sanitary Waste. Special sanitary waste is sanitary waste that requires specific treatment, analysis, certification, and/or packaging prior to disposal off site. Special sanitary waste includes asbestos and Be waste that is not hazardous waste.

SETs. For decommissioning purposes, SETs are small, manageable groupings of similar equipment and rooms that may be worked independently.

Special Nuclear Material (SNM). Means Pu or uranium enriched in the isotope 233 or in the isotope 235, and any other material determined to be SNM pursuant to the Atomic Energy Act. (42 U.S.C. 2014[aa]).

Standards. As defined by the Department's Standards Committee, "Standards" include "Federal, state, and local laws and regulations; Department Orders; nationally and internationally recognized standards; and other documents (such as industrial standards) that protect the environment and the safety and health of our workers and the public."

Surveillance and Maintenance (S&M). A program established during deactivation and continuing until phased out during closure to provide containment of contamination, physical safety and security controls and maintenance of the facility in a cost-effective manner that is protective of workers, the public and the environment.

Transuranic (TRU) Waste. TRU waste is any waste that is contaminated with alpha-emitting transuranium radionuclides with half-lives greater than 20 years, in concentrations greater than or equal to 100 nCi/gram at the time of assay. TRU waste mixed with hazardous waste is referred to as TRU mixed waste (TRM).

Unreviewed Safety Question (USQ). A process to allow contractors to make physical and procedural changes and to conduct tests and experiments without prior DOE approval as long as the changes do not explicitly or implicitly affect the safety AB of the facility. It also requires that issues with a potential impact to the safety AB be brought to the attention of DOE.

USQ Screening Process. A technique/tool that uses a checklist approach to help determine if suggested changes require a full USQ determination of any effect on the safety AB of the facility.

Work Proposal Document (WPD). The WPD is a subset of the PBS, it defines the scope of work to be performed each fiscal year for each WBS element, the budget required to perform the scope, milestones planned for each WBS element and their end dates. Once approved, the WPD becomes

the WAD. This authorization occurs on an annual basis once Congress has appropriated budget to DOE. Several WPDs can roll up to the PBS level but in the case of the Building 776/777 Closure Project, only one WPD (WPD 35) rolls into the summary document (PBS 19). Specific items included in the WPD/WAD are: the fiscal year statement of work (for the current fiscal year plus one year) at the WBS level; DOE- RFFO controlled and other external milestones; fiscal year specific assumptions and conditions; impact of directed funding reduction on work scope and a detailed cost plan (budget profile) by fiscal year for each WBS element (current FY plus 1 FY); and a record of approved changes to the WAD. Several appendices accompany the WAD and provides further detail to the schedule and milestones.

WADlet. The WADlet is the next level of detail under the WAD. A WADlet is a grouping of scope with associated budget and schedule requirements to meet the scope. The WADlet is identified as a WBS element that is required to control and report specific scope conducted to meet the final objective of the WAD . Normally, several scope-similar, summary activities that leads to a significant completion milestone roll up to the WADlet level. An example for Building 776/777 is WADlet 1.1.06.12.02-SNM Removal Operations, which consists of activities such as: performing gamma scans; identifying SNM holdup contamination; verifying GB operability; entering the GB and removing the holdup; and transporting the holdup for thermal stabilization. The two primary completion milestone for this WADlet is removal of all SNM holdup from Building 776/777 and closure of the Material Access Area.

Work Task. A discrete activity made up of procedures performed in steps to achieve an objective goal such as removal of Pu from GBs, removal of a chemical from a storage area or removal of asbestos from a facility area.

13.3 References

1 FINAL Rocky Flats Cleanup Agreement, Federal Facility Agreement and Consent Order, CERCLA VIII-96-21, RCRA (3008[h]) VIII-96-01, State of Colorado Docket #96-07-19-01 (July 19, 1996).

2 RFCA, Appendix 9, Rocky Flats Vision.

3 Decontamination and Decommissioning Characterization Protocol (MAN-077-DDCP), latest revision.

4 Building 776/777 Reconnaissance Level Characterization Report, Rev. 0, August 28, 1989.

5 Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), 42 USC 9620.

6 Rocky Flats Environmental Technology Site Decommissioning Program Plan (DPP), latest revision.

7 Rocky Flats Environmental Technology Site Radiological Control Manual, latest revision.

8 Integrated Work Control Program (IWCP) Manual (MAN-0710-IWCP).

9 Toxic Substances Control Act (TSCA), 15 USC 2601 *et seq.*

10 Management of Polychlorinated Biphenyls (PCBs) in Paint and Other Bulk Product Waste During Facility Disposition, RFETS Environmental Leadership Team Environmental/Waste Compliance Guidance No. 25.

11 Chronic Beryllium Disease Prevention Program (MAN-072-OS&H).

12 10 CFR 835, Occupational Radiation Protection.

13 DOE Order 5400.5, Radiation Protection of the Public and the Environment.

14 The Decontamination & Decommissioning Characterization Protocol (DDCP) is currently undergoing a major revision, in consultation with EPA and CDPHE, per Section 2.3 of the Decommissioning Program Plan (DPP). When complete, the associated Pre-Demolition Survey Plan will be submitted to the LRA for review and approval, per Section 4.6 of this DOP.

15 6 CCR 1007-3, Part 261, Identification and Listing of Hazardous Waste.

16 6 CCR 1007-3, CFR Part 268, Land Disposal Restrictions.

17 Value Engineering Study, RFETS Building 776/777 Glovebox Size Reduction, FINAL REPORT, August 1998, prepared by Solutions Engineering & Facilitating, Inc.

18 Property Management Manual (1-MAN-009-PMM), latest revision.

19 Brown, C.M., "Evaluation of Potential Cost Impacts from Volume Reduction and Decontamination for TRU Contaminated Systems and Equipment," Kaiser-Hill Company, L.L.C. internal document, September 1998.

20 Building 776/777 Complex Basis for Interim Operation (BIO), Rev. 0, March 30, 1999 (draft), Safe Sites of Colorado, LLC.

21 DOE Order 5480.21, Unreviewed Safety Question.

22 DOE Order 440.1, Worker Protection Management for DOE Federal and Contractor Employees.

23 29 CFR 1910, Occupational Safety and Health Standards.

24 29 CFR 1926, Safety and Health Regulations for Construction.

25 Building 776/777 Closure Project-Specific Health and Safety Plan (HASP), latest revision.

26 RFETS Health and Safety Practices (HSP) Manual (latest revision).

27 DOE Order 5480.9A, Construction Project Safety and Health Management.
28 Integrated Safety Management System Manual (1-MAN-016-ISM), latest revision.

29 Conduct of Operations Manual (MAN-066-COOP), latest revision.

30 Conduct of Engineering Manual (COEM), latest revision.

31 Site Document Control Manual (1-MAN-001-SDRM), latest revision.

32 Training Users Manual (TUM), latest revision.

33 Rocky Flats Administrative Procedures Manual Operations Review Requirements (1-52000-ADM-02.01), latest revision.

34 Rocky Flats Environmental Technology Site Implementation Plan for the Nuclear Criticality Safety Manual, Rev. 2, December 2, 1996.

35 Rocky Flats Transportation Safety Manuals (PADC-94-01279), December 1995.

36 Rocky Flats Environmental Technology Site Emergency Plan (EPLAN-96).

37 Building 776/777 Emergency Response Operations, Rev. 0 (3-V95-BERO-14.776/777), latest revision.

38 Mixed Residue Compliance Order on Consent (99-09-24-01), including the Mixed Residues Tank Plan.

39 40 CFR 761, Manufacturing, Processing, and Distribution of PCBs in Commerce.

40 Waste Chemical Compliance Order on Consent (97-08-21-02), including the Waste Chemical Project Plan.

41 Waste Chemical Consent Order Number 97-08-21-02, Project Managers' Clarification Paper No. 3 (07/02/98).

42 Potentially Shock Sensitive/Explosive Chemical Characterization, Management, and Disposal Plan, (latest revision).

43 Idle Equipment and Hazardous Waste Tanks Compliance Order on Consent (97-08-21-01), including the Management Plan for Material Contained in Idle Equipment (latest revision).

44 40 CFR 300.440, National Oil and Hazardous Substances Pollution Contingency Plan, Procedures for Planning and Implementing Off-Site Response Actions.

45 Comprehensive Response, Compensation, and Liability Act, as amended by the Superfund Amendments and Reauthorization Act (SARA) and the Community Environmental Response Facilitation Act (CERFA), 42 USC 9601.

46 5 CCR 1001-3, Regulation No. 1, Emission Controls for Particulates, Smoke, Carbon Monoxide, and Sulfur Oxides.

47 5 CCR 1001-3, Regulation No. 3, Air Pollutant Emission Notice (APEN).

48 6 CCR 1007-2, CDPHE Regulations Pertaining to the Disposal of Solid Waste.

49 Migratory Bird Treaty Act, 16 USC 701 *et seq.*

50 Fish and Wildlife Conservation Act, 16 USC 661 *et seq.*

51 40 CFR 61, Subpart H, National Emissions Standards for Emission of Radionuclides Other than Radon from Department of Energy Facilities.

52 Rocky Flats Cumulative Impacts Document (CID), latest revision.

53 Endangered Species Act, 16 USC 1531, *et seq.*

54 Specifications and Guidelines for Quality Systems for Environmental Data Collection and Environmental Technology Systems (ANSI/ASQC-E4), 1994.

55 Quality Assurance Program Description, (RMRS-QAPD-001), Revision 2, April 15, 1998.

56 Memorandum of Understanding Governing Regulation and Oversight of Department of Energy Activities in the Rocky Flats Environmental Technology Site Industrial Area, entered into by DOE, EPA, CDPHE, and the DNFSB on February 15, 1996.

Appendix A - SET Descriptions, Endpoints, and Hazard Matrix

SET NO.	SET DESCRIPTION	MAJOR ENDPOINTS	ADDITIONAL CHARACTERIZTION NEEDED	UNIQUE HAZARD ANALYSIS	HAZARD CONTROL	WASTE STREAM
1	**GLOVEBOX SET - Room 125 and Dimensional Metrology Lab GB** *Beryllium*: Be contaminated clothes may have been laundered in this area in the 1950s &1960s, and Be components may have been located on carts that were moved through or staged in this area. *Chemicals*: Ethyl alcohol, 1,1,1-trichloroethane and oil were used in this area up until operations were suspended. *Lead and Other Heavy Metals*: The paint on the floor may contain lead and other heavy metals; GB gloves contain lead. *PCBs*: PCBs may be contained in paint. A PCB determination of ballasts will be made when the ballasts are removed. *SNM Holdup*: SNM holdup is not expected in this SET since the critically limits were "No Fissile Materials." *Radiological Contamination*: The GBs are expected to be contaminated >10^6 dpm Pu on the inner surface. There is fixed contamination on the floor and walls from the 1969 fire and major leaks from the GBs.	Deactivation: Control/fix contamination Remove/dispose of loose combustibles Remove/dispose of loose equipment Control/fix contamination Remove/dispose of loose hazardous materials Decommissioning: Drain/isolate fluid systems Control radioactive/chemical contamination Drain/isolate/remove/dispose of utility systems Remove/dispose of equipment & associated piping conduit Remove/dispose of utilities Package to waste acceptance criteria	*Beryllium* *SNM Holdup Measurements* *Radiological Surveys*	Beryllium High levels of radiological contamination	PPE Radiological Controls/ ALARA Principles CBDPP	TRU, TRM, LLW, LLM
2	**ROOM SET - Rooms 126, 132, 133, 137B** *Lead and Other Heavy Metals*: The paint on the floor may contain led or other RCRA heavy metals. The solder and printed circuit boards contain regulated quantities of lead.	Deactivation: Control/fix contamination Remove/dispose of loose combustibles Remove/dispose of loose equipment Remove/dispose of loose hazardous materials Decommissioning: Drain/isolate/remove/dispose of utility systems Remove/dispose of equipment & associated piping/conduit Package to waste acceptance criteria		None	PPE	LLW, LLM
3	**EQUIPMENT SET - Hydraulic Oil System, 2nd Floor in Room 233A** *Chemicals*: The unit contains a significant quantity of hydraulic oil.	Deactivation: Remove/dispose of loose combustibles Drain/isolate utility systems Decommissioning: Remove/dispose of equipment & associated piping/conduit Package to waste acceptance criteria	*Chemicals*: Hydraulic oil	None	PPE	LLW

SET NO.	SET DESCRIPTION	MAJOR ENDPOINTS	ADDITIONAL CHARACTERIZTION NEEDED	UNIQUE HAZARD ANALYSIS	HAZARD CONTROL	WASTE STREAM
4	**GLOVEBOX SET - Portion of Room 131 East/West D-Line and GBs 601, 602, 604, 605, 606, 608 and 612 (including Mixed Residue Tanks DL-776 & V-605 [2])** *Beryllium*: Be was machined in GB-605. *SNM Holdup*: Several of the GBs currently contain significant Pu holdup. *Radiological*: *Contamination:* The GBs are expected to be contaminated >10^6 cpm on the inner surfaces.	Deactivation: Control/fix contamination Remove/package classified material Remove/dispose of loose combustibles Drain/dispose of solutions Remove/dispose of loose equipment Remove/dispose of loose hazardous material Decommissioning: Drain/isolate fluid systems Control radioactive/chemical contamination Drain/isolate/remove/dispose of utility systems Remove/dispose of equipment & associated piping/conduit Package to waste acceptance criteria	*Beryllium* *SNM Holdup Measurements* *Radiological Surveys*	Beryllium High levels of radiological contamination	PPE Radiological Controls/ ALARA Principles CBDPP	TRU, TRM, LLW, LLM
Mod #8 5	**GLOVEBOX SET - Portion of Room 131 East/West D-Line and GBs 614, 615, 616, 617, 619, 620, 621, and 622 (including Mixed Residue Tanks V-614, V-616, V-618, and V-620)** *Chemicals*: Carbon tetrachloride and Freon TF (1,1,2-trichloro-1,2,2-trifluoroethane) were used as solvents in these GBs. Texaco Regal #643 lubricating oil was used as a coolant to cut Pu parts. *Lead & Other Heavy Metals*: There is lead shielding and leaded gloves on the GBs. The paint on the GBs may contain lead or other heavy metals. Leaded glass contains regulated quantities of barium and lead. *SNM Holdup*: Several of the GBs contain significant Pu holdup. *Radiological Contamination*: The GBs are expected to be contaminated.	Deactivation: Control/fix contamination Remove/package classified material Remove/dispose of loose combustibles Drain/dispose solutions Remove/dispose of loose equipment Remove/dispose of loose hazardous materials Decommissioning: Drain/isolate fluid systems Control radioactive/chemical contamination Drain/isolate/remove/dispose of utility systems Remove/dispose of equipment & associated piping/conduit Package to waste acceptance criteria		None	PPE	LLM, TRU

SET NO.	SET DESCRIPTION	MAJOR ENDPOINTS	ADDITIONAL CHARACTERIZTION NEEDED	UNIQUE HAZARD ANALYSIS	HAZARD CONTROL	WASTE STREAM
6	**GLOVEBOX SET - Portion of Room 131 North/South D-Line and GBs 626-628, 630, 632, 636, and 642 (including Mixed Residue Tanks V-626 and V-627)** *Beryllium*: Be contaminated oil is present in this area. *Chemicals*: Carbon tetrachloride and Freon TF (1,1,2, trichloro-1,2,2-trifluoroethane) were used as solvents in these GBs. Texaco Regal #643 lubricating oil was used as a coolant to cut Pu parts. *Lead and Other Heavy Metals*: There is lead shielding and leaded gloves on the GBs. The paint on the GBs may contain lead or other RCRA heavy metals. Leaded glass contains regulated quantities of barium and lead. *SNM Holdup*: Several of the GBs contain significant Pu holdup. *Radiological Contamination*: The GBs are expected to be contaminated >10^6 dpm Pu on the inner surfaces. Several of the GBs have less fixed contamination on the exterior; they are individually marked. The optical comparator may be contaminated with U-235.	Deactivation: Control/fix contamination Remove/package classified material Remove/dispose of loose combustibles Drain/dispose of solutions Remove/dispose of loose equipment Remove/dispose of loose hazardous materials Decommissioning: Drain/isolate fluid systems Control radioactive/chemical contamination Drain/isolate/remove/dispose of utility systems Remove/dispose of equipment & associated piping/conduit Package to waste acceptance criteria	*Beryllium* *Chemicals:* Oil *SNM Holdup Measurements* *Radiological Surveys*	Beryllium	PPE CBDPP	TRU, TRM, LLW, LLM

SET NO.	SET DESCRIPTION	MAJOR ENDPOINTS	ADDITIONAL CHARACTERIZTION NEEDED	UNIQUE HAZARD ANALYSIS	HAZARD CONTROL	WASTE STREAM
7	**TANK SET - Tanks 1103 (RCRA Unit 95.006), 1104 (RCRA Unit 95.007), 1106 (RCRA Unit 95.008) and associated ancillary equipment in Room 131** *Beryllium:* There is the possibility that liquids stored in the tank may be Be contaminated from Building 707 operations. *Chemicals*: Carbon tetrachloride and Freon TF (1,1,2-trichloro-1,2,2-trifluoroethane) were used as solvents in some of the GBs. Lubricating oils was used as a coolant to cut Pu parts. In the 1970s perchloroethylene was used in place of carbon tetrachloride in certain operations. *Lead & Other Heavy Metals*: The paint on the tanks might contain lead & other heavy metals. Based on historical analysis, there are detectable levels of barium, chromium and lead in the sludge. *SNM Holdup:* The tanks have significant Pu holdup. High hold-up levels will be reduced to below safeguards termination limits during deactivation activities (ring and sludge removal). *Radiological Contamination:* The tanks are assumed to be externally contaminated with Pu since they are in contamination control houses.	Deactivation: Control/fix contamination Remove/dispose of loose combustibles Drain/dispose of solutions Remove/dispose of loose equipment Remove/dispose of loose hazardous materials Decommissioning: Drain/isolate fluid systems Control radioactive/chemical contamination Drain/isolate/remove/dispose of utility systems Remove/dispose of equipment & associated piping/conduit Package to waste acceptance criteria	*Liquids* *SNM Holdup Measurements* *Radiological Surveys*	Beryllium High levels of radiological contamination	PPE CBDPP Radiological Controls/ ALARA Principles	TRM
8	**ROOM SET - Rooms 120, 130B, 131 (RCRA Unit 90.49), 131A, and Dock 1** *Chemicals*: Carbon Tetrachloride and Freon TF (1,1,2-trichloro-1,2,2-trifluoroethane) were used as solvents in the GBs located in Room 134E. Lubricating oil was used as a coolant to cut Pu parts. *Lead & Other Heavy Metals*: The paint on the floor and walls may contain lead & other heavy metals. Printed circuit boards in the control equipment will be handled as RCRA waste doe to lead in the solder. The incandescent and fluorescent lights may contain lead and mercury, respectively.	Deactivation: Control/fix contamination Remove/package classified material Remove/dispose of loose combustibles Remove/dispose of loose equipment Remove/dispose of loose hazardous materials Decommissioning: Drain/isolate/remove/dispose of utility systems Remove/dispose of equipment & associated piping/conduit Package to waste acceptance criteria		None	PPE	LLW, LLM

SET NO.	SET DESCRIPTION	MAJOR ENDPOINTS	ADDITIONAL CHARACTERIZTION NEEDED	UNIQUE HAZARD ANALYSIS	HAZARD CONTROL	WASTE STREAM
9	**ROOM SET - Room 134E** *Chemicals*: Carbon tetrachloride and Freon TF were used as solvents in the GBs. Lubricating oil was used as a coolant to cut Pu parts. *Lead & Other Heavy Metals*: The paint on the floor and walls may contain lead & other heavy metals. The gloveport covers and aprons in the cabinet contain lead. Printed circuit boards in control equipment will be handled as RCRA waste due to the lead in solder. Incandescent lights contain lead and fluorescent lights contain mercury; these lights will be managed as hazardous waste. *PCBs*: A PCB determination of ballasts will be made when the ballasts are removed. Any paint analyzed for lead & other heavy metals will be analyzed for PCBs. *Radiological Contamination:* There are several High Contamination Areas in GBs; the contamination is mainly in the form of Pu-contaminated oil. It is assumed that the fixed contamination under paint on the floors is the same as the contamination levels detected after the 1969 fire (i.e., $>10^6$ cpm/cm^2).	Deactivation: Control/fix contamination Remove/dispose of loose combustibles Remove/dispose of loose equipment Remove/dispose of loose hazardous materials Decommissioning: Drain/isolate/remove/dispose of utility systems Remove/dispose of equipment & associated piping/conduit Package to waste acceptance criteria	*Radiological Surveys*	High radiological contamination areas	PPE Radiological Controls/ ALARA Principles	LLW, LLM
10	**GLOVEBOX SET - Room 134E, GBs 505, 509, 751, 752, 624 and Associated M-Line & North/South D-Line (including Mixed Residue Tank V-752)** *Chemicals*: Carbon tetrachloride, 1,1,1-trichloroethane and Freon TF were used as solvents in these GBs. Texaco Regal #643 lubricating oil was used as a coolant to cut Pu parts. *Lead & Other Heavy Metals*: There is lead shielding and leaded gloves on the GBs. The paint on the GBs may contain lead or other heavy metals. *SNM Holdup*: GB 752 contains significant Pu holdup that will be removed prior to decommissioning. *Radiological Contamination*: The GBs are expected to be contaminated to $>10^6$ dpm Pu on the inner surfaces.	Deactivation: Control/fix contamination Remove/package classified material Remove/dispose of loose combustibles Drain/dispose of solutions Remove/dispose of loose equipment Remove/dispose of loose hazardous materials Decommissioning: Drain/isolate fluid systems Control radioactive/chemical contamination Drain/isolate/remove/dispose of utility systems Remove/dispose of equipment & associated piping/conduit Package to waste acceptance criteria	*SNM Holdup Measurements* *Radiological Surveys*	High levels of radiological contamination	PPE Radiological Controls/ ALARA Principles	TRU, TRM, LLW, LLM

SET NO.	SET DESCRIPTION	MAJOR ENDPOINTS	ADDITIONAL CHARACTERIZTION NEEDED	UNIQUE HAZARD ANALYSIS	HAZARD CONTROL	WASTE STREAM
11	**GLOVEBOX SET - Room 134E, GBs 746, 747, 748, 749, and Associated M-Lines, (including Tank T-7 [RCRA Unit 95.014] and Mixed Residue Tanks V-746, V-747, V-748, & V-749)** *Chemicals*: Carbon Tetrachloride and Freon TF were used as solvents in these GBs. Texaco Regal #643 lubricating oil was used as a coolant to cut Pu parts. *Lead & Other Heavy Metals*: There is lead shielding and leaded gloves on the GBs. Leaded glass on the GB contains regulated quantities of barium and lead. The paint on the GBs may contain lead and other heavy metals. *SNM Holdup*: GB746 contains significant Pu holdup; several of the remaining GBs contain measurable Pu holdup. GBs 746, 748, and 749 contain less than 15 grams uranium (U) holdup each. *Radiological Contamination:* The GBs are expected to be contaminated >10^6 dpm Pu on the inner surface. Several of the GBs have less fixed contamination on the exterior.	Deactivation: Control/fix contamination Remove/package classified material Remove/dispose of loose combustibles Drain/dispose of solutions Remove/dispose of loose equipment Remove/dispose of loose hazardous materials Decommissioning: Drain/isolate systems Control radioactive/chemical contamination Drain/isolate/remove/dispose of utility systems Remove/dispose of equipment & associated piping/conduit Package to waste acceptance criteria	*SNM Holdup Measurements* *Radiological Surveys*	High levels of radiological contamination	PPE Radiological Controls/ ALARA Principles	TRU, TRM, LLW, LLM
12	**ROOM SET - Rooms 401, 402, 402A, 403, 404, 405, 406, 407, 409, 410, and 411** *Asbestos*: Rooms 495 and 410 have tile floors that may contain asbestos: There may be floor tile is under the carpet in Room 408 that may contain asbestos. *Beryllium*: Based on the type of work performed in Room 408, Be is likely to be present. Be contamination has been detected in Room 401. *Lead & Other Heavy Metals*: The paint on the floor and walls may contain lead or other heavy metals. Incandescent lights contain lead and fluorescent lights contain mercury; these lights will be managed as hazardous waste. *PCBs*: PCBs may be in fluorescent light ballasts. Any paint sampled for lead or other heavy metals will be sampled for PCBs. *Radiological Contamination*: There is fixed contamination in Rooms 402, 402A and 411 beneath the paint on the floor and original walls as a result of the 1969 fire. Floor contamination levels after the fire were up to 10^6 cpm.	Deactivation: Remove/dispose of loose combustibles Remove/dispose of loose equipment Remove/dispose of loose hazardous materials Decommissioning: Drain/isolate/remove/dispose of utility systems Remove/dispose of equipment & associated piping/conduit Package to waste acceptance criteria	*Asbestos* *Beryllium* *Radiological Surveys*	Beryllium High levels of radiological contamination	PPE Radiological Controls/ ALARA Principles CBDPP	LLW, LLM, SAN, HAZ

SET NO.	SET DESCRIPTION	MAJOR ENDPOINTS	ADDITIONAL CHARACTERIZTION NEEDED	UNIQUE HAZARD ANALYSIS	HAZARD CONTROL	WASTE STREAM
13	**ROOM SET - Rooms 416, 416B, 417, 418, 419, 420, 429, 431, 431A, and 431B** *Asbestos*: There are floor tiles in Room 419 that may contain asbestos. *Beryllium:* A grit blaster for Be parts was operated in Room 416 in the 1960s. R&D welding was performed in Room 416 in the same time period. Be contamination has been detected in Room 416.	Deactivation: Control/fix contamination Remove/package classified material Remove/dispose of loose combustibles Remove/dispose of loose equipment Remove/dispose of loose hazardous materials Decommissioning: Drain/isolate/dispose of utility systems Remove/dispose of equipment & associated piping/conduit Package to waste acceptance criteria	*Asbestos* *Beryllium*	Beryllium	PPE BCDDP	LLW

	SET DESCRIPTION	MAJOR ENDPOINTS	ADDITIONAL CHARACTERIZTION NEEDED	UNIQUE HAZARD ANALYSIS	HAZARD CONTROL	WASTE STREAM
14	**ROOM/EQUIPMENT SET - Room 415 and associated GBs 201 through 205, 207 through 214, and 216 through 222** *Beryllium*: R&D welding was performed within Room 416 in the 1960s. *Chemicals*: 1,1,1-Trichloroethane was used to clean specimens and wet the grit for polishing within the GBs. Ethanol was also used to clean specimens. A kerosene/diamond paste mixture was used in the polishers. Inorganic chemicals used in the GBs include electrolytic solution, oxalic acid and sodium hydride. *Lead & Other Heavy Metals*: The paint on the floor and walls may contain lead or other RCRA heavy metals. The incandescent and fluorescent lights can contain lead and mercury, respectively. *PCBs*: A PCB determination of ballasts will be made when the ballasts are removed. Any paint analyzed for lead & other heavy metals will be analyzed for PCBs. *SNM Holdup*: To be determined. *Radioisotope Sources*: The sources from the alphamet monitors in Room 415 will be removed during deactivation. *Radiological Contamination*: The GBs are expected to be contaminated >10^6 dpm Pu on the inner surface. There is fixed contamination beneath the paint on the floor and the building walls from the 1969 fire. It is assumed that floor contamination levels are the same as those after the 1969 fire (i.e., 250 – 10^6 cpm).	Deactivation: Control/fix contamination Remove/package classified material Remove/dispose of loose combustibles Drain/dispose of solutions Remove/dispose of loose equipment Remove/dispose of loose hazardous materials Decommissioning: Drain/isolate fluid systems Control radioactive/chemical contamination Drain/isolate/remove/dispose of utility systems Remove/dispose of equipment & associated piping/conduit Package to waste acceptance criteria	*Beryllium* *SNM Holdup Measurements* *Radiological Surveys*	Beryllium High levels of radiological contamination	PPE CBDPP Radiological Controls/ ALARA Principles	TRU, TRM, LLW, LLM
15	**ROOM SET - Room 416A (Vault)** *Beryllium*: Be parts were stored on carts. R&D welding was performed in the 1960s. Be may have been welded or brazed in the equipment located in this room. *Lead & Other Heavy Metals*: The paint on the floor and wall may contain lead and other RCRA heavy metals. Incandescent lights contain lead and fluorescent lights contain mercury; these lights will be managed as hazardous waste. *PCBs*: A PCB determination of ballasts will be made when the ballasts are removed. PCBs may be present in paint. *Radiological Contamination*: There is fixed contamination beneath the paint on the floor and the building walls from the 1969 fire. It is assumed that floor contamination levels are the same as those after the 1969 fire (i.e., 10^5 – 10^6 cpm).	Deactivation: Control/fix contamination Remove/package classified material Remove/dispose of loose combustibles Remove/dispose of loose equipment Remove/dispose of loose hazardous materials Decommissioning: Drain/isolate/dispose of utility systems Remove/dispose of equipment & associated piping/conduit Package to waste acceptance criteria	*Beryllium* *Radiological Surveys*	Beryllium High levels of radiological contamination	PPE CBDPP Radiological Controls/ ALARA Principles	LLW, LLM

SET NO.	SET DESCRIPTION	MAJOR ENDPOINTS	ADDITIONAL CHARACTERIZTION NEEDED	UNIQUE HAZARD ANALYSIS	HAZARD CONTROL	WASTE STREAM
16	**ROOM SET - Rooms 426, 427, 427A, and 428** *Beryllium*: Be has been detected in the hood above the washing machine. There are no records to indicate the source of Be contamination. *Chemicals*: Soaps, detergent, and bleach were used within Rooms 426, 427 and 428. *Lead & Other Heavy Metals*: The paint on the floor and walls may contain lead or other RCRA heavy metals. Incandescent lights contain lead and fluorescent lights contain mercury; these lights will be managed as hazardous waste. *PCBs*: A PCB determination of ballasts will be made when the ballasts are removed. PCBs may be present in paint. *Radiological Contamination*: There is fixed contamination beneath the paint on the floor and building walls from the 1969 fire. It is assumed that the floor contamination levels are the same as those after the 1969 fire (i.e., 10^5 - 10^6 cpm). The drains from the process sinks are assumed to be contaminated based on their usage.	Deactivation: Control/fix contamination Remove/dispose of loose combustibles Drain/dispose of solutions Remove/dispose of loose equipment Remove/dispose of loose hazardous materials Decommissioning: Drain/isolate/dispose of utility systems Remove/dispose of equipment & associated piping/conduit Package to waste acceptance criteria	*Beryllium* *SNM Holdup Measurements* *Radiological Surveys*	Beryllium	PPE CBDPP	LLW, LLM
17	**GLOVEBOX SET - Room 430, GB 481** *Chemicals:* A catalyst column is filled with palladium metal that is mounted to the Superdry facility wall. *Lead & Other Heavy Metals*: There is lead shielding and leaded gloves on the GBs. The paint on the GBs may contain lead or other RCRA heavy metals. Leaded glass on the GBs contains regulated quantities of barium and lead. *Radiological:* Since the GB was never used, there is no contamination inside the GB. However, since the outside of the GB is painted, the GB may not be free released.	Deactivation: Remove/dispose of loose combustibles Drain/dispose of solutions Remove/dispose of loose hazardous materials Decommissioning: Drain/isolate utility systems Remove/dispose of equipment & associated piping/conduit Package to waste acceptance criteria	*Radiological Surveys*	None	PPE Radiological Controls/ ALARA Principles	LLW, LLM

SET NO.	SET DESCRIPTION	MAJOR ENDPOINTS	ADDITIONAL CHARACTERIZTION NEEDED	UNIQUE HAZARD ANALYSIS	HAZARD CONTROL	WASTE STREAM
18	**GLOVEBOX SET - Room 430, GBs 360, 361, 362, 363, 364, 367, 368, 369, 370, 371, 372, 373, 465, and associated G2-Line** *Chemicals*: Carbon tetrachloride and Freon TF were used as solvents in these GBs. *Lead & Other Heavy Metals*: There is lead shielding and leaded gloves on the GBs. The paint on the GBs may contain lead or other RCRA heavy metals. Leaded glass on the GBs contains regulated quantities of barium and lead. *PCBs*: PCBs may be present in paint. *SNM Holdup:* GB 362 contains Pu holdup. No measurable U holdup has been detected to date. There are other GBs in this SET where holdup is not yet determined. *Radiological Contamination:* The GBs are expected to be contaminated >10^6 dpm Pu on the inner surfaces. Several of the GBs have less fixed contamination on the exterior; they are individually marked.	Deactivation: Control/fix contamination Remove/package classified material Remove/dispose of loose combustibles Drain/dispose of solutions Remove/dispose of loose equipment Remove/dispose of loose hazardous materials Decommissioning: Drain/isolate fluid systems Control radioactive/chemical contamination Drain/isolate/remove/dispose of utility systems Remove/dispose of equipment & associated piping/conduit Package to waste acceptance criteria	*SNM Holdup Measurements* *Radiological Surveys*	High levels of radiological contamination	PPE Radiological Controls/ ALARA Principles	TRU, TRM, LLW, LLM
19	**ROOM SET - Room 154A** *Lead & Other Heavy Metals*: The paint on the floor and walls may contain lead or other RCRA heavy metals. Incandescent lights contain lead and fluorescent lights contain mercury; these lights will be managed as hazardous waste. *PCBs*: A PCB determination of ballasts will be made when the ballasts are removed. PCBs may be present in paint. *Radiological Contamination*: There is fixed contamination beneath the paint on the floor and the building walls from the 1969 fire. It is assumed that floor contamination levels are the same as those after the 1969 fire (10^5 – 10^6 cpm).	Deactivation: Control/fix contamination Remove/dispose of loose combustibles Drain/dispose solutions Remove/dispose of loose equipment Remove/dispose of loose hazardous materials Decommissioning: Drain/isolate fluid systems Control radioactive/chemical contamination Drain/isolate/remove/dispose of utility systems Remove/dispose of equipment & associated piping/conduit Package to waste acceptance criteria	*Radiological Surveys*	High levels of radiological contamination	PPE Radiological Controls/ ALARA Principles	LLW, LLM

SET NO.	SET DESCRIPTION	MAJOR ENDPOINTS	ADDITIONAL CHARACTERIZTION NEEDED	UNIQUE HAZARD ANALYSIS	HAZARD CONTROL	WASTE STREAM
20	**GLOVEBOX SET - Room 430, GBs 401, 402, Hood Area, and Room 424** *Beryllium*: Be was machined in GBs 401 and 402. Be salts were handled in the hoods in Room 424. Surveys confirmed the presence of Be in these areas. *Chemicals:* 1,1,1-trichloroethane was used on wipes within the GBs. Oil from the vacuum pumps will be removed during deactivation. *Lead & Other Heavy Metals*: The paint on the floor and walls may contain lead or other RCRA heavy metals. Incandescent lights contain lead and fluorescent lights contain mercury; these lights will be managed as hazardous waste. *PCBs*: A PCB determination of ballasts will be made when the ballasts are removed. PCBs may be present in paint. *SNM Holdup*: Not determined. The two lathe B-boxes will be scanned for holdup. *Radiological Sources*: There are two registered sources in Room 424. These sources will be removed during deactivation. *Radiological Contamination*: There is fixed contamination beneath the paint on the floor and the building walls from the 1969 fire. It is assumed that floor contamination levels are the same as those after the 1969 fire (i.e., $>10^5$ cpm).	Deactivation: Control/fix contamination Remove/package classified material Remove/dispose of loose combustibles Drain/dispose of solutions Remove/dispose of loose equipment Remove/dispose of loose hazardous materials Decommissioning: Drain/isolate fluid systems Control radioactive/chemical contamination Drain/isolate/remove/dispose of utility systems Remove/dispose of equipment & associated piping/conduit Package to waste acceptance criteria	*Beryllium* *SNM Holdup Measurements* *Radiological Surveys*	Beryllium High levels of radiological contamination	PPE CBDPP Radiological Controls/ ALARA Principles	TRU, TRM, LLW, LLM

SET NO.	SET DESCRIPTION	MAJOR ENDPOINTS	ADDITIONAL CHARACTERIZTION NEEDED	UNIQUE HAZARD ANALYSIS	HAZARD CONTROL	WASTE STREAM
21	**GLOVEBOX SET - Room 430, GBs 403, 404, 405, 408, 409, 413, 426, 427, 450, and associated A-Line** *Beryllium*: Be was handled in GB427. *Chemicals*: 1,1,1-trichloroethane was used on wipes and inside the ultrasonic cleaner/vapor degreaser within the GBs. Oil from the vacuum pumps will be removed during deactivation. *Lead & Other Heavy Metals*: The paint on the floor and walls may contain lead or other RCRA heavy metals. Incandescent lights contain lead and fluorescent lights contain mercury; these lights will be managed as hazardous waste. *PCBs*: A PCB determination of ballasts will be made when the ballasts are removed. PCBs may be present in paint. *SNM Holdup*: It has not been determined if there is holdup in the GBs. *Radiological Sources*: The sources in the alphamet monitors will be removed during deactivation. *Radiological Contamination*: The GBs are expected to be contaminated >10^6 dpm Pu on the inner surfaces. Some of the GBs may be internally contaminated with enriched U.	Deactivation: Control/fix contamination Remove/repackage classified material Remove/dispose of loose combustibles Drain/dispose of solutions Remove/dispose of loose equipment Remove/dispose of loose hazardous materials Decommissioning: Drain/isolate fluid systems Control radioactive/chemical contamination Drain/isolate/remove/dispose of utility system Remove/dispose of equipment & associated piping/conduit Package to waste acceptance criteria	*Beryllium* *SNM Holdup Measurements* *Radiological Surveys*	Beryllium High levels of radiological contamination	PPE CBDPP Radiological Controls/ ALARA Principles	TRU, TRM, LLW, LLM
22	**GLOVEBOX SET - Room 430, GBs 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 451, 452, 454, 456, 457, 458, 459, 462, 464 and associated A-Line** *Beryllium*: Be was handled in GBs 448, 451, 451 and 454. *Chemicals*: 1,1,1-trichloroethane was used on wipes and inside the ultrasonic cleaner/vapor degreaser within the GBs. Oil from the vacuum pumps will be removed during deactivation. *Lead & Other Heavy Metals*: The paint on the floor and walls may contain lead or other RCRA heavy metals. Incandescent lights contain lead and fluorescent lights contain mercury; these lights will be managed as hazardous waste. *PCBs*: A PCB determination of ballasts will be made when the ballasts are removed. PCBs may be present in paint. *SNM Holdup*: It has not yet been determined if these GBs contain holdup. *Radiological Contamination*: The GBs are expected to be contaminated >10^6 dpm Pu on the inner surfaces. Some of the GBs may be internally contaminated with enriched and depleted U.	Deactivation: Control/fix contamination Remove/package classified material Remove/dispose of loose combustibles Drain/dispose of solutions Remove/dispose of loose equipment Remove/dispose of loose hazardous materials Decommissioning: Drain/isolate fluid systems Control radioactive/chemical contamination Drain/isolate/remove/dispose of utility systems Remove/dispose of equipment & associated piping/conduit Package to waste acceptance criteria	*Beryllium* *SNM Holdup Measurements* *Radiological Surveys*	Beryllium High levels of radiological contamination	PPE CBDPP Radiological Controls/ ALARA Principles	TRU, TRM, LLW, LLM

SET NO.	SET DESCRIPTION	MAJOR ENDPOINTS	ADDITIONAL CHARACTERIZTION NEEDED	UNIQUE HAZARD ANALYSIS	HAZARD CONTROL	WASTE STREAM
23	**GLOVEBOX SET - Room 430, GB 515, associated R-Line, and GBs 318, 320, 321, 323, 324, 327, 328, 329, 330, and 331** *Chemicals*: Carbon tetrachloride, 1,1,1-trichloroethane and Freon TF were used on wipes in the GBs. *Lead & Other Heavy Metals*: There is lead shielding and leaded gloves on the GBs. There are lead counterweights on the equipment in GB 318. The paint on the floor and walls may contain lead or other RCRA heavy metals. Fluorescent lights contain mercury; these lights will be managed as hazardous waste. *PCBs*: A PCB determination of ballasts will be made when the ballasts are removed. PCBs may be present in paint. *SNM Holdup*: It has not yet been determined if these GBs contain holdup. *Radiological Contamination*: The GBs are expected to be contaminated >10^6 dpm Pu on the inner surfaces.	Deactivation: Control/fix contamination Remove/package classified Remove/dispose of loose combustibles Drain/dispose of solutions Remove/dispose of loose equipment Remove/dispose of loose hazardous materials Decommissioning: Drain/isolate fluid systems Control radioactive/chemical contamination Drain/isolate/remove/dispose of utility systems Remove/dispose of equipment & associated piping/conduit Package to waste acceptance criteria	*SNM Holdup Measurements* *Radiological Surveys*	High levels of radiological contamination	PPE Radiological Controls/ ALARA Principles	TRU, TRM, LLW, LLW
24	**GLOVEBOX SET - Room 430, GBs 756, 758, 759, 760, 761, 762, 763, 764, and associated M-Line** *Chemicals*: Carbon tetrachloride and Freon TF were used on wipes within the GBs. *Lead & Other Heavy Metals*: There is lead shielding and leaded gloves on the GBs. There are lead counterweights on the equipment in GB 758. The paint on the floor and walls may contain lead or other RCRA heavy metals. Fluorescent lights contain mercury; these lights will be managed as hazardous waste. *PCBs*: A PCB determination of ballasts will be made when the ballasts are removed. PCBs may be present in paint. *SNM Holdup*: It has not yet been determined if these GBs contain holdup. *Radiological Sources*: The sources in the alphamet monitors will be removed during deactivation. *Radiological Contamination*: The GBs (except GB 764) are expected to be contaminated >10^6 dpm Pu on the inner surface. The outer surfaces of the GBs are contaminated up to 250,000 dpm. GB 764 was never used and has little or no radioactive contamination.	Deactivation: Control/fix contamination Remove/package classified material Remove/dispose of loose combustibles Drain/dispose of solutions Remove/dispose of loose equipment Remove/dispose of loose hazardous materials Decommissioning: Drain/isolate fluid systems Control radioactive/chemical contamination Drain/isolate/remove/dispose of utility systems Remove/dispose of equipment & associated piping/conduit Package to waste acceptance criteria	*SNM Holdup Measurements* *Radiological Surveys*	High levels of radiological contamination	PPE Radiological Controls/ ALARA Principles	TRU, TRM, LLW, LLM

SET NO.	SET DESCRIPTION	MAJOR ENDPOINTS	ADDITIONAL CHARACTERIZTION NEEDED	UNIQUE HAZARD ANALYSIS	HAZARD CONTROL	WASTE STREAM
25	**ROOM SET - Room 430, including RCRA Unit 777.1 (i.e., Areas 2 & 3)** *Asbestos*: There is insulation on small tank(s) and tritium dryers in this SET. This insulation will be managed as asbestos waste. *Beryllium*: Be was machined in GBs 401 and 402 in Room 430. Be salts were handled in the hoods in Room 424, which is on the southern border of this SET. Previous surveys have confirmed the presence of Be contamination. *Chemicals*: Water in Tank RT-1 and oil in the vacuum pumps will be drained during deactivation. *Lead & Other Heavy Metals*: There is lead metal on the drum shields and leaded gloves stored in this room. The paint on the floor and walls may contain lead or other RCRA heavy metals. Incandescent lights contain lead and fluorescent lights contain mercury; these lights will be managed as hazardous waste. *PCBs*: A PCB determination of ballasts will be made when the ballasts are removed. PCBs may be present in paint. *Radioactive Sources*: Sources on combo monitors will be removed during deactivation. *Radiological Contamination*: Gettering system tank RT-1 is marked as Pu and tritium contaminated.	Deactivation: Control/fix contamination Remove/package classified material Remove/dispose of loose combustibles Remove/dispose of loose equipment Remove/dispose of loose hazardous materials Decommissioning: Drain/isolate/dispose of utility systems Remove/dispose of equipment & associated piping/conduit Package to waste acceptance criteria	*Beryllium* *SNM Holdup Measurements* *Radiological Surveys*	Beryllium Tritium	PPE CBDPP Radiological Controls/ ALARA Principles	LW, LLM
26	**TANK SET - Room 430, Tanks T-1 (RCRA Unit 95.015), T-2 (RCRA Unit 95.016), and FL-1** *Beryllium*: Be metal was not routinely cleaned in ultrasonic cleaners after the late 1960s –early 1970s. Prior to this period, an ultrasonic cleaner for grit blasted Be parts operated in Room 418. It is not clear if the SET26 tanks were installed before or after the ultrasonic cleaner was removed from Room 418. *Chemicals*: 1,1,1-trichloroethane was stored in the tanks. Prior to 1974, trichloroethylene was used in place of 1,1,1-trochloroethane. *Lead & Other Heavy Metals*: The paint on the tanks and filter GB may contain lead or other RCRA heavy metals. *PCBs*: PCBs may be present in paint. *SNM Holdup*: The tanks were scanned in 1990 and 1994 for holdup. The holdup is less than 50 grams per tank. Holdup levels will be reduced during deactivation. *Radiological Contamination*: The tanks are assumed to be externally contaminated with Pu since they are in contamination control houses.	Deactivation: Control/fix contamination Remove/dispose of loose combustibles Drain/dispose of solutions Remove/dispose of loose equipment Remove/dispose of loose hazardous materials Decommissioning: Drain/isolate fluid systems Control radioactive/chemical contamination Drain/isolate/remove/dispose of utility systems Remove/dispose of equipment & associated piping/conduit Package to waste acceptance criteria	*Beryllium* *SNM Holdup Measurements* *Radiological Surveys*	Beryllium	PPE CBDPP	TRU, TRM

SET NO.	SET DESCRIPTION	MAJOR ENDPOINTS	ADDITIONAL CHARACTERIZTION NEEDED	UNIQUE HAZARD ANALYSIS	HAZARD CONTROL	WASTE STREAM
27	**ROOM/EQUIPMENT SET - Rooms 432, 432A, 432B, 432C (RCRA Unit 777.1), 432D, 440, and GB 461** *Asbestos*: A small oven in this SET is insulated with Transite. *Beryllium*: Be parts were stored, cleaned and assembled in the Superdry facility. *Chemicals*: 1,1,1-trichloroethane was used in the ultrasonic cleaners in Room 440. Prior to 1974, trichloroethylene was used in place of 1,1,1-trichlorethane. The oil in the machinery will be removed during deactivation. A palladium metal filled catalyst column for SET 17 is attached to the north exterior wall of the SET. *Lead & Other Heavy Metals*: There is lead metal stored in the room. The paint on the floor and walls may contain lead or other RCRA heavy metals. Incandescent lights contain lead and fluorescent lights contain mercury; these lights will be managed as hazardous waste. *PCBs*: A PCB determination of ballasts will be made when the ballasts are removed. PCBs may be present in paint. *SNM Holdup*: It is not yet determined if the lathes in Room 432D and the downdraft table in Room 432B contain SNM holdup. *Radiological Contamination*: There are used tritium dryers with unknown levels of contamination. Depleted and enriched U contamination is possible in this SET. Room 432B and the lathe in Room 432D are posted as high contamination areas. The posted contamination within Room 432B is 500,000 cpm.	Deactivation: Control/fix contamination Remove/package classified material Remove/dispose of loose combustibles Drain/dispose solutions Remove/dispose of loose equipment Remove/dispose of loose hazardous materials Decommissioning: Drain/isolate fluid systems Control radioactive/chemical contamination Drain/isolate/dispose of utility systems Remove/dispose of equipment & associated piping/conduit Package to waste acceptance criteria	*Beryllium* *SNM Holdup Measurements* *Radiological Surveys*	Beryllium Tritium	PPE CBDPP Radiological Controls/ ALARA Principles	TRU, LLW, LLM
28	**ROOM SET - Room 433** *Beryllium*: Be parts were handled in this area in the 1960s and may have been transported through the room after the 1960s. Be contamination has been found near SET 28 in SET 20. *Chemicals*: The flammable cabinets contain two drums of epoxy and catalyst. These drums will be removed during deactivation. *Lead & Other Heavy Metals*: There is a leaded glove and a box of leaded glass stored in the room. The paint on the floor and walls may contain lead or other RCRA heavy metals. Incandescent lights contain lead and fluorescent lights contain mercury; these lights will be managed as hazardous waste. *PCBs*: A PCB determination of ballasts will be made when the ballasts are removed. PCBs may be present in paint. *Radiological Contamination*: A transformer in the SET is marked as having 50,000 dpm fixed contamination.	Deactivation: Control/fix contamination Remove/dispose of loose combustibles Remove/dispose of loose equipment Remove/dispose of loose hazardous materials Decommissioning: Drain/isolate/dispose of utility systems Remove/dispose of equipment & associated piping/conduit Package to waste acceptance criteria	*Beryllium* *Radiological Surveys*	Beryllium	PPE CBDPP	LLW, LLM

SET NO.	SET DESCRIPTION	MAJOR ENDPOINTS	ADDITIONAL CHARACTERIZTION NEEDED	UNIQUE HAZARD ANALYSIS	HAZARD CONTROL	WASTE STREAM
29	**GLOVEBOX SET - Room 437, GB A1, A2 and A3, and associated conveyor lines** *Beryllium*: Leak detector parts stored in the room have manufacturer warnings regarding Be in the ceramic rings. *Chemicals*: 1,1,1-trichloroethane and Freon TF were use as solvents in these GBs. Containerized chemicals will be removed during deactivation. *Lead & Other Heavy Metals*: There is lead shielding and leaded gloves on the GBs. Leaded GB covers, gloves, and an apron are stored in the cabinets. Leaded glass in the GB windows contains regulated quantities of barium and lead. The paint on the floors, walls and GBs may contain lead or other RCRA heavy metals. *PCBs*: A PCB determination of ballasts will be made when the ballasts are removed. PCBs may be present in paint. *SNM Holdup*: GBs A-1 and A-2 have been scanned for Pu holdup. While these GBs contain gram quantities of Pu, the holdup does not require remediation prior to decommissioning. *Radiological Contamination*: The GBs are expected to be contaminated >10^6 dpm Pu on the inner surfaces. The maximum fixed contamination on the exterior of the GBs is 100,000 dpm. An electrical cabinet in the room is marked as containing fixed contamination. There is fixed contamination beneath the paint on the floor and the building walls from the 1969 fire. It is assumed that floor contamination levels are the same as those after the 1969 fire (i.e., 10^5 to 10^6 cpm).	Deactivation: Control/fix contamination Remove/package classified material Remove/dispose of loose combustibles Drain/dispose of solutions Remove/dispose of loose equipment Remove/dispose of loose hazardous materials Decommissioning: Drain/isolate fluid systems Control radioactive/chemical contamination Drain/isolate/remove/dispose of utility systems Remove/dispose of equipment & associated piping/conduit Package to waste acceptance criteria	*Radiological Surveys*	High levels of radiological contamination	PPE Radiological Controls/ ALARA Principles	TRU, TRM, LLW, LLM
30	**ROOM SET - Room 442** *Beryllium*: Be parts were x-rayed and stored in this area. *Chemicals*: Freon gas will be removed during deactivation. *Lead & Other Heavy Metals*: There is lead metal located in the room. The paint on the floor and walls may contain lead or other RCRA heavy metals. Incandescent lights contain lead and fluorescent lights contain mercury; these lights will be managed as hazardous waste. *PCBs*: A PCB determination of ballasts will be made when the ballasts are removed. PCBs may be present in paint. *Radiological Contamination*: There is no indication of radiological contamination in this room.(surveys).	Deactivation: Control/fix contamination Remove/package classified material Remove/dispose of loose combustibles Remove/dispose of loose equipment Remove/dispose of loose hazardous materials Decommissioning: Drain/isolate/remove/dispose of utility systems Remove/dispose of equipment & associated piping/conduit Package to waste acceptance criteria	*Beryllium* *Radiological Surveys*	Beryllium	PPE CBDPP	LLW, LLM

SET NO.	SET DESCRIPTION	MAJOR ENDPOINTS	ADDITIONAL CHARACTERIZTION NEEDED	UNIQUE HAZARD ANALYSIS	HAZARD CONTROL	WASTE STREAM
31	**ROOM/EQUIPMENT SET - Room 443 (including RCRA Unit 777.1) and NDT Line** *Beryllium*: Be parts may have been stored on carts in Room 443. *Chemicals*: A small cylinder of sulfur hexafluoride will be removed during deactivation. Any liquids (i.e., oil or water) in the x-ray unit or GBs will be drained. Carbon tetrachloride has been used in the GBs in the past. *Lead & Other Heavy Metals*: There is lead metal stored in the room and lead shielding within the x-ray unit. There is a thermometer on the X-ray unit that contains mercury. There is lead metal located in the room. The paint on the floor and walls may contain lead or other RCRA heavy metals. Incandescent lights contain lead and fluorescent lights contain mercury; these lights will be managed as hazardous waste. *PCBs*: A PCB determination of ballasts will be made when the ballasts are removed. PCBs may be present in paint. *SNM Holdup*: Not yet determined. The GBs need to be scanned prior to packaging in waste containers, as required by the current criticality controls. *Radiological Contamination*: The GBs are expected to be contaminated >10^6 dpm Pu on the inner surfaces. There is fixed contamination beneath the paint on the floor and the building walls from the 1969 fire. It is assumed that floor contamination levels are the same as those after the 1969 fire (i.e., >10^5 cpm).	Deactivation: Control/fix contamination Remove/package classified material Remove/dispose of loose combustibles Drain/dispose of solutions Remove/dispose of loose equipment Remove/dispose of loose hazardous materials Decommissioning: Drain/isolate fluid systems Control radioactive/chemical contamination Drain/isolate/remove/dispose of utility systems Remove/dispose of equipment & associated piping/conduit Package to waste acceptance criteria	*Beryllium* *SNM Holdup Measurements* *Radiological Surveys*	Beryllium High levels of radiological contamination	PPE CBDPP Radiological Controls/ ALARA Principles	TRU, TRM, LLW, LLM

SET NO.	SET DESCRIPTION	MAJOR ENDPOINTS	ADDITIONAL CHARACTERIZTION NEEDED	UNIQUE HAZARD ANALYSIS	HAZARD CONTROL	WASTE STREAM
32	**ROOM SET - Room 436, 444, 446, 447, 448 (RCRA Unit 777.1), 449, and 450** *Asbestos*: Rooms 444 and 450 have suspended ceiling with that may be made of asbestos tile. *Beryllium*: Be parts may have been radiographed or stored on carts in Rooms 448 or 449. *Chemicals*: Any liquids (i.e., oil or water) in the x-ray unit, including hydraulics, will be drained. The water in the water walled storage positions and the batteries in Room 448 will be drained after the SNM is removed from the vault during deactivation. *Lead & Other Heavy Metals*: There is lead metal stored in Rooms 447, 448, and 449. There is lead shielding within the cobalt sources in Room 449 and the can storage positions in Room 448. The paint on the floor and walls may contain lead or other RCRA heavy metals. Incandescent lights contain lead and fluorescent lights contain mercury; these lights will be managed as hazardous waste. *PCBs*: A PCB determination of ballasts will be made when the ballasts are removed. PCBs may be present in paint. *Radioactive Sources*: The Cobalt-60 and alpha met sources will be removed during deactivation. *Radiological Contamination*: There is fixed contamination beneath the paint on the floor and the building walls from the 1969 fire. It is assumed that floor contamination levels are the same as those after the 1969 fire (i.e., $10^5 > 10^6$ cpm).	Deactivation: Control/fix contamination Remove/package classified material Remove/dispose of loose combustibles Remove/dispose of loose equipment Remove/dispose of loose hazardous materials Decommissioning: Drain/isolate/dispose of utility systems Remove/dispose of equipment & associated piping/conduit Package to waste acceptance criteria	*Asbestos* *Beryllium* *Chemicals* *Radiological Surveys*	Beryllium High levels of radiological contamination	PPE Radiological Controls/ ALARA Principles	LLW, LLM

SET NO.	SET DESCRIPTION	MAJOR ENDPOINTS	ADDITIONAL CHARACTERIZTION NEEDED	UNIQUE HAZARD ANALYSIS	HAZARD CONTROL	WASTE STREAM
33	**ROOM/EQUIPMENT SET - Room 445 and GBs 494, 495, 499, 500, 501, and 502** *Asbestos*: A heating mantle will be managed as asbestos waste unless sampling or manufacturer information indicates the material is non-asbestos. *Beryllium*: Be was welded in the PIGMA welder. Be metal is stored in the cabinet north of the PIGMA welder and in a desk near Room 458. Be parts may have been handled within the environmental test chamber and GBs. *Chemicals*: Oil from the vacuum pumps and hydraulic units will be removed during deactivation. The refrigerant from an environmental test chamber will be removed prior to decommissioning. The can of magnesium oxide below GBs 494 and 494 will be removed during deactivation. *Lead & Other Heavy Metals*: There is lead shielding, leaded glass, leaded aprons, and leaded gloves stored in cabinets. The paint on the floor and walls may contain lead or other RCRA heavy metals. Incandescent lights contain lead and fluorescent lights contain mercury; these lights will be managed as hazardous waste. *SNM Holdup*: GBs 494 and 495 have been scanned for holdup. The holdup in these two GBs does not require remediation prior to GB removal. The other four GBs in the SET need to be scanned. *Radiological Contamination*: The inside surfaces of the GBs are contaminated with $>10^6$ dpm. There is up to 10,000 dpm of fixed contamination on the exterior of the GBs. There is fixed contamination on a section of bagged ductwork, a downdraft vacuum, and room exhaust ducts. There is fixed contamination beneath the paint on the floor and the building walls from the 1969 fire. It is assumed that floor contamination levels are the same as those after the 1969 fire (i.e., $10^5 > 10^6$ cpm).	Deactivation: Control/fix contamination Remove/package classified material Remove/dispose of loose combustibles Drain/dispose of solutions Remove/dispose of loose equipment Remove/dispose of loose hazardous materials Decommissioning: Drain/isolate fluid systems Control radioactive/chemical contamination Drain/isolate/remove/dispose of utility systems Remove/dispose of equipment & associated piping/conduit Package to waste acceptance criteria	*Beryllium* *Chemicals* *SNM Holdup Measurements* *Radiological Surveys*	Beryllium High levels of radiological contamination	PPE CBDPP Radiological Controls/ ALARA Principles	TRU, TRM, LLW, LLM

SET NO.	SET DESCRIPTION	MAJOR ENDPOINTS	ADDITIONAL CHARACTERIZTION NEEDED	UNIQUE HAZARD ANALYSIS	HAZARD CONTROL	WASTE STREAM
34	**ROOM/EQUIPMENT SET - Room 452 (including Mixed Residue Tank V-022) and Room 475, GBs 022, 027, 029, 034, 035, 522, 548 and associated H-Line** *Beryllium*: Pits with Be were disassembled within the inert system. Machining necessary to disassemble the pits would contaminate the inside of the GB with Be. *Chemicals*: Oil from the vacuum pumps and hydraulic units will be removed during deactivation. The can of magnesium oxide in GB 034 will be removed during deactivation. *Lead & Other Heavy Metals*: There is lead shielding, leaded glass, and leaded gloves on the GBs. A mercoid switch contains mercury. The paint on the floor and walls may contain lead or other RCRA heavy metals. Fluorescent lights contain mercury; these lights will be managed as hazardous waste. *PCBs*: A PCB determination of ballasts will be made when the ballasts are removed. PCBs may be present in paint. *SNM Holdup*: Not yet determined. *Radiological Contamination*: The inside surfaces of the GBs are contaminated with >10^6 dpm. There is up to 40,000 dpm of fixed contamination on the vacuum pumps and associated motors below the GBs. The contamination beneath the paint on the GBs cannot be measured due to the paint shielding the alpha particles.	Deactivation: Control/fix contamination Remove/package classified material Remove/dispose of loose combustibles Drain/dispose of solutions Remove/dispose of loose equipment Remove/dispose of loose hazardous materials Decommissioning: Drain/isolate fluid systems Control radioactive/chemical contamination Drain/isolate/remove/dispose of utility systems Remove/dispose of equipment & associated piping/conduit Package to waste acceptance criteria	*Beryllium* *Chemicals* *SNM Holdup Measurements* *Radiological Surveys*	Beryllium High levels of radiological contamination	PPE CBDPP Radiological Controls/ ALARA Principles	TRU, TRM, LLW, LLM

SET NO.	SET DESCRIPTION	MAJOR ENDPOINTS	ADDITIONAL CHARACTERIZTION NEEDED	UNIQUE HAZARD ANALYSIS	HAZARD CONTROL	WASTE STREAM
35	**GLOVEBOX SET - Room 452, GBs 026, 526, 524, 525, 526, 527, 528, 530, 532, 537, 538, 541, and associated H-Line** *Asbestos*: The insulation associated with the muffle furnace in GB 523 and the heating chamber in GB 528 may contain asbestos. Manufacturer information or sampling may be used to characterize the insulation. *Beryllium*: Mixed Be/Pu chips were oxidized within the furnace in GB 523. Be parts may have been handled within the environmental test chamber and GBs. *Chemicals*: Oil from the vacuum pumps and hydraulic units will be removed during deactivation. The refrigerant from the environmental test chamber will be removed prior to decommissioning. Containerized chemicals will be removed during deactivation. *Lead & Other Heavy Metals*: There is lead shielding, leaded glass, and leaded gloves on the GBs. There is a lead hammer in GB 537. The geometry tank in GB 524 is lined with cadmium. The parts processed in the GBs were made of or coated with a variety of unspecified metals. Any metal fragments or chips discovered in the GBs will be characterized. The paint on the floor and walls may contain lead or other RCRA heavy metals. Fluorescent lights contain mercury; these lights will be managed as hazardous waste. *PCBs*: A PCB determination of ballasts will be made when the ballasts are removed. PCBs may be present in paint. *SNM Holdup*: Not yet determined. *Radiological Contamination*: The inside surfaces of the GBs are contaminated with >10^6 dpm. The downdraft rooms have been surveyed as 1,000,000 dpm fixed + removable inside. There is up to 20,000 dpm fixed contamination on the exterior of the GBs. The contamination beneath the GB paint cannot be measured due to the paint shielding the alpha particles. The cylinders extending into the raschig ring filled pit beneath GB 528 are Pu contaminated. Depleted and enriched U contamination is possible in these GBs. Tritium releases occurred in GB 532 in the 1960s and 1970s. Parts exposed to radiation blasts at NTS were disassembled in the GBs. Residual activation or fission product contamination will need to be addressed.	Deactivation: Control/fix contamination Remove/package classified material Remove/dispose of loose combustibles Drain/dispose of solutions Remove/dispose of loose equipment Remove/dispose of loose hazardous materials Decommissioning: Drain/isolate fluid systems Control radioactive/chemical contamination Drain/isolate/remove/dispose of utility systems Remove/dispose of equipment & associated piping/conduit Package to waste acceptance criteria	*Asbestos* *Beryllium* *Chemicals* *SNM Holdup Measurements* *Radiological Surveys*	Beryllium High levels of radiological contamination Tritium Activation products Fission products	PPE CBDPP Radiological Controls/ ALARA Principles	TRU, TRM, LLW, LLM

SET NO.	SET DESCRIPTION	MAJOR ENDPOINTS	ADDITIONAL CHARACTERIZTION NEEDED	UNIQUE HAZARD ANALYSIS	HAZARD CONTROL	WASTE STREAM
36	**ROOM/EQUIPMENT SET - Room 452 (including Mixed Residue Tank V-543) and Room 475 with GBs 536, 544, and 543 and machining equipment** *Asbestos*: The high temperature gloves and heating mantles will be managed as asbestos waste unless sampling or manufacturer information indicates these are non-asbestos. *Beryllium*: Be was machined in GB 543. Historical Be surveys confirm the presence of Be contamination near this GB. The argon system in the mezzanine is potentially contaminated internally with Be. *Chemicals*: Oil from the vacuum pumps and hydraulic units will be removed during deactivation. The can of magnesium oxide will be removed during deactivation. The oxygen getter is identified as Dow Q1. This material needs to be characterized. The desiccant is a zeolite. *Lead & Other Heavy Metals*: There are lead vise covers, lead bricks and lead hammers in the rooms. There is lead tape and leaded glove covers stored in the cabinets. Paint on walls and floors may contain lead and other heavy metals. *PCBs*: A PCB determination of ballasts will be made when the ballasts are removed. PCBs may be present in paint. *SNM Holdup*: The columns for the gettering material and desiccant will be scanned for holdup. *Radiological Contamination*: There is up to 10,000 dpm of fixed contamination on the hoods, table, and room exhaust duct. In the early 1960s, a contamination incident from a coating machine dispersed Pu and gold contamination throughout Room 452. The contamination from this incident is in the range of the fire contamination.	Deactivation: Control/fix contamination Remove/package classified material Remove/dispose of loose combustibles Drain/dispose of solutions Remove/dispose of loose equipment Remove/dispose of loose hazardous materials Decommissioning: Drain/isolate fluid systems Control radioactive/chemical contamination Drain/isolate/remove/dispose of utility systems Remove/dispose of equipment & associated piping/conduit Package to waste acceptance criteria	*Beryllium* *Chemicals* *SNM Holdup Measurements* *Radiological Surveys*	Beryllium High levels of radiological contamination	PPE CBDPP Radiological Controls/ ALARA Principles	LLW, LLM

SET NO.	SET DESCRIPTION	MAJOR ENDPOINTS	ADDITIONAL CHARACTERIZTION NEEDED	UNIQUE HAZARD ANALYSIS	HAZARD CONTROL	WASTE STREAM
37	**ROOM SET - Rooms 453, 454, 460, and part of Room 445 (south end)** *Beryllium*: Be metal samples were found in Room 453. Be parts may have been handled within the testing equipment. Surface surveys will be performed prior to initiating decommissioning activities. *Chemicals*: Oil from the compressors and hydraulic units will be removed during deactivation. The refrigerant from the environmental test chamber will be removed prior to decommissioning. *Lead & Other Heavy Metals*: The paint on the floor, walls and accelerators may contain lead or other RCRA heavy metals. Fluorescent lights contain mercury; these lights will be managed as hazardous waste. The room thermostats may contain mercury. Some of the internal parts of the horizontal accelerator are cadmium plated. *PCBs*: A PCB determination of ballasts will be made when the ballasts are removed. PCBs may be present in paint. *Radiological Contamination*: There is fixed contamination on the exterior of the horizontal accelerator including the sandbags. The contamination beneath the paint on the accelerator can not be measured due to the paint shielding the alpha particles. There is fixed contamination beneath the paint on the floor and the building walls from the 1969 fire. It is assumed that floor contamination levels are the same as those after the 1969 fire (i.e., 10^5 - >10^6 cpm).	Deactivation: Control/fix contamination Remove/dispose of loose combustibles Drain/dispose of solutions Remove/dispose of loose equipment Remove/dispose of loose hazardous materials Decommissioning: Drain/isolate fluid systems Drain/isolate/remove/dispose of utility systems Remove/dispose of equipment & associated piping/conduit Package to waste acceptance criteria	*Beryllium* *Chemicals* *SNM Holdup Measurements* *Radiological Surveys*	Beryllium High levels of radiological contamination	PPE CBDPP Radiological Controls/ ALARA Principles	LLW, LLM

SET NO.	SET DESCRIPTION	MAJOR ENDPOINTS	ADDITIONAL CHARACTERIZTION NEEDED	UNIQUE HAZARD ANALYSIS	HAZARD CONTROL	WASTE STREAM
Mod #8 38	**ROOM SET - Rooms 301, 302, 455, 456, 457, 458, and 461** *Asbestos*: The floor tile in Rooms 302 and 302 may contain asbestos. *Beryllium*: The tool cutter in Room 461 is marked as Be contaminated. Be metal parts were handled in Rooms 455 and 457. *Chemicals*: Oil in the equipment will be drained during deactivation. The containerized chemicals (salt, calcium sulfate) in Room 458 will be removed during deactivation. *Lead & Other Heavy Metals*: There is lead glass in Room 457. There are printed circuit boards and a lead apron in Room 458. Lead scrap, lead security seals, and a lead-shielded cart are contained in this SET. The paint on the floor and walls may contain lead or other RCRA heavy metals. Incandescent lights contain lead and fluorescent lights contain mercury; these lights will be managed as hazardous waste. *PCBs*: A PCB determination of ballasts will be made when the ballasts are removed. PCBs may be present in paint. The switchgear will be inspected for PCB capacitors when it is removed. An obsolete power supply in Room 302 will be inspected for PCB fluid when it is removed. *Radiological Contamination*: There is fixed contamination in and on the equipment in Rooms 302 (power supply, surface plate) and 455 (pumpdown table, hood). There is fixed contamination on bagged tools within cabinets in several of the rooms. There is fixed contamination beneath the paint on the floor and the building walls from the 1969 fire. It is assumed that floor contamination levels are the same as those after the 1969 fire (i.e., 10^5 - 10^6 cpm).	Deactivation: Control/fix contamination Remove/dispose of loose combustibles Remove/dispose of loose equipment Remove/dispose of loose hazardous materials Decommissioning: Drain/isolate/remove/dispose of utility systems Remove/dispose of equipment & associated piping/conduit Package to waste acceptance criteria	*Asbestos* *Chemicals* *Beryllium* *Radiological Surveys*	Beryllium High levels of radiological contamination	PPE CBDPP Radiological Controls/ ALARA Principles	LLW, LLM

SET NO.	SET DESCRIPTION	MAJOR ENDPOINTS	ADDITIONAL CHARACTERIZTION NEEDED	UNIQUE HAZARD ANALYSIS	HAZARD CONTROL	WASTE STREAM
39	**ROOM SET - Rooms 459 and 459A** *Beryllium*: Be metal parts may have been pressure tested in Room 459A. *Chemicals*: Oil or other liquids in the equipment will be removed during deactivation. The container of water in Room 459 will be removed during deactivation. *Lead & Other Heavy Metals*: There is lead metal and circuit boards in Room 459. There is a mercury switch in this SET. The paint on the floor and walls may contain lead or other RCRA heavy metals. Incandescent lights contain lead and fluorescent lights contain mercury; these lights will be managed as hazardous waste. *PCBs*: A PCB determination of ballasts will be made when the ballasts are removed. PCBs may be present in paint. The InductoTherm furnace contains capacitors filled with Pydraul dielectric fluid. *Radiological Contamination*: There is 2,400 dpm fixed contamination on a room exhaust duct. Depleted U contamination is possible in the pressure test units. There is fixed contamination beneath the paint on the floor and the building walls from the 1969 fire. It is assumed that floor contamination levels are the same as those after the 1969 fire (i.e., 10^5 - 10^6 cpm).	Deactivation: Control/fix contamination Remove/dispose of loose combustibles Remove/dispose of loose equipment Remove/dispose of loose hazardous materials Decommissioning: Drain/isolate/remove/dispose of utility systems Remove/dispose of equipment & associated piping/conduit Package to waste acceptance criteria	*Beryllium* *Chemicals* *Radiological Surveys*	Beryllium High levels of radiological contamination	PPE CBDPP Radiological Controls/ ALARA Principles	LLW, LLM
40	**ROOM SET - Room 462, "A" Vault** *Beryllium*: Be metal parts have been stored on carts or in shipping containers in Room 462. *Chemicals*: Tubes of vacuum grease, sealant and containers of cleaning supplies will be removed during deactivation. *Lead & Other Heavy Metals*: There is lead metal, leaded glass and leaded aprons stored in Room 462. There is lead shielding on the benelex wall. The paint on the floor and walls may contain lead or other RCRA heavy metals. The room thermostat may contain mercury. Fluorescent light fixtures contain mercury and will be managed as RCRA hazardous waste. *PCBs*: A PCB determination of ballasts will be made when the ballasts are removed. PCBs may be present in paint. *SNM Holdup*: The SNM in the vault is stored with containment (i.e. metal can, plastic bags, within a pit) at all times. Therefore, holdup is not an issue. *Radiological Contamination*: The map of floor contamination levels after the 1969 fire indicates contamination from the fire did not spread to the vault.	Deactivation: Control/fix contamination Remove/package classified material Remove/dispose of loose combustibles Remove/dispose of loose equipment Remove/dispose of loose hazardous materials Decommissioning: Drain/isolate/remove/dispose of utility systems Remove/dispose of equipment & associated piping/conduit Package to waste acceptance criteria	*Beryllium* *Radiological Surveys*	Beryllium	PPE CBDPP	LLW, LLM

SET NO.	SET DESCRIPTION	MAJOR ENDPOINTS	ADDITIONAL CHARACTERIZTION NEEDED	UNIQUE HAZARD ANALYSIS	HAZARD CONTROL	WASTE STREAM
41	**ROOM/EQUIPMENT SET - Room 463 and GBs A4, A5, A6, A7, A8, A9, and A11** *Beryllium*: Leak detector parts stored in the room have manufacturer warning regarding Be in the ceramic rings. There are Be metal discs stored in one of the cabinets. The north end of the room was once part of Room 464, which contained furnaces to "bake out" Be parts. *Chemicals*: Ethanol and Freon TF were used as solvents in these GBs. All liquids will be drained prior to decommissioning activities. Containerized chemicals will be removed during deactivation. *Lead & Other Heavy Metals*: There is lead shielding and leaded gloves on GBs. Leaded GB covers gloves, printed circuit boards with lead solder, and leaded aprons are stored in cabinets. Leaded glass on the GBs contains regulated quantities of barium and lead. The vacuum pump connected to GB A-7 is assumed to contain mercury until the pump liquid can be verified to be mercury or oil. *PCBs*: A PCB determination of ballasts will be made when the ballasts are removed. PCBs may be present in paint. *SNM Holdup*: GBs A-4, -5 and –11 have been scanned for Pu holdup. The Pu in these GBs does not require remediation prior to decommissioning. While enriched U was handled in these Gabs, measurable U holdup has not been detected to date. *Radiological Contamination*: The GBs are expected to be contaminated >10^6 dpm Pu on the inner surfaces. The maximum fixed contamination on the exterior of the GBs is 600,000 dpm. There is fixed contamination beneath the paint on the floor and building walls from the 1969 fire. It is assumed that the floor contamination levels are the same as those after the 1969 fire (i.e., 10^3 – 10^4 cpm). An electrical cabinet in the room is marked as containing fixed contamination.	Deactivation: Control/fix contamination Remove/package classified material Remove/dispose of loose combustibles Drain/dispose of solutions Remove/dispose of loose equipment Remove/dispose of loose hazardous materials Decommissioning: Drain/isolate fluid systems Control radioactive/chemical contamination Drain/isolate/remove/dispose of utility systems Remove/dispose of equipment & associated piping/conduit Package to waste acceptance criteria	*Beryllium* *Chemicals* *SNM Holdup Measurement* *Radiological Surveys*	Beryllium High levels of radiological contamination	PPE CBDPP Radiological Controls/ ALARA	TRU, TRM, LLW, LLM

SET NO.	SET DESCRIPTION	MAJOR ENDPOINTS	ADDITIONAL CHARACTERIZTION NEEDED	UNIQUE HAZARD ANALYSIS	HAZARD CONTROL	WASTE STREAM
42	**ROOM SET - Rooms 464, 477, 477A, 463A, and 463B** *Asbestos*: The insulation on the water pipes in Room 463B is visually identified as fiberglass insulation (confirm as non-asbestos). The floor tile in Rooms 477 and 477A may contain asbestos. *Beryllium*: Be parts were baked to remove moisture in Room 464 during the 1960s. *Chemicals*: Water from process tank in Room 463B will be drained during deactivation. The refrigerant and oil from the air conditioner in Room 464 will be removed during deactivation. *Lead & Other Heavy Metals*: The paint on the floor and walls may contain lead or other RCRA heavy metals. Incandescent lights contain lead and fluorescent light fixtures contain mercury. *PCBs*: A PCB determination of ballasts will be made when the ballasts are removed. PCBs may be present in paint. *Radiological Sources*: The alphamet sources in Room 463A will be removed during deactivation. *Radiological Contamination*: There is fixed contamination beneath the paint on the floor and building walls from the 1969 fire. It is assumed that the floor contamination levels are the same as those after the 1969 fire (i.e., $10^3 - 10^4$ cpm).	Deactivation: Control/fix contamination Remove/package classified material Remove/dispose of loose combustibles Drain/dispose of solutions Remove/dispose of loose equipment Remove/dispose of loose hazardous materials Decommissioning: Drain/isolate fluid systems Drain/isolate/dispose of utility systems Remove/dispose of equipment & associated piping/conduit Package to waste acceptance criteria	*Asbestos* *Beryllium* *Liquids* *Chemicals* *Radiological Surveys*	Beryllium High levels of radiological contamination	PPE CBDPP Radiological Controls/ ALARA Principles	LLW, LLM
43	**ROOM SET - Rooms 465, 465A, and the north end of Room 445** *Beryllium*: Be parts were stored in packages in Room 465. At least one pressure cooker in Room 465 is marked as internally contaminated with Be. There is Be contaminated equipment in Room 445 in SET 33, which is south of SET 43. *Chemicals*: Containerized chemicals (Bonami, 1,1,1-trichloroethane, oil, Oakite, water) in and near the two hoods in Room 445 will be removed during deactivation. *Lead & Other Heavy Metals*: There are printed circuit boards with lead solder, lead-taped vials, lead bricks, and leaded aprons in this SET. The paint on the floor and walls may contain lead or other RCRA heavy metals. Fluorescent light fixtures contain mercury and will be managed as RCRA hazardous waste. Thermostats in the room may contain mercury. *PCBs*: A PCB determination of ballasts will be made when the ballasts are removed. PCBs may be present in paint. Radioactive Sources: The combo source will be removed during deactivation. *Radiological Contamination*: Fixed contamination exists within the used pressure cookers in Room 465A. There is fixed contamination beneath the paint on the floor and building walls from the 1969 fire. It is assumed that the floor contamination levels are the same as those after the 1969 fire (i.e., 10^3 - >10^6 cpm).	Deactivation: Control/fix contamination Remove/dispose of loose combustibles Remove/dispose of loose equipment Remove/dispose of loose hazardous materials Decommissioning: Drain/isolate utility systems Remove/dispose of equipment & associated piping/conduit Package to waste acceptance criteria	*Beryllium* *Radiological Surveys*	Beryllium High levels of radiological contamination	PPE CBDPP Radiological Controls/ ALARA Principles	LLW, LLM

SET NO.	SET DESCRIPTION	MAJOR ENDPOINTS	ADDITIONAL CHARACTERIZTION NEEDED	UNIQUE HAZARD ANALYSIS	HAZARD CONTROL	WASTE STREAM
44	**ROOM SET - Rooms 466, 467, 468, 469, 470, 471, 472, 474, and 474D** *Beryllium:* Be parts were moved on carts through the hallway and radiographed in Room 471. Be windows were used to filter out low energy X-rays on the low keV in Room 471. *Chemicals*: Any liquids (i.e. oil or water) will be drained from equipment during deactivation. Containers of oil and Freon will be removed during deactivation. *Lead & Other Heavy Metals*: Pieces of lead metal are stored in Room 471. There is lead shielding on the sources and in the door to Room 471. There are leaded gloves and lead shielding on the GB in Room 472. The radiography film in Room 474D may contain regulated quantities of heavy metals such as cadmium based on information from Kodak. Equipment that contacted the fixer solution will be contaminated with silver. The paint on the floor and walls may contain lead or other RCRA heavy metals. Incandescent lights may contain lead and fluorescent light fixtures contain mercury. These lights will be managed as RCRA hazardous waste. *PCBs*: A PCB determination of ballasts will be made when the ballasts are removed. PCBs may be present in paint. *SNM Holdup*: It has not yet been determined if the GB and tank in Room 472 contain holdup. *Radioactive Sources*: The sources in Room 471 will be removed during deactivation, including the depleted U pig used for shielding. *Radiological Contamination*: The GBs are expected to be contaminated >10^6 dpm Pu on the inner surfaces. There is fixed contamination beneath the paint on the floor and building walls from the 1969 fire. It is assumed that the floor contamination levels are the same as those after the 1969 fire (i.e., $10^3 - 10^5$ cpm).	Deactivation: Control/fix contamination Remove/package classified material Remove/dispose of loose combustibles Remove/dispose of loose equipment Remove/dispose of loose hazardous materials Decommissioning: Drain/isolate/remove/dispose of utility systems Remove/dispose of equipment & associated piping/conduit Package to waste acceptance criteria	*Beryllium* *Chemicals* *SNM Holdup Measurement* *Radiological Surveys*	Beryllium High levels of radiological contamination	PPE CBDPP Radiological Controls/ ALARA Principles	TRU, TRM, LLW, LLM

SET NO.	SET DESCRIPTION	MAJOR ENDPOINTS	ADDITIONAL CHARACTERIZTION NEEDED	UNIQUE HAZARD ANALYSIS	HAZARD CONTROL	WASTE STREAM
45	**ROOM SET - Rooms 473 and 476** *Beryllium:* Be parts may have been radiographed and stored on carts in Room 473. *Chemicals*: Sulfur hexafluoride is an insulating gas within the x-ray device. Any liquids (i.e., oil or water) in the x-ray unit will be drained. *Lead & Other Heavy Metals*: There are leaded gloves and pieces of lead metal stored in the room. The door to Room 473 and the storage rack doors in Room 476 contain lead metal. There is lead shielding within the x-ray unit and on the floor. The paint on the floor and walls may contain lead or other RCRA heavy metals. Incandescent lights contain lead and fluorescent light fixtures contain mercury. These lights will be managed as RCRA hazardous waste. *PCBs*: A PCB determination of ballasts will be made when the ballasts are removed. PCBs may be present in paint. *Radioactive Sources*: The gamma alarm and radiography sources will be removed during deactivation. *Radiological Contamination*: Fixed contamination exists within the x-ray unit. There is fixed contamination beneath the paint on the floor and building walls from the 1969 fire. It is assumed that the floor contamination levels are the same as those after the 1969 fire (i.e., $10^3 - 10^4$ cpm).	Deactivation: Control/fix contamination Remove/dispose of loose combustibles Remove/dispose of loose equipment Remove/dispose of loose hazardous materials Decommissioning: Drain/isolate/remove/dispose of utility systems Remove/dispose of equipment & associated piping/conduit Package to waste acceptance criteria	*Beryllium* *Chemicals* *Radiological Surveys*	Beryllium	PPE CBDPP	LLW, LLM
46	**ROOM SET - Room 478, "B" Vault** *Beryllium*: Be metal parts have been stored on carts or shelves in Room 478. *Lead & Other Heavy Metals*: The paint on the floor and walls may contain lead or other RCRA heavy metals. Fluorescent light fixtures contain mercury. These lights will be managed as RCRA hazardous waste. *PCBs*: A PCB determination of ballasts will be made when the ballasts are removed. PCBs may be present in paint. *Radiological Contamination*: There is fixed contamination beneath the paint on the floor and building walls from the 1969 fire. It is assumed that the floor contamination levels are the same as those after the 1969 fire (i.e., $10^3 - 10^4$ cpm).	Deactivation: Control/fix contamination Remove/package classified material Remove/dispose of loose combustibles Remove/dispose of loose equipment Remove/dispose of loose hazardous materials Decommissioning: Drain/isolate fluid systems Control radioactive/chemical contamination Drain/isolate/remove/dispose of utility systems Remove/dispose of equipment & associated piping/conduit Package to waste acceptance criteria	*Beryllium* *Chemicals* *Radiological Surveys*	Beryllium	PPE CBDPP	LLW, LLM

SET NO.	SET DESCRIPTION	MAJOR ENDPOINTS	ADDITIONAL CHARACTERIZTION NEEDED	UNIQUE HAZARD ANALYSIS	HAZARD CONTROL	WASTE STREAM
47	**ROOM SET - Rooms 479, 481, 482, 483, 483A, and 483B (including RCRA Unit 777.1 [i.e., Rm. 483, Area 8])** *Beryllium*: Be parts are stored in Room 483A. Be parts may have been stored or moved through other rooms in this SET. *Chemicals*: Containerized chemicals near the forklift charging station (water, sodium bicarbonate, and magnesium oxide) will be removed during deactivation. *Lead & Other Heavy Metals*: There is lead shielding from shipping containers and lead bricks stored in Room 482. Leaded aprons are stored in Room 481. Room thermostats may contain mercury. The paint on the floor and walls may contain lead or other RCRA heavy metals. Fluorescent light fixtures contain mercury. These lights will be managed as RCRA hazardous waste. *PCBs*: A PCB determination of ballasts will be made when the ballasts are removed. PCBs may be present in paint. *Radioactive Sources*: The source on the combo monitor in Room 481 will be removed during deactivation. *Radiological Contamination*: The depleted U parts stored in Room 483A will be removed during deactivation. There is fixed contamination beneath the paint on the floor and building walls from the 1969 fire. It is assumed that the floor contamination levels are the same as those after the 1969 fire (i.e., $10^3 - 10^5$ cpm).	Deactivation: Control/fix contamination Remove/package classified material Remove/dispose of loose combustibles Remove/dispose of loose equipment Remove/dispose of loose hazardous materials Decommissioning: Drain/isolate utility systems Remove/dispose of equipment & associated piping/conduit Package to waste acceptance criteria	*Beryllium* *Radiological Surveys*	Beryllium	PPE CBDPP	LLW, LLM

SET NO.	SET DESCRIPTION	MAJOR ENDPOINTS	ADDITIONAL CHARACTERIZTION NEEDED	UNIQUE HAZARD ANALYSIS	HAZARD CONTROL	WASTE STREAM
48	**EQUIPMENT SET - Kathabar System (except inside plenums)** *Asbestos*: The insulation on the Kathabar K-1 is listed in the asbestos inventory. Insulation on the remaining units will be managed as asbestos. *Chemicals*: The brine in the units will not be drained until decommissioning because cooling of the air is needed to keep the building temperatures comfortable. *Lead & Other Heavy Metals*: Kathene sludge has been analyzed and shown to contain regulated amounts of cadmium, chromium and lead. *Radiological Contamination*: There is no known radiological contamination of the Kathabar units except for the GBDA Kathabar (SET 72). Since the equipment is not completely surveyable, the equipment will be disposed of as radiologically contaminated.	Deactivation: Control/fix contamination Remove/dispose of loose combustibles Drain/dispose of solutions Remove/dispose of loose hazardous materials Decommissioning: Drain/isolate/remove/dispose of utility systems Remove/dispose of equipment & associated piping/conduit Package to waste acceptance criteria	*Beryllium* *Chemicals*	Cadmium Chromium	PPE	LL.W, LLM

SET NO.	SET DESCRIPTION	MAJOR ENDPOINTS	ADDITIONAL CHARACTERIZTION NEEDED	UNIQUE HAZARD ANALYSIS	HAZARD CONTROL	WASTE STREAM
49	**ROOM SET - Modulab** *Asbestos*: The gloves used for handling thermally hot samples will be managed as asbestos waste. *Beryllium*: The lapping machine in the Modulab is marked as Be contaminated. There is a portion of a Be ingot and other pieces of Be stored in a cabinet. Be has been detected on smears taken from the Modulab. *Chemicals*: The column of dierite (calcium sulfate) will be removed during deactivation. Ethanol and varsol were used as solvents in the lapping process. Oil from the hydraulic systems and vacuum pumps will be drained during deactivation. *Lead & Other Heavy Metals*: Lead metal is located in cabinet drawers. *PCBs*: The InductoTherm furnace contains capacitors filled with Pydraul dielectric fluid. A PCB determination of ballasts will be made when the ballasts are removed. *Radiological Contamination*: There are depleted U metal samples in the Modulab. Some of the equipment may be contaminated with depleted U. According to OSAs for the processes, Pu was no processed in the Modulab. Based on the contamination map form the 1969 fire, the Modulab was not internally contaminated.	Deactivation: Control/fix contamination Remove/dispose of loose combustibles Remove/dispose of loose equipment Remove/dispose of loose hazardous materials Decommissioning: Drain/isolate utility systems Remove/dispose of equipment & associated piping/conduit Package to waste acceptance criteria	*Beryllium* *Chemicals* *Radiological Surveys*	Beryllium	PPE CBDPP	LLW, LLM

SET NO.	SET DESCRIPTION	MAJOR ENDPOINTS	ADDITIONAL CHARACTERIZTION NEEDED	UNIQUE HAZARD ANALYSIS	HAZARD CONTROL	WASTE STREAM
50	**ROOM SET - Rooms 101, 102, 103, 103A, 104, 104A, 104B, 104C, 104E, 106A, 106D, 107, 107D, 107E, 108, 108A, 108B, 108C, 109, 109A, 109C, 109D, 110, 112, 112A, 112B, 113, 113B, 113C, 114, 116B, 117, 119, 120, 121, 129, 140, and 149** *Asbestos*: May be present in floor tiles. *Chemicals*: Cleaning supplies in this SET will be removed prior to decommissioning. *Lead & Other Heavy Metals*: The paint on the floor and walls may contain lead or other RCRA heavy metals. *PCBs*: A PCB determination of ballasts will be made when the ballasts are removed. PCBs may be present in paint. *Radioactive Sources*: Sources will be removed prior to decommissioning. *Radiological Contamination*: There is fixed contamination beneath the paint and floor tile. It is assumed that contamination levels are the same as those after the 1969 fire (i.e., 250 – 10^6 cpm). The offices were extensively decontaminated after the fire; however, contamination has been discovered when floor tile has been removed. Small amounts of contamination have been discovered in a light fixture in Room 129.	Deactivation: Control/fix contamination Remove/package classified material Remove/dispose of loose combustibles Remove/dispose of loose equipment Remove/dispose of loose hazardous materials Decommissioning: Drain/isolate/remove/dispose of utility systems Remove/dispose of equipment & associated piping/conduit Package to waste acceptance criteria	*Asbestos* *Radiological Surveys*	High levels of radiological contamination	PPE Radiological Controls/ ALARA Principles	LLW, SAN

SET NO.	SET DESCRIPTION	MAJOR ENDPOINTS	ADDITIONAL CHARACTERIZTION NEEDED	UNIQUE HAZARD ANALYSIS	HAZARD CONTROL	WASTE STREAM
51	**GLOVEBOX SET - GBs in Room 154A: 046, 494 (cold box adjacent to GB 495), 495, 496, 499, 501, 502, 503, 505, 506, and 507** *Chemicals*: Freon refrigerant was used to cool the furnaces. Water from the water wall shielding and oil from the vacuum pumps will be drained during deactivation. *Lead & Other Heavy Metals*: There is lead shielding and leaded gloves on the GBs. Leaded glass contains regulated quantities of lead and barium. The paint on the floor and walls may contain lead or other RCRA heavy metals. *PCBs*: A PCB determination of ballasts will be made when the ballasts are removed. PCBs may be present in paint. *SNM Holdup*: GBs 495, 496, 501 and 502 contain significant Pu holdup, which will be remediated to safeguards termination limits prior to decommissioning. No measurable U holdup has been detected. *Radiological Contamination*: The GBs are expected to be contaminated >10^6 dpm Pu on the inner surfaces. The fixed contamination on the exterior of the GBs ranges from 10,000 dpm to 1,000,000 dpm. Americium contamination in GBs 046, 499, 501, 502 and 503 contain greater than 1000 ppm Am in the Pu.	Deactivation: Control/fix contamination Remove/package classified material Remove/dispose of loose combustibles Drain/dispose of solutions Remove/dispose of loose equipment Remove/dispose of loose hazardous materials Decommissioning: Drain/isolate/dispose of fluid systems Control radioactive/chemical contamination Drain/isolate/remove/dispose of utility systems Remove/dispose of equipment & associated piping/conduit Package to waste acceptance criteria	*Chemicals* *SNM Holdup easement* *Radiological Surveys*	High levels of radiological contamination	PPE Radiological Controls/ ALARA Principles	TRU, TRM, LLW, LLM
52	**EQUIPMENT SET - Tanks T-360 (RCRA Unit 94.007) and T-370 (RCRA Unit 94.008), plus GBs 361 and 371 and Bermed Area** *Beryllium*: There is no record of Be processing in this area. Surface surveys will be performed to verity there is no contamination. *Chemicals*: Any liquids in the tanks will be drained during deactivation. *Lead & Other Heavy Metals*: There are leaded gloves on the filter GBs. *PCBs*: A PCB determination of ballasts will be made when the ballasts are removed. *SNM Holdup*: Not yet determined for the tanks and GBs. The tanks and the GBs will need to be "gram estimated" prior to removal to comply with the current criticality control requirements for waste boxes. *Radiological Contamination*: The tanks and GBs may or may not be contaminated inside. Radiological surveys are needed.	Deactivation: Control/fix contamination Remove/package classified material Remove/dispose of loose combustibles Drain/dispose of solutions Remove/dispose of loose equipment Remove/dispose of loose hazardous materials Decommissioning: Drain/isolate fluid systems Control radioactive/chemical contamination Drain/isolate/remove/dispose of utility systems Remove/dispose of equipment & associated piping/conduit Package to waste acceptance criteria	*Beryllium* *Chemicals* *SNM Holdup Measurement* *Radiological Surveys*	None	PPE	LLW, LLM

SET NO.	SET DESCRIPTION	MAJOR ENDPOINTS	ADDITIONAL CHARACTERIZTION NEEDED	UNIQUE HAZARD ANALYSIS	HAZARD CONTROL	WASTE STREAM
53	**ROOM SET - Room 152 Vault (RCRA Unit 90.85)** *Beryllium*: The criticality limits did not allow the storage of Be. Surface surveys will be performed prior to initiating decommissioning to confirm there is no Be contamination. *Chemicals*: The water in the water walled storage will be drained during deactivation. *Lead & Other Heavy Metals*: There is lead shielding on the can storage positions in Room 448. The paint on the floor and walls may contain lead or other RCRA heavy metals. Incandescent lights contain lead and fluorescent light fixtures contain mercury. These lights will be managed as RCRA hazardous waste. *PCBs*: A PCB determination of ballasts will be made when the ballasts are removed. PCBs may be present in paint. *Radiological Contamination*: There is fixed contamination beneath the paint on the floor and building walls from the 1969 fire. It is assumed that the floor contamination levels are the same as those after the 1969 fire (i.e., $>10^6$ cpm).	Deactivation: Control/fix contamination Remove/package classified material Remove/dispose of loose combustibles Remove/dispose of loose equipment Remove/dispose of loose hazardous materials Decommissioning: Drain/isolate/remove/dispose of utility systems Remove/dispose of equipment & associated piping/conduit Package to waste acceptance criteria	*Beryllium* *Chemicals* *Radiological Surveys*	High levels of radiological contamination	PPE Radiological Controls/ ALARA Principles	LLW, LLM
54	**ROOM SET - Rooms 153, 154 (RCRA Unit 776.1), 154B, 155, and 161B** *Asbestos*: The insulation on the condensate tank will be manages as asbestos waste unless sample results indicate the insulation is non-asbestos. *Beryllium*: Pits with Be parts were processes in the autoclaves in Room 153 during the 1960s. *Chemicals*: There are lead acid batteries and tubes of adhesive that will be removed during deactivation. The tanks and vacuum pumps will be drained during deactivation. *Lead & Other Heavy Metals*: Printed circuit boards contain lead. The room thermostat may contain mercury. The paint on the floor and walls may contain lead or other RCRA heavy metals. Incandescent lights contain lead and fluorescent light fixtures contain mercury. These lights will be managed as RCRA hazardous waste. *PCBs*: A PCB determination of ballasts will be made when the ballasts are removed. PCBs may be present in paint. *SNM Holdup*: The SNM processed in the autoclaves was self-contained; therefore, holdup is not possible in the autoclave pit. *Radiological Contamination*: There is fixed contamination beneath the paint on the floor and building walls from the 1969 fire. It is assumed that the floor contamination levels are the same as those after the 1969 fire (i.e., 10^3 - $>10^4$ cpm) in Room 153 and $>10^6$ cpm in other rooms in this SET.	Deactivation: Control/fix contamination Remove/dispose of loose combustibles Drain/dispose of solutions Remove/dispose of loose equipment Remove/dispose of loose hazardous materials Decommissioning: Drain/isolate/dispose of fluid systems Control radioactive/chemical contamination Drain/isolate/remove/dispose of utility systems Remove/dispose of equipment & associated piping/conduit Package to waste acceptance criteria	*Asbestos* *Beryllium* *Chemicals* *Radiological Surveys*	Beryllium High levels of radiological contamination	PPE CBDPP Radiological Controls/ ALARA Principles	LLW, LLM

SET NO.	SET DESCRIPTION	MAJOR ENDPOINTS	ADDITIONAL CHARACTERIZTION NEEDED	UNIQUE HAZARD ANALYSIS	HAZARD CONTROL	WASTE STREAM
55	**EQUIPMENT SET - Tanks SRV3 (RCRA Unit 94.001), SRV4 (RCRA Unit 94.002), SRV5 (RCRA Unit 94.003), and GB0001** *Beryllium*: Be contaminated metal may have been cleaned in the SRV. This possible Be contamination is not a safety concern due to the suspension in water and the controls necessary for radiological contamination. *Chemicals*: Any liquids in the tanks will be drained during deactivation. *Lead & Other Heavy Metals*: There are leaded gloves on the filter GB. Lead from the leaded glove washing (ball mill) is assumed to be present in the water within the tanks. The paint on the tanks and filter GBs may contain lead or other RCRA heavy metals. *PCBs*: PCBs may be present in paint. *SNM Holdup*: The tanks were scanned for Pu holdup in the early 1990s. The maximum holdup in any of the tanks is about 200 grams. The tanks will be rescanned for holdup prior to and after the raschig rings are removed. *Radiological Contamination*: The highest fixed contamination marked on the equipment exterior is 100,000 dpm. It is assumed that the inside surface of the tanks is contaminated with $>10^6$ dpm. The tanks were brought to the building for the 1969 fire cleanup; therefore, the tanks were not contaminated by the fire.	Deactivation: Control/fix contamination Remove/dispose of loose combustibles Drain/dispose of solutions Remove/dispose of loose equipment Remove/dispose of loose hazardous materials Decommissioning: Drain/isolate fluid systems Control radioactive/chemical contamination Drain/isolate/remove/dispose of utility systems Remove/dispose of equipment & associated piping/conduit Package to waste acceptance criteria	*Chemicals* *SNM Holdup Measurement* *Radiological Surveys*	High levels of radiological contamination	PPE Radiological Controls/ ALARA Principles	TRU, TRM
56	**ROOM SET - Rooms 161 and 161A** *Beryllium*: Surface surveys will be performed prior to decommissioning activities. *Chemicals*: There is a container of Molykote and vacuum grease in Room 161. These chemicals and any liquid in the press will be drained during deactivation. *Lead & Other Heavy Metals*: Paint on the floor and walls may contain lead or other RCRA heavy metals. Incandescent lights contain lead and fluorescent light fixtures contain mercury. These lights will be managed as hazardous waste. *PCBs*: A PCB determination of ballasts will be made when the ballasts are removed. PCBs may be present in paint. *SNM Holdup*: The press will be scanned for holdup prior to dismantlement to comply with the criticality control requirements for the waste boxes. *Radiological Contamination*: There is fixed contamination beneath the paint on the floor and building walls from the 1969 fire. It is assumed that the floor contamination levels are the same as those after the 1969 fire (i.e., $>10^6$ cpm). There is contamination above the paint in Room 161A. There is 10,000 dpm contamination on the console in Room 161A. The electrical boxes are marked with internal contamination warnings.	Deactivation: Control/fix contamination Remove/dispose of loose combustibles Remove/dispose of loose equipment Remove/dispose of loose hazardous materials Decommissioning: Drain/isolate utility systems Remove/dispose of equipment & associated piping/conduit Package to waste acceptance criteria Close subsurface volumes	*Chemicals* *SNM Holdup Measurement* *Radiological Surveys*	High levels of radiological contamination	PPE Radiological Controls/ ALARA Principles	LLW, LLM

SET NO.	SET DESCRIPTION	MAJOR ENDPOINTS	ADDITIONAL CHARACTERIZTION NEEDED	UNIQUE HAZARD ANALYSIS	HAZARD CONTROL	WASTE STREAM
57	**ROOM SET - Rooms 156, 159 (RCRA Unit 776.1), 159A, 159B, 159C, and 160 (the enclosed portion of Dock 5)** *Asbestos*: The insulation in the furnaces will be managed as asbestos unless sample results or manufacturer information indicate the insulation is non-asbestos. *Chemicals*: Acids, metals, and organics were used in the processes that were in this area. The hood exhaust and furnaces may be contaminated with residual metals from the coating material. *Lead & Other Heavy Metals*: There is lead brick in Room 156. The paint on the floor and walls may contain lead or other RCRA heavy metals. Fluorescent light fixtures contain mercury. These lights will be managed as RCRA hazardous waste. Thermostats may contain mercury. *PCBs*: A PCB determination of ballasts will be made when the ballasts are removed. PCBs may be present in paint. *Radiological Contamination*: There is fixed contamination beneath the paint on the floor and building walls from the 1969 fire. It is assumed that the floor contamination levels are the same as those after the 1969 fire (i.e., $10^3 - 10^5$ cpm).	Deactivation: Control/fix contamination Remove/dispose of loose combustibles Remove/dispose of loose equipment Remove/dispose of loose hazardous materials Decommissioning: Drain/isolate utility systems Remove/dispose of equipment & associated piping/conduit Package to waste acceptance criteria	*SNM Holdup Measurement* *Radiological Surveys*	High levels of radiological contamination	PPE Radiological Controls/ ALARA Principles	LLW, LLM
58	**ROOM SET - Rooms 157 and 158** *Asbestos*: The tile floor in Room 157 may contain asbestos. *Beryllium*: There is no record of Be storage or processing in this area. Surface surveys will be performed prior to initiating decommissioning to confirm that there is no Be contamination in this area. *Chemicals*: The paint in the flammable cabinet, refrigerant in the air conditioner, Varsol, and oil will be removed prior to decommissioning. *Lead & Other Heavy Metals*: There are lead sheets, bricks, and tape in this set. Thermostats may contain mercury. The paint on the floor and walls may contain lead or other RCRA heavy metals. Incandescent lights contain lead and fluorescent light fixtures contain mercury. These lights will be managed as RCRA hazardous waste. *PCBs*: A PCB determination of ballasts will be made when the ballasts are removed. PCBs may be present in paint. *Radiological Contamination*: A nitrogen cylinder is marked as having fixed contamination. There is fixed contamination beneath the paint on the floor and building walls from the 1969 fire. It is assumed that the floor contamination levels are the same as those after the 1969 fire (i.e., 10^4 - 10^6 cpm).	Deactivation: Control/fix contamination Remove/dispose of loose combustibles Remove/dispose of loose equipment Remove/dispose of loose hazardous materials Decommissioning: Drain/isolate utility systems Remove/dispose of equipment & associated piping/conduit Package to waste acceptance criteria	*Asbestos* *Beryllium* *Radiological Surveys*	High levels of radiological contamination	PPE Radiological Controls/ ALARA Principles	LLW, LLM

SET NO.	SET DESCRIPTION	MAJOR ENDPOINTS	ADDITIONAL CHARACTERIZTION NEEDED	UNIQUE HAZARD ANALYSIS	HAZARD CONTROL	WASTE STREAM
Mod #8 59	**ROOM SET - Rooms 002, 138, 139, 144, and 147; and room south of Room 144.** *Asbestos*: The insulation in Room 144 will be managed as asbestos waste unless sample results indicate that the insulation is non-asbestos. *Chemicals*: The oil in the vacuum pump will be drained during deactivation. The hydraulic oil for the elevator will not be drained until the elevator is removed from service. If the portable tank contains any liquid, the liquid will be removed during deactivation. *Lead & Other Heavy Metals*: There are lead aprons in the SET. The paint on the floor and walls may contain lead or other RCRA heavy metals. Incandescent lights contain lead and fluorescent light fixtures contain mercury. These lights will be managed as RCRA hazardous waste. *PCBs*: A PCB determination of ballasts will be made when the ballasts are removed. PCBs may be present in paint. *Radiological Contamination*: The portable tank is marked as having 15,000 dpm fixed contamination. The baler and elevator shaft are internally contaminated with Pu. There is fixed contamination beneath the paint on the floor and building walls from the 1969 fire. It is assumed that the floor levels are the same as those after the 1969 fire (i.e., $10^5 - 10^6$ cpm).	Deactivation: Control/fix contamination Remove/package classified material Remove/dispose of loose combustibles Drain/dispose of solutions Remove/dispose of loose equipment Remove/dispose of loose hazardous materials Decommissioning: Drain/isolate fluid systems Drain/isolate/remove/dispose of utility systems Remove/dispose of equipment & associated piping/conduit Package to waste acceptance criteria	*Chemicals* *Radiological Surveys*	High levels of radiological contamination	High levels of radiological contamination	LLW, LLM

SET NO.	SET DESCRIPTION	MAJOR ENDPOINTS	ADDITIONAL CHARACTERIZTION NEEDED	UNIQUE HAZARD ANALYSIS	HAZARD CONTROL	WASTE STREAM
60	**ROOM/EQUIPMENT SET - Room 146, including Ball Mill Washer (RCRA Unit 94.009), Collection Pan (RCRA Unit 94.010), and Annular Tank (RCRA Unit 94.011), plus Rooms 146A, 146B, and 146C, including SRV Treatment and Storage Units (RCRA Unit 61)** *Asbestos*: There is no insulation, floor tile or fire blankets visible on the 1989 photographs of the vault interior. An updated visual characterization is needed to see if any insulation waste has been placed in the vault since the photographs were taken. *Beryllium*: Be contaminated metal may have been sized reduced in the SRV. *Chemicals*: The oil in the equipment and any residual liquid in the ball mill collection ring or piping will be drained prior to decommissioning. A supplied air entry of the SRV is needed to determine if any containerized chemicals exist. *Lead & Other Heavy Metals*: There is lead shielding on the east side of the vault. The paint on the floor and walls may contain lead or other RCRA heavy metals. Incandescent lights contain lead. These lights will be managed as RCRA hazardous waste. *PCBs*: No PCB items are visible on the 1989 photographs of the area. A visual inspection is needed to determine if PCB ballasts are stored in the vault. PCBs may be present in paint. *SNM Holdup*: Not yet determined. The wash table and ball mill need to be scanned for SNM holdup. The scans will be performed in FY99 and FY00. *Radiological Contamination*: The SRV is expected to be contaminated >10^6 dpm Pu on the inner surfaces. There is fixed contamination beneath the paint on the floor and building walls from the 1969 fire. It is assumed that the floor contamination levels are the same as those after the 1969 fire (i.e., >10^6 cpm).	Deactivation: Control/fix contamination Remove/dispose of loose combustibles Drain/dispose of solutions Remove/dispose of loose equipment Remove/dispose of loose hazardous materials Decommissioning: Drain/isolate fluid systems Drain/isolate/remove/dispose of utility systems Remove/dispose of equipment & associated piping/conduit Package to waste acceptance criteria	*Asbestos* *Beryllium* *Chemicals* *SNM Holdup Measurement* *Radiological Surveys*	Beryllium High levels of radiological contamination	PPE CBDPP Radiological Controls/ ALARA Principles	TRU, TRM, LLW, LLM
61	**ROOM/EQUIPMENT SET - Room 135, FBI Pilot Unit, including Tanks T-1 & T-2 (RCRA Unit 49.02)** *Asbestos*: Insulation on the equipment will be managed as asbestos waste unless sample results indicate that the insulation is nonasbestos. *Chemicals*: The ALARA paint and other containerized chemicals will be removed during deactivation. *Lead & Other Heavy Metals*: There are leaded gloves on the canyon wall. The paint on the floor and walls may contain lead or other RCRA heavy metals. Incandescent lights contain lead and fluorescent light fixtures contain mercury. These lights will be managed as RCRA hazardous waste. *PCBs*: A PCB determination of ballasts will be made when the ballasts are removed. PCBs may be present in paint. Though PCBs were incinerated in the FBI, the ash is not Toxic Substance Control Act (TSCA) Regulated. *Radiological Contamination*: The FBI is internally contaminated with Pu. The GBs are expected to be contaminated >10^6 dpm Pu on the inner surfaces. There is fixed contamination beneath the paint on the floor and building walls from the 1969 fire. It is assumed that the floor contamination levels are the same as those after the 1969 fire (i.e., 10^5 - >10^6 cpm).	Deactivation: Control/fix contamination Remove/dispose of loose combustibles Drain/dispose of solutions Remove/dispose of loose equipment Remove/dispose of loose hazardous materials Decommissioning: Drain/isolate fluid systems Control radioactive/chemical contamination Drain/isolate/remove/dispose Remove/dispose of equipment & associated piping/conduit Package to waste acceptance criteria Remove/dispose of specified constituents	*Radiological Surveys*	High levels of radiological contamination	High levels of radiological contamination	LLW, LLM

SET NO.	SET DESCRIPTION	MAJOR ENDPOINTS	ADDITIONAL CHARACTERIZTION NEEDED	UNIQUE HAZARD ANALYSIS	HAZARD CONTROL	WASTE STREAM
62	**ROOM/EQUIPMENT SET - Tanks FBI-1 & FBI-2, and Oil Storage Tanks T-1 & T-2 (RCRA Units 44.01 & 44.02), and Associated Room** *Beryllium*: No process data for Be is available. In process surveys/sampling are needed. *Chemicals*: Organic liquids were stored in these tanks. The liquids were drained in 1998. *Lead & Other Heavy Metals*: Based on the 1992 analysis of liquid from the tank that leaked on the floor, cadmium and chromium are present in the oil. *Radiological Contamination*: The rings in one of the tanks were found to be contaminated (about 10,000 cpm) when they were removed in 1998.	Deactivation: Control/fix contamination Remove/dispose of loose combustibles Drain/dispose of solutions Remove/dispose of loose equipment Remove/dispose of loose hazardous materials Decommissioning: Drain/isolate fluid systems Control radioactive/chemical contamination Drain/isolate/remove/dispose of utility systems Remove/dispose of equipment & associated piping/conduit Package to waste acceptance criteria	*Beryllium* *Lead & Other Heavy Metals* Oil *SNM Holdup Measurement* *Radiological Surveys*	High levels of radiological contamination	PPE Radiological Controls/ ALARA Principles	LLM
63	**ROOM/EQUIPMENT SET - Rooms 118, 118A, 118B, 118C, 118D, 118E, 118F, 118G, 118H, and FBI Production Unit (RCRA Unit 49.01)** *Asbestos*: Insulation on equipment will be managed as asbestos unless sample results indicate the insulation is non-asbestos. *Beryllium*: There is no record of Be storage or processing in this area. Surface surveys will be performed prior to initiating decommissioning activities to confirm there is no Be contamination in the area. *Chemicals*: hydraulic oil will be drained from tanks during deactivation. Hydraulic oil for the elevator will not be drained until the elevator is removed from service. If portable tank contains liquid, it will be removed during deactivation. *Lead & Other Heavy Metals*: There are leaded gloves on the canyon wall. The paint on the floor and walls may contain lead or other RCRA heavy metals. Incandescent lights contain lead and fluorescent light fixtures contain mercury. These lights will be managed as RCRA hazardous waste. *PCBs*: A PCB determination of ballasts will be made when the ballasts are removed. PCBs may be present in paint. *Radiological Contamination*: The FBI is internally contaminated with low levels of Pu contamination. There is fixed contamination beneath the paint on the floor and building walls from the 1969 fire. It is assumed that the floor levels are the same as those after the 1969 fire (i.e., >106 cpm).	Deactivation: Control/fix contamination Remove/dispose of loose combustibles Drain/dispose of solutions Remove/dispose of loose equipment Remove/dispose of loose hazardous materials Decommissioning: Drain/isolate systems Control radioactive/chemical contamination Drain/isolate/remove/dispose of utility systems Remove/dispose of equipment & associated piping/conduit Package to waste acceptance criteria Remove/dispose of specified constituents	*Beryllium* *Chemicals* *Radiological Surveys*	High levels of radiological contamination	PPE Radiological Controls/ ALARA Principles	LLW, LLM

SET NO.	SET DESCRIPTION	MAJOR ENDPOINTS	ADDITIONAL CHARACTERIZTION NEEDED	UNIQUE HAZARD ANALYSIS	HAZARD CONTROL	WASTE STREAM
64	**GLOVEBOX SET - SARF (GBs 512, 513, 515, 517, 518, 521-1, 521-2), including RCRA Unit 74** *Chemicals*: The hydraulic oil will be drained during deactivation. If the collection ring contains any liquid, the liquid will be drained during deactivation. *Lead & Other Heavy Metals*: There are leaded gloves on the SARF GBs. The fluorescent lights contain mercury, and will be managed as RCRA hazardous waste. Representative samples of the paint throughout the building will be analyzed prior to removal of the paint or painted item. *PCBs*: A PCB determination of ballasts will be made when the ballasts are removed. PCBs may be present in paint. *SNM Holdup*: The potential for holdup in these GBs is extremely low since the GBs were used for a short period of time on material that was well contained. However, these GBs will need to be scanned for SNM holdup prior to removal based on the current criticality limit requirements. *Radioisotope sources*: The Pu sources for alpha mets need to be removed. *Radiological Contamination*: The internal surfaces of the SARF are Pu contaminated. The level of contamination is not known at this time and will need to be determined by in-process surveys. Since the SARF was used for only a short time on TRU waste, the contamination may be lower than in other GBs within the building. Based on discussions with two of the operators, the heaviest contamination should be on the pre-compactor ram and supercompactor piston.	Deactivation: Control/fix contamination Remove/dispose of loose combustibles Drain/dispose of solutions Remove/dispose of loose equipment Remove/dispose of loose hazardous materials Decommissioning: Drain/isolate fluid systems Control radioactive/chemical contamination Drain/isolate/remove/dispose of utility systems Remove/dispose of equipment & associated piping/conduit Package to waste acceptance criteria	*Beryllium* *Chemicals* *Radiological Surveys*	High levels of radiological contamination	PPE Radiological Controls/ ALARA Principles	TRU, TRM, LLW, LLM
65	**ROOM SET - Rooms 127J, 136, 141, 150, and 150A** *Asbestos*: The insulation on the equipment will be managed as asbestos waste unless sample results indicate that the insulation is non-asbestos. *Chemicals*: There are a number of chemicals in this SET, including antifreeze, oil, and freon refrigerant. These chemicals will be in use until the utility equipment is no longer needed. Any containers of chemicals will be removed prior to decommissioning. In addition, the liquid reservoirs on the utility equipment will be drained. *Lead & Other Heavy Metals*: The paint on the floor and walls may contain lead or other RCRA heavy metals. Incandescent lights contain lead and fluorescent light fixtures contain mercury. These lights will be managed as RCRA hazardous waste. *PCBs*: A PCB determination of ballasts will be made when the ballasts are removed. PCBs may be present in paint. *Radiological Contamination*: There is fixed contamination beneath the paint on the floor and building walls from the 1969 fire. It is assumed that the floor contamination levels are the same as those after the 1969 fire (i.e., 10^4 - > 10^6 cpm).	Deactivation: Remove/dispose of loose combustibles Drain/dispose of solutions Remove/dispose of loose equipment Remove/dispose of loose hazardous materials Decommissioning: Control radioactive/chemical contamination Drain/isolate/remove/dispose of utility systems Remove/dispose of equipment & associated piping/conduit Package to waste acceptance criteria	*Chemicals* *Radiological Surveys*	High levels of radiological contamination	PPE Radiological Controls/ ALARA Principles	LLW, LLM, SAN

SET NO.	SET DESCRIPTION	MAJOR ENDPOINTS	ADDITIONAL CHARACTERIZTION NEEDED	UNIQUE HAZARD ANALYSIS	HAZARD CONTROL	WASTE STREAM
66	**ROOM/EQUIPMENT SET - ASRF (RCRA Units 776.1 and 776.3), including RDA, MDA, TA, J177, J176, J340, J341, J357, J270, Rooms 130, 130A, 209, 228 and Filter Units, Tank T-344 (RCRA Unit 94.005) and Tank T-345 (RCRA Unit 94.006)** *Asbestos*: There is insulation on the steam piping within Room 228. There are high-temperature mittens within GB J-341. *Beryllium*: Be contaminated metal may have been size reduced in the ASRF. *Chemicals*: The oil in the equipment and any residual condensate in the steam condensate tanks or piping will be drained during deactivation. The containers of liquid in the GBs and the DOP in Room 228 will be removed during deactivation. *Lead & Other Heavy Metals*: There are leaded gloves on the GBs. The paint on the floor and walls may contain lead or other RCRA heavy metals. Incandescent lights contain lead and fluorescent light fixtures contain mercury. These lights will be managed as RCRA hazardous waste. *PCBs*: A PCB determination of ballasts will be made when the ballasts are removed. PCBs may be present in paint. *SNM Holdup*: The GBs in this SET will be scanned for SNM Holdup in FY99 and FY00. *Radioactive Sources*: There are several Pu sources in the ASRF. The sources will be removed when this SET is deactivated. *Radiological Contamination*: The internal surfaces of the ASRF are contaminated. The GBs and the canyons are expected to be contaminated >10^6 dpm Pu on the inner surfaces. There is fixed contamination beneath the paint on the floor and building walls from the 1969 fire. It is assumed that the floor contamination levels are the same as those after the 1969 fire (i.e., 10^5 - 10^6 cpm for Rooms 130, 130A, 209 and 228).	Deactivation: Control/fix contamination Remove/package classified material Remove/dispose of loose combustibles Drain/dispose of solutions Remove/dispose of loose equipment Remove/dispose of loose hazardous materials Decommissioning: Drain/isolate fluid systems Control radioactive/chemical contamination Drain/isolate/remove/dispose of utility systems Remove/dispose of equipment & associated piping/conduit Package to waste acceptance criteria	*Beryllium* *Chemicals* *SNM Holdup Measurement* *Radiological Surveys*	Beryllium High levels of radiological contamination	PPE CBDPP Radiological Controls/ ALARA Principles	TRU, TRM, LLW, LLM

SET NO.	SET DESCRIPTION	MAJOR ENDPOINTS	ADDITIONAL CHARACTERIZTION NEEDED	UNIQUE HAZARD ANALYSIS	HAZARD CONTROL	WASTE STREAM
67	**ROOM SET - Rooms 123, 134 (RCRA Unit 776.1), and 137** *Beryllium*: Be parts were moved through this SET on carts. There is no indication that the rooms became contaminated from these parts. Surface surveys will be performed prior to initiating decommissioning activities to confirm there is no Be contamination in this area. *Chemicals*: Any liquids in equipment will be drained during deactivation. The gas cylinders associated with the PCMs will not be removed until the PCMs are no longer needed. *Lead & Other Heavy Metals*: The paint on the floor and walls may contain lead or other RCRA heavy metals. Fluorescent light fixtures contain mercury. These lights will be managed as RCRA hazardous waste. *PCBs*: A PCB determination of ballasts will be made when the ballasts are removed. PCBs may be present in paint. *Radiological Contamination*: There is fixed contamination beneath the paint on the floor and building walls from the 1969 fire. It is assumed that the floor contamination levels are the same as those after the 1969 fire (i.e., $>10^6$ cpm).	Deactivation: Control/fix contamination Remove/dispose of loose combustibles Remove/dispose of loose equipment Remove/dispose of loose hazardous materials Decommissioning: Drain/isolate/remove/dispose of utility systems Remove/dispose of equipment & associated piping/conduit Package to waste acceptance criteria	*Beryllium* *Chemicals* *Radiological Surveys*	Beryllium High levels of radiological contamination	PPE CBDPP Radiological Controls/ ALARA Principles	LLW, LLM
68	**ROOM SET - Rooms 001 (RCRA Unit 90.99), 127 (RCRA Unit 776.1), 127A, and 127B** *Lead and Other Heavy Metals*: The fence around the process waste tanks has 1/8 inch lead shielding. Representative samples of paint from the rooms will be taken if necessary. Fluorescent lights may contain mercury. *PCBs*: Ballastss within fluorescent light fixtures may contain PCBs. Paint may be sampled for PCBs. *Radiological*: The map of floor contamination levels after the fire indicates contamination $>10^6$ cpm. The paint on the floor has bubbled several times; surveys completed for radiological contamination verify the contamination levels after the fire.	Deactivation: Control/fix contamination Remove/dispose of loose combustibles Drain/dispose of solutions Remove/dispose of loose equipment Remove/dispose of loose hazardous materials Decommissioning: Drain/isolate utility systems Remove/dispose of equipment & associated piping/conduit Package to waste acceptance criteria	*Radiological Surveys*	High levels of radiological contamination	PPE Radiological Controls/ ALARA Principles	LLW, LLM, TRU

SET NO.	SET DESCRIPTION	MAJOR ENDPOINTS	ADDITIONAL CHARACTERIZTION NEEDED	UNIQUE HAZARD ANALYSIS	HAZARD CONTROL	WASTE STREAM
69	**TANK SET - Tanks T-1A, T1B, T-2A, & T-2B (RCRA Unit 776.2), Tank T3, and Bermed Area** *Beryllium*: Be contaminated metal may have been cleaned in the SRV. Wash water from the SRV was shipped to Tanks T1A and T1B. The process waste from Building 779 may have contained small amounts of Be. This possible Be contamination is not a safety concern due to the suspension in water and the controls necessary for the radiological contamination. *Chemicals*: Any liquids in the tanks or piping will be drained prior to the removal of the piping. The process waste tanks are RCRA regulated. *Lead & Other Heavy Metals*: The tanks were permitted for RCRA heavy metals. *PCBs*: PCBs may be present in paint. *SNM Holdup*: The process waste tanks are limited to fissile exempt liquid by the Nuclear Materials Safety limits. Tank T-3 may be more contaminated inside since the water from the plenums is not necessarily fissile exempt liquid. *Radiological Contamination*: The process waste tanks are limited to fissile exempt liquid by the Nuclear Material Safety Limits. Tank T-3 may be more contaminated inside since the water from the plenums is not necessarily fissile exempt liquid. There is fixed contamination beneath the paint on the floor and building walls from the 1969 fire. It is assumed that the floor levels are the same as those after the 1969 fire (i.e., $>10^6$ cpm).	Deactivation: Remove/dispose of loose combustibles Drain/dispose of solutions Remove/dispose of loose equipment Remove/dispose of loose hazardous materials Decommissioning: Drain/isolate systems Control radioactive/chemical contamination Drain/isolate/remove/dispose of utility systems Remove/dispose of equipment & associated piping/ conduit Package to waste acceptance criteria	*Chemicals* *SNM Holdup Measurement* *Radiological Surveys*	High levels of radiological contamination	High levels of radiological contamination	LLW, TRU
70	**ROOM SET - Rooms 205, 206, 208 (RCRA Units 776.1 & 777.1), 219, 237 (RCRA Unit 776.1), and 232 to 256 (not all inclusive)** *Asbestos*: Floor tiles and pipe insulation in several rooms may contain asbestos. *Beryllium*: Be was not stored or processed on the second floor of Building 776 or 777B. Be was handled on the first floor of the Building 777B. In process surveys for Be contamination will be needed when building components are removed. The only potential site of Be contamination on the second floor of Building 776 is the exhaust ducting and plenums. Surface surveys will be performed prior to initiating decommissioning activities. *Lead & Other Heavy Metals*: The paint on the floor and walls may contain lead or other RCRA heavy metals. Fluorescent light fixtures contain mercury. These lights will be managed as RCRA hazardous waste. *PCBs*: A PCB determination of ballasts will be made when the ballasts are removed. PCBs may be present in paint. *Radiological Contamination*: The GBs are expected to be contaminated $>10^6$ dpm Pu on the inner surfaces. The maximum fixed contamination on the exterior of the GBs is 600,000 dpm. There is fixed contamination beneath the paint on the floor and building walls from the 1969 fire. It is assumed that the floor contamination levels are the same as those after the 1969 fire (i.e., 10^3 - 10^6 cpm).	Deactivation: Control/fix contamination Remove/dispose of loose combustibles Drain/dispose of solutions Remove/dispose of loose equipment Remove/dispose of loose hazardous materials Decommissioning: Drain/isolate fluid systems Control radioactive/chemical contamination Drain/isolate/remove/dispose of utility systems Remove/dispose of equipment & associated piping/conduit Package to waste acceptance criteria	*Asbestos* *Beryllium* *Chemicals* *Radiological Surveys*	Beryllium	PPE CBDPP	LLW, LLM

SET NO.	SET DESCRIPTION	MAJOR ENDPOINTS	ADDITIONAL CHARACTERIZTION NEEDED	UNIQUE HAZARD ANALYSIS	HAZARD CONTROL	WASTE STREAM
71	**EQUIPMENT SET - Superdry Air Drying System, 2nd Floor** *Asbestos*: The insulation on the ducting contains asbestos. *Beryllium*: Be was stored, cleaned, and assembled in the Superdry facility. None of these operations would cause significant airborne contamination. Surface surveys will be performed prior to initiating decommissioning activities. *Chemicals*: The dryers are filled with silica gel. *Lead & Other Heavy Metals*: The paint on the floor and walls may contain lead or other RCRA heavy metals. *PCBs*: PCBs may be present in paint. *Radiological Contamination*: The dryers may be slightly contaminated from room exhaust.	Deactivation: Control/fix contamination Remove/dispose of loose combustibles Drain/dispose of solutions Remove/dispose of loose equipment Remove/dispose of loose hazardous materials Decommissioning: Drain/isolate fluid systems Control radioactive/chemical contamination Drain/isolate/remove/dispose of utility systems Remove/dispose of equipment & associated piping/conduit Package to waste acceptance criteria	*Beryllium* *Radiological Surveys*	Beryllium	PPE CBDPP	LLW
72	**EQUIPMENT SET - GB Dry Air Drying System, 2nd Floor** *Asbestos*: The insulation on the Kathabar K-1 is listed in the asbestos inventory. Insulation on the remaining units will be managed as asbestos. *Beryllium*: The only potential site of Be contamination on the second floor is the exhaust plenums. Surface surveys will be performed prior to initiating decommissioning activities. *Chemicals*: Any freon refrigerant remaining in the compressors will be removed during deactivation. *Lead & Other Heavy Metals*: Kathene sludge has been analyzed and shown to contain regulated amounts of cadmium, chromium and lead. *PCBs*: The lubricating oil in the Kathabars will be tested for PCBs since the unit is pre1970s and the oil has not been changed since the 1960s. PCBs may be present in paint. *SNM Holdup*: GB exhaust was not routed through this unit during its operation. The contamination in the unit is from the makeup air drawn form the 2nd floor during the 1969 fire. *Radiological Contamination*: The GBDA Cathedra is known to be internally contaminated from the 1969 fire.	Deactivation: Control/fix contamination Remove/dispose of loose combustibles Drain/dispose of solutions Remove/dispose of loose equipment Remove/dispose of loose hazardous materials Decommissioning: Drain/isolate fluid systems Control radioactive/chemical contamination Drain/isolate/remove/dispose of utility systems Remove/dispose of equipment & associated piping/conduit Package to waste acceptance criteria	*Beryllium* *Chemicals* *Lead & Other Heavy Metals:* Sludge *SNM Holdup Measurement*	Beryllium	PPE CBDPP	LLW, LLM

SET NO.	SET DESCRIPTION	MAJOR ENDPOINTS	ADDITIONAL CHARACTERIZTION NEEDED	UNIQUE HAZARD ANALYSIS	HAZARD CONTROL	WASTE STREAM
73	**EQUIPMENT SET - Remainder of the 2nd Floor Equipment Not in Other SETS** *Asbestos*: Asbestos has been detected in multiple insulation samples on the 2nd floor. The insulation on the piping and equipment in this SET will be managed as asbestos contaminated waste. *Beryllium*: The only potential site of Be contamination on the second floor is in the exhaust plenums. Surveys will be performed prior to initiating decommissioning activities. *Chemicals*: Any liquids or compressed gases will be drained from the equipment prior to removing the equipment. This includes brine, freon, oil and water. *Lead & Other Heavy Metals*: The paint on the floor and walls may contain lead or other RCRA heavy metals *PCBs*: PCBs may be present in paint. *Radiological Contamination*: The reheat system is known to be internally contaminated. The remaining equipment may be contaminated since the SET is contained within a Radiation Buffer Area (RBA). Unless the equipment is unpainted and 100% surveyable, the equipment will be disposed of as LLW.	Deactivation: Control/fix contamination Remove/package classified material Remove/dispose of loose combustibles Drain/dispose of solutions Remove/dispose of loose equipment Remove/dispose of loose hazardous materials Decommissioning: Drain/isolate fluid systems Control radioactive/chemical contamination Drain/isolate/remove/dispose of utility systems Remove/dispose of equipment & associated piping/conduit Package to waste acceptance criteria	*Beryllium* *Chemicals* *Radiological Surveys*	Beryllium	PPE CBDPP	LLW
74	**BUILDING STRUCTURE SET - Building 702, 712 and 712A** *Asbestos*: The insulation on the steam lines in Building 702 will be managed as asbestos waste unless sampling indicates otherwise. The baffles on the cooling tower will be sampled for asbestos. *Chemicals*: There are several drums of oil that will be removed from Building 702 during deactivation. Liquids from the motors, pumps, and piping will be drained also. *Lead & Other Heavy Metals*: Incandescent lights contain lead. Fluorescent light fixtures and mercoid switches contain mercury. These items will be managed as RCRA hazardous waste. *Radiological Contamination:* There is no indication of radiological contamination in these buildings. Surveys will be performed to verify contamination is not present.	Deactivation: Control/fix contamination Remove/dispose of loose combustibles Drain/dispose of solutions Remove/dispose of loose equipment Remove/dispose of loose hazardous materials Decommissioning: Control radioactive/chemical contamination Drain/isolate/remove/dispose of utility systems Remove/dispose of equipment & associated piping/conduit Package to waste acceptance criteria Remove/dispose of specified constituents Remove/dispose of structures Close subsurface volumes	*Asbestos* *Chemicals* *Radiological Surveys*	None	PPE	HAZ, SAN

SET NO.	SET DESCRIPTION	MAJOR ENDPOINTS	ADDITIONAL CHARACTERIZTION NEEDED	UNIQUE HAZARD ANALYSIS	HAZARD CONTROL	WASTE STREAM
75	**BUILDING STRUCTURE SET - Building 781** *Beryllium*: Not yet known; there is no process history for the items tested in the chamber in Building 781. *Chemicals*: A cylinder of helium in the building will be removed prior to decommissioning. *Lead & Other Heavy Metals*: Incandescent lights contain. These lights will be managed as RCRA hazardous waste. *Radiological Contamination*: There is no indication of radiological contamination in this building. However, the compressor lines from Building 781 pass into a Contamination Area in Room 459A, Building 777. Surveys will be performed to verify contamination is not present.	Deactivation: Remove/dispose of loose combustibles Drain/dispose of solutions Remove/dispose of loose hazardous materials Decommissioning: Drain/isolate/remove/dispose of utility systems Remove/dispose of equipment & associated piping/conduit Package to waste acceptance criteria Remove/dispose specified constituents Close subsurface volumes	*Beryllium* *Radiological Surveys*	None	PPE	LLW, LLM
76	**BUILDING STRUCTURE SET - Building 701, 710 and 730** *Asbestos*: The insulation in these buildings will be managed as asbestos waste unless sampling indicates otherwise. *Beryllium*: There may be historical Be contamination from the laundry water in Building 730. There is no indication of Be handing or storage in Building 701 or 710. *Chemicals*: There are several gas cylinders that will be removed from Building 701 during deactivation. Liquids from the motors, pumps and piping will be drained also. *Lead & Other Heavy Metals*: Incandescent lights contain lead, fluorescent light fixtures contain mercury, and sodium vapor lights can contain lead and mercury. These lights will be managed as RCRA hazardous waste. There are leaded gloves stored in this SET. *PCBs*: A PCB determination of ballasts will be made when the ballasts are removed *Radiological Contamination*: The liquids handled in Building 730 were radioactively contaminated. Building 701 has been contaminated twice by incidents related to process waste backing up into a toilet in 1972 and personnel spreading contamination from Building 730 in 1975. The building was decontaminated after both incidents. There is no indication of radiological contamination in Building 710.	Deactivation: Control/fix contamination Remove/dispose of loose combustibles Drain/dispose of solutions Remove/dispose of loose equipment Remove/dispose of loose hazardous materials Decommissioning: Drain/isolate fluid systems Control radioactive/chemical contamination Drain/isolate/remove/dispose of utility systems Remove/dispose of equipment & associated piping/conduit Package to waste acceptance criteria Remove/dispose of specified constituents Remove/dispose of structures Close subsurface volumes	*Beryllium* *Chemicals* *Radiological Surveys*	Beryllium	PPE CBDPP	LLW, HAZ, SAN

SET NO.	SET DESCRIPTION	MAJOR ENDPOINTS	ADDITIONAL CHARACTERIZTION NEEDED	UNIQUE HAZARD ANALYSIS	HAZARD CONTROL	WASTE STREAM
77	**EQUIPMENT SET - Chillers #2 and #3 (not in use) in Room 150** *Asbestos*: Asbestos has been detected in samples of the Chiller #5 insulation. Based on this information and the age of Chillers #2 and #3, it is assumed that the insulation on these chillers contains asbestos. *Chemicals*: Any brine or oil remaining in the chillers will be drained prior to removal of the chillers. *Lead & Other Heavy Metals*: The paint on the floor and walls may contain lead or other RCRA heavy metals. *PCBs*: A PCB determination of ballasts will be made when the ballasts are removed. PCBs may be present in paint. Radiological Contamination: There is fixed contamination beneath the paint on the floor and building walls from the 1969 fire. It is assumed that the floor contamination levels are the same as those after the 1969 fire (i.e., 10^4 ->10^6 cpm).	Deactivation: Control/fix contamination Remove/dispose of loose combustibles Drain/dispose of solutions Remove/dispose of loose hazardous materials Decommissioning: Control radioactive/chemical contamination Drain/isolate/remove/dispose of utility systems Remove/dispose of equipment & associated piping/conduit Package to waste acceptance criteria	*Chemicals* *Radiological Surveys*	High levels of radiological contamination	PPE Radiological Controls/ ALARA Principles	LLW
78	**EQUIPMENT SET - Miscellaneous Unused Piping (e.g. machine coolant, CCl_4, trichloroethane, process waste, and argon)** *Beryllium*: The possibility of Be contamination exists in the waste lines (process, machine coolant and trichloroethane). This possible Be contamination is not a safety concern due to the suspension in oil and the controls necessary for the radiological contamination. Be contamination is expected in the argon system as well. *Chemicals*: Sections of piping will be drained prior to removal of the pipe. The liquids will be characterized according to the individual system (i.e., process waste, trichloroethane, and machine coolant). *SNM Holdup*: The piping will be scanned prior to disposal to comply with current criticality limit requirements. It is anticipated the holdup amounts will be modest if any for the waste lines. The amounts in the argon system may be higher than the other systems in this SET if the argon was not filtered prior to leaving the GB. *Radiological Contamination*: Based on the removal of waste trichloroethane and machine coolant lines in 1995 and 1998, the interior of this piping is contaminated >10^6 dpm. The painted supply piping may be contaminated on the exterior. The process waste piping will be contaminated to varying degrees depending on the source of the liquid (i.e., the line for size reduction will be more contaminated than the lines from the ASRF or the 2nd floor). The argon line in Room 475 is assumed to be contaminated with >10^6 dpm Pu since these units contained GB atmosphere.	Deactivation: Control/fix contamination Remove/dispose of loose combustibles Drain/dispose of solutions Remove/dispose of loose hazardous materials Decommissioning: Drain/isolate fluid systems Control radioactive/chemical contamination Drain/isolate utility systems Remove/dispose of equipment & associated piping/conduit Package to waste acceptance criteria	*Beryllium* *Chemicals* *SNM Holdup Measurement* *Radiological Surveys*	Beryllium High levels of radiological contamination	PPE CBDPP Radiological Controls/ ALARA Principles	LLW, LLM

SET NO.	SET DESCRIPTION	MAJOR ENDPOINTS	ADDITIONAL CHARACTERIZTION NEEDED	UNIQUE HAZARD ANALYSIS	HAZARD CONTROL	WASTE STREAM
79	**EQUIPMENT SET - Criticality Accident Alarm System (CAAS) and Plenum Deluge System** *Beryllium*: There is no indication of Be contamination on the components of this SET that will be removed during decommissioning. Be surveys will be required to "free release" the system component. *Chemicals*: The water from the deluge valve to the supply will need to be drained. The system is "dry" within the plenum. *Radiological Contamination*: Radiological contamination is not encountered when the neutron detectors are replaced or serviced.	Deactivation: Control/fix contamination Drain/dispose of solutions Remove/dispose of loose hazardous materials Decommissioning: Drain/isolate fluid systems Control radioactive/chemical contamination Drain/isolate/remove/dispose of utility systems Remove/dispose of equipment & associated piping/conduit Package to waste acceptance criteria	*Beryllium* *Chemicals* *Radiological Surveys*	None	PPE	LLW, SAN
80	**EQUIPMENT SET - Plenums and associated ductwork for Zone 1 ventilation** *Beryllium*: The ducting from the GBs and hoods that processed Be will be considered Be contaminated. *Chemicals*: DOP on the filters from testing. *SNM Holdup*: The plenums are scanned on an annual basis to determine the amount of holdup present. The ducting was scanned in 1990 to determine the amount of SNM within the ducting. SNM has been removed from the molten salts duct. SNM holdup will be reduced to the safeguards termination limits during deactivation. *Radiological Contamination*: The plenums are High Contamination Areas. The plenums and ducting contain gram amounts of Pu and are therefore contaminated in excess of 10^6 dpm.	Deactivation: Control/fix contamination Remove/dispose of loose combustibles Drain/dispose of solutions Remove/dispose of loose equipment Remove/dispose of loose hazardous materials Decommissioning: Control radioactive/chemical contamination Drain/isolate/remove/dispose utility systems Remove/dispose of equipment & associated piping/conduit Package to waste acceptance criteria	*Beryllium* *SNM Holdup Measurement* *Radiological Surveys*	Beryllium High levels of radiological contamination	PPE CBDPP Radiological Controls/ ALARA Principles	LLW, TRU

SET NO.	SET DESCRIPTION	MAJOR ENDPOINTS	ADDITIONAL CHARACTERIZTION NEEDED	UNIQUE HAZARD ANALYSIS	HAZARD CONTROL	WASTE STREAM
81	**EQUIPMENT SET - Miscellaneous external items (including UST, AST, cargo containers, exterior piping, and electrical transformers)** *Asbestos*: Much of the steam condensate line insulation has been replaced with non-asbestos insulation. Any insulation that has not been replaced or installed recently will be managed as asbestos unless sample results indicate the insulation is non-asbestos. *Beryllium*: The process waste lines may have low levels of Be contamination (see tank SETs 7, 26 and 69). This possible Be contamination is not a safety concern due to the suspension in liquid and the controls that are necessary for radiological contamination. *Chemicals*: There are chemical containers that will be removed from cargo containers during deactivation. Any residual liquids in the piping will be removed prior to decommissioning. The dielectric fluid in the transformers will be sampled and removed prior to removal of the transformer carcasses. *Lead & Other Heavy Metals*: Sodium vapor lights contain lead and mercury. There are treatability wastes in cargo containers that must be disposed of prior to decommissioning. *SNM Holdup*: Not determined. The contaminated piping was used to ship process waste. Based on the removal of the trichloroethane piping in Rooms 141 and 430, there is no detectable holdup in the piping. The piping will require scanning prior to packaging to comply with the current criticality controls for waste drums and boxes. *Radiological Contamination*: The process waste lines are internally contaminated. The other piping should not be contaminated. The cargo carriers, their contents, and the transformer carcasses will be surveyed for "free release" also.	Deactivation: Remove/dispose of loose combustibles Drain/dispose of solutions Remove/dispose of loose equipment Remove/dispose of loose hazardous materials Decommissioning: Control radioactive/chemical contamination Drain/isolate utility systems Remove/dispose of equipment & associated piping/conduit Package to waste acceptance criteria	*Asbestos* *Beryllium* *Chemicals* *Lead & Other Heavy Metals:* Sludge *SNM Holdup Measurement* *Radiological Surveys*	Beryllium	PPE CBDPP	LLW, LLM, HAZ, SAN

SET NO.	SET DESCRIPTION	MAJOR ENDPOINTS	ADDITIONAL CHARACTERIZTION NEEDED	UNIQUE HAZARD ANALYSIS	HAZARD CONTROL	WASTE STREAM
82	**BUILDING STRUCTURE SET - Building Shell (1st and 2nd Floors) includes Docks 2 through 6** *Asbestos*: The walls contain several asbestos features. Much of the original exterior walls are covered with transite panels. Where asbestos insulated pipes pass through the 2nd floor, asbestos insulation may be present in the pipe section remaining in the floor. The mortar filling contained in some cement blocks might contain asbestos. *Beryllium*: Be surveys will be needed for the building structure once the equipment is removed. The areas that have known or suspected contamination can be found on the Be map in the Reconnaissance Level Characterization Report or in the individual SET descriptions in this appendix. *Chemicals*: The wall along column line L between Columns 7 and 9 is potentially contaminated with carbon tetrachloride and oil. In the 1960s prior to the 1969 fire, waste machine coolant mixed with carbon tetrachloride was sprayed onto the wall when drums of the liquid were overfilled. There are numerous other incidents where the same waste leaked onto the 1st floor in other areas of the building. Since the 1st floor will not be removed during decommissioning, these sites do not affect characterization of the waste generated during decommissioning. *Lead & Other Heavy Metals*: The paint on the floor and walls may contain lead or other RCRA heavy metals. The concrete near the Kathabar units on the second floor is contaminated with Kathene. Kathene sludge contains chromium, cadmium and lead. The levels of these metals in the concrete have not been determined. Based on comments from a former NDT employee, the north, west, and east walls of Room 473 may contain lead "wool" within the concrete. The lead was added to increase the shielding provided by the walls. *Radiological Contamination*: There is fixed contamination beneath the paint on the floor and building walls from the 1969 fire. It is assumed that the floor contamination levels are the same as those after the 1969 fire (i.e., a range of not detectable to $>10^6$ cpm).	Ensure that the following deactivation and decommissioning have been completed: Deactivation: Control/fix contamination Remove/dispose of loose combustibles Drain/dispose of solutions Remove/dispose of loose equipment Remove/dispose of loose hazardous materials Decommissioning: Drain/isolate fluid systems Control radioactive/ chemical contamination Drain/isolate/remove/dispose of utility systems Remove/dispose of equipment & associated piping/conduit Package to waste acceptance criteria Remove/dispose of specified constituents Control air emissions Then: Remove/dispose of building structure	*Beryllium* *Lead & Other Heavy Metals:* Sludge *Radiological Surveys*	Beryllium High levels of radiological contamination Kathene	PPE CBDPP Radiological Controls/ ALARA Principles	LLW, TRU, LLM, HAZ, SAN

SET NO.	SET DESCRIPTION	MAJOR ENDPOINTS	ADDITIONAL CHARACTERIZTION NEEDED	UNIQUE HAZARD ANALYSIS	HAZARD CONTROL	WASTE STREAM
83	**EQUIPMENT SET - SET 83 is broken into three parts: (1) Buildings 703, 713 (cooling tower) and 713A, (2) Zone 2 Plenums and Ductwork, (3) Remaining equipment in Building776/777 (Supply Fans S1 –S9, HP heads, air, N_2, sanitary drains, domestic water, electrical, UPS batteries (Room 230), LS/DW batteries, Rooms 230A, 231, 231A and 232A, fire systems, and inner tent dismantlement chamber (ITDC) in Room 433). The overall SET has the same endpoints; the individual parts have different hazards and contaminants, as shown below.** *Asbestos*: (1) The insulation on the piping and structure will be managed as asbestos waste unless sampling indicates otherwise. The baffles on the cooling tower may contain asbestos. (2) None. (3) The pipe insulation, ceiling tile and floor tile will be managed as asbestos waste unless sampling indicates otherwise. *Beryllium*: (1) None. (2) The ducting from the rooms with Be was handled will be considered Be contaminated. (3) None. *Chemicals*: (1) There are containers of oil and Nalco 2826 that will be removed from Building 702 during deactivation. Liquids from the motors, pumps and piping will be drained also. (2) There is DOP on the filters from testing. (3) The electrolyte in the batteries is acidic. *Lead & Other Heavy Metals*: (1) The fluorescent bulbs contain mercury (Building 703) and will be managed as hazardous waste. (2) None (3) The fluorescent bulbs contain mercury. There is lead within the LS/DW and UPS batteries. Incandescent bulbs can contain lead. *PCBs*: (1) A PCB determination of ballasts will be made when the ballasts are removed. (2) None (3) A PCB determination of ballasts will be made when the ballasts are removed. The switchgear will be inspected for PCB capacitors when it is deactivated. *Radioactive Sources*: (1) None (2) None (3) The sources in the air monitors will be removed with the air monitors. *Radiological Contamination*: (1) There is no indication of radiological contamination in these buildings. (2) The plenums are High Contamination Areas. Several room exhaust ducts on the 1st floor are marked "contains fixed contamination". (3) The remaining equipment may be contaminated since the SET is contained within a Radiation Buffer Area and Contamination Area. Unless the equipment is unpainted and 100% surveyable, the equipment will be disposed of as LLW.	Deactivation: Control/fix contamination Remove/dispose of loose combustibles Drain/dispose of solutions Remove/dispose of loose equipment Decommissioning: Drain/isolate fluid systems Control radioactive/chemical contamination Drain/isolate/remove/dispose of utility systems Remove/dispose of equipment & associated piping/conduit Package to waste acceptance criteria Remove/dispose specified constituents Control air emissions Remove/dispose of structures Close subsurface volumes	*Beryllium* (2) *Chemicals* (1), (3) *PCBs* (3) *Radiological Surveys* (1), (2), (3)	Beryllium High levels of radiological contamination	PPE CBDPP Radiological Controls/ ALARA Principles	LLW, LLM

Mod #8

SET NO.	SET DESCRIPTION	MAJOR ENDPOINTS	ADDITIONAL CHARACTERIZTION NEEDED	UNIQUE HAZARD ANALYSIS	HAZARD CONTROL	WASTE STREAM
84	**EQUIPMENT SET - Floors and below-grade features filled with concrete, including equipment from the 1969 fire cleanup** *Asbestos:* It is assumed that the insulation on the buried autoclave contains asbestos. *Chemicals:* There were numerous incidents in Rooms 127, 131, and 134E where oil/carbon tetrachloride mixture leaked to the floor. This mixture was cleaned in accordance with decontamination practices or procedures in place at the time of the spill. The stairwells, mill/press pits and the Hydroform equipment room floor were most likely contaminated with this mixture at various times. There is no information on the presence or absence of leakage from the paint trap. Trichloroethylene was used for cleaning items processed in the autoclaves. *Lead & Other Heavy Metals*: The paint on the floor and walls may contain lead or other RCRA heavy metals. *SNM Holdup:* Not yet determined. Buried equipment used to process SNM (GBs, rolling mill rolls) may contain SNM. *Radiological:* The depth of the contamination into the floor has not been established. The contaminated fire water from the 1969 fire may have penetrated the floors at the expansion joints.	Decommissioning: Area A, Stairwells (5) Under Main Floor Slab Control radioactive contamination Remove/ dispose of cement Package to waste acceptance criteria Control air emissions Area B, Room 127, Maintenance Area Control radioactive contamination Remove/ dispose of cement and metal panels Package to waste acceptance criteria Control air emissions Area C, Four-High Rolling Mill Pit Control radioactive contamination Remove/ dispose of cement and equipment Package to waste acceptance criteria Control air emissions Area D, Marform Press Pit Control radioactive contamination Remove/dispose of cement Package to waste acceptance criteria Control air emissions Area E, Hydroform Press Room Control radioactive contamination Remove/dispose of cement and equipment Package to waste acceptance criteria Control air emissions Area F, Autoclave Equipment Pit Control radioactive contamination Remove/ dispose of cement Package to waste acceptance criteria Control air emissions Area G, Washing Machine Drain Pit Control radioactive contamination Remove/dispose of cement and equipment Package to waste acceptance criteria Control air emissions Area H, Paint Trap Control radioactive contamination Remove/dispose of cement and equipment Package to waste acceptance criteria Control air emissions	*Chemicals:* To be determined. *SNM Holdup:* To be determined on a case by case basis. *Radiological Surveys*	High levels of radiological contamination	PPE Radiological Controls/ ALARA Principles	TRU, TRM, LLW

Appendix B
Ground Water Action Levels
(source: RFCA, Attachment 5)

Analyte	CAS No.	Tier 1- 100 x MCLs (mg/L)	Tier 2- MCLs (mg/L)
Acenaphthene (V)	83-32-9	2.19E+02	2.19E+00
Acetone (V)	67-64-1	3.65E+02	3.65E+00
Aldrin	309-00-2	5.00E-04	5.00E-06
Aluminum	7429-90-5	1.06E+04	1.06E+02
Anthracene (V)	120-12-7	1.10E+03	1.10E+01
Antimony	7440-36-0	6.00E-01	6.00E-03
Aroclor-1016	12674-11-2	5.00E-02	5.00E-04
Aroclor-1221	11104-28-2	5.00E-02	5.00E-04
Aroclor-1232	11141-16-5	5.00E-02	5.00E-04
Aroclor-1242	53469-21-9	5.00E-02	5.00E-04
Aroclor-1248	12672-29-6	5.00E-02	5.00E-04
Aroclor-1254	11097-69-1	5.00E-02	5.00E-04
Aroclor-1260	11096-82-5	5.00E-02	5.00E-04
Arsenic	7440-38-2	5.00E+00	5.00E-02
Barium	7440-39-3	2.00E+02	2.00E+00
Benzene (V)	71-43-2	5.00E-01	5.00E-03
alpha-BHC	319-84-6	1.35E-03	1.35E-05
beta-BHC	319-85-7	4.72E-03	4.72E-05
gamma-BHC (Lindane)	58-89-9	2.00E-02	2.00E-04
Benzo(a)anthracene	56-55-3	1.16E-02	1.16E-04
Benzo(a)pyrene	50-32-8	2.00E-02	2.00E-04
Benzo(b)fluoranthene	205-99-2	1.16E-02	1.16E-04
Benzo(k)fluoranthene	207-08-9	1.16E-01	1.16E-03
Benzoic Acid	65-85-0	1.46E+04	1.46E+02
Benzyl Alcohol	100-51-6	1.10E+03	1.10E+01
Beryllium	7440-41-7	4.00E-01	4.00E-03
bis(2-Chloroethyl)ether (V)	111-44-4	1.63E-03	1.63E-05
bis(2-Chloroisopropyl)ether (V)	108-60-1	4.22E-02	4.22E-04
bis(2-Ethylhexyl)phthalate	117-81-7	6.00E-01	6.00E-03
Bromodichloromethane (V)	75-27-4	1.00E+01	1.00E-01
Bromoform (V)	75-25-2	1.00E+01	1.00E-01
Bromomethane (V)	74-83-9	1.09E+00	1.09E-02
2-Butanone (V)	78-93-3	2.47E+02	2.47E+00
Butylbenzylphthalate	85-68-7	7.30E+02	7.30E+00
Cadmium	7440-43-9	5.00E-01	5.00E-03
Carbon disulfide (V)	75-15-0	2.76E+00	2.76E-02
Carbon tetrachloride (V)	56-23-5	5.00E-01	5.00E-03
alpha-Chlordane	5103-71-9	2.00E-01	2.00E-03
beta-Chlordane	5103-74-2	2.00E-01	2.00E-03
gamma-Chlordane	5103-74-2	2.00E-01	2.00E-03
4-Chloroaniline	106-47-8	1.46E+01	1.46E-01
Chlorobenzene (V)	108-90-7	1.00E+01	1.00E-01
Chloroethane (V)	75-00-3	2.78E+03	2.78E+01
Chloroform (V)	67-66-3	1.00E+01	1.00E-01
Chloromethane (V)	74-87-3	2.32E-01	2.32E-03
2-Chloronaphthalene (V)	91-58-7	2.92E+02	2.92E+00
2-Chlorophenol (V)	95-57-8	1.83E+01	1.83E-01
Chromium	7440-47-3	1.00E+01	1.00E-01
Chrysene	218-01-9	1.16E+00	1.16E-02
Cobalt	7440-48-4	2.19E+02	2.19E+00

187

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Appendix B
Ground Water Action Levels
(source: RFCA, Attachment 5)

Analyte	CAS No.	Tier 1- 100 x MCLs (mg/L)	Tier 2- MCLs (mg/L)
Copper	7440-50-8	1.30E+02	1.30E+00
Cyanide	57-12-5	2.00E+01	2.00E-01
4,4-DDD	72-54-8	*3.54E-02*	*3.54E-04*
4,4-DDE	72-55-9	*2.50E-02*	*2.50E-04*
4,4-DDT	50-29-3	*2.50E-02*	*2.50E-04*
Dalapon	75-99-0	2.00E+01	2.00E-01
Dibenz(a,h)anthracene	53-70-3	*1.16E-03*	*1.16E-05*
Dibromochloromethane	124-48-1	*1.01E-01*	*1.01E-03*
1,2-Dibromo-3-chloropropane	96-12-8	2.00E-02	2.00E-04
Di-n-butylphthalate	84-74-0	*3.65E+02*	*3.65E+00*
2,4-D	94-75-7	7.00E+00	7.00E-02
1,2-Dichlorobenzene (V)	95-50-1	6.00E+01	6.00E-01
1,3-Dichlorobenzene (V)	541-73-1	6.00E+01	6.00E-01
1,4-Dichlorobenzene (V)	106-46-7	7.50E+00	7.50E-02
3,3-Dichlorobenzidine	91-94-1	*1.89E-02*	*1.89E-04*
1,1-Dichloroethane (V)	107-06-2	*1.01E+02*	*1.01E+00*
1,2-Dichloroethane (V)	107-06-2	5.00E-01	5.00E-03
1,1-Dichloroethene (V)	540-59-0	7.00E-01	7.00E-03
1,2-Dichloroethene (total)(V)	540-59-0	7.00E+00	7.00E-02
2,4-Dichlorophenol	120-83-2	*1.10E+01*	*1.10E-01*
1,2-Dichloropropane (V)	78-87-5	5.00E-01	5.00E-03
cis-1,3-Dichloropropene (V)	1006-01-5	*1.27E-02*	*1.27E-04*
trans-1,3-Dichloropropene (V)	10061-02-6	*1.27E-02*	*1.27E-04*
Dieldrin	60-57-1	*5.31E-04*	*5.31E-06*
Diethylphthalate	84-66-2	*2.92E+03*	*2.92E+01*
2,4-Dimethylphenol (V)	105-67-9	*7.30E+01*	*7.30E-01*
Dimethylphthalate	131-11-3	*3.65E+04*	*3.65E+02*
2,4-Dinitrophenol	51-28-5	*7.30E+00*	*7.30E-02*
2,4-Dinitrotoluene	121-14-2	*7.30E+00*	*7.30E-02*
2,6-Dinitrotoluene	606-20-2	*1.25E-02*	*1.25E-04*
Di-n-octylphthalate	117-84-0	*7.30E+01*	*7.30E-01*
Endosulfan I	959-98-8	*2.19E+01*	*2.19E-01*
Endosulfan II	33213-65-9	*2.19E+01*	*2.19E-01*
Endosulfan sulfate	1031-07-8	*2.19E+01*	*2.19E-01*
Endosulfan (technical)	115-29-7	*2.19E+01*	*2.19E-01*
Endrin (technical)	72-26-8	2.00E-01	2.00E-03
Ethylbenzene (V)	100-41-4	7.00E+01	7.00E-01
Fluoranthene	206-44-0	*1.46E+02*	*1.46E+00*
Fluorene (V)	86-73-7	*1.46E+02*	*1.46E+00*
Fluoride	16984-48-8	4.00E+02	4.00E+00
Glyphosate	1071-83-6	7.00E+01	7.00E-01
Heptachlor	76-44-8	4.00E-02	4.00E-04
Heptachlor epoxide	1024-57-3	2.00E-02	2.00E-04
Hexachlorobenzene	118-74-1	1.00E-01	1.00E-03
Hexachlorobutadiene	87-68-3	*1.09E-01*	*1.09E-03*
Hexachlorocyclopentadiene	77-47-4	5.00E+00	5.00E-02
Hexachloroethane	67-72-1	*6.07E-01*	*6.07E-03*
Indeno(1,2,3-cd)pyrene	193-39-5	*1.16E-02*	*1.16E-04*
Isophorone	78-59-1	*8.95E+00*	*8.95E-02*
Lithium	7439-93-2	*7.30E+01*	*7.30E-01*

188

Appendix B
Ground Water Action Levels
(source: RFCA, Attachment 5)

Analyte	CAS No.	Tier 1- 100 x MCLs (mg/L)	Tier 2- MCLs (mg/L)
Manganese	7439-96-5	*1.83E+01*	*1.83E-01*
Mercury	7439-97-6	2.00E-01	2.00E-03
Methoxychlor	72-43-5	4.00E+00	4.00E-02
Methylene chloride (V)	75-09-2	5.00E-01	5.00E-03
4-Methyl-2-pentanone (V)	108-10-1	*2.03E+01*	*2.03E-01*
2-Methylphenol	95-48-7	*1.83E+02*	*1.83E+00*
Molybdenum	7439-98-7	*1.83E+01*	*1.83E-01*
Naphthalene (V)	91-20-3	*1.46E+02*	*1.46E+00*
Nickel	7440-02-0	1.00E+01	1.00E-01
Nitrate (MCL as N)	1-005	1.00E+03	1.00E+01
Nitrite (MCL as N)	1-005	1.00E+02	1.00E+00
Nitrobenzene (V)	98-95-3	*4.20E-01*	*4.20E-03*
n-Nitrosodiphenylamine (V)	86-30-6	*1.73E+00*	*1.73E-02*
n-Nitrosodipropylamine	621-64-7	*1.21E-03*	*1.21E-05*
Pentachlorophenol	87-86-5	1.00E-01	1.00E-03
Phenol	108-95-2	*2.19E+03*	*2.19E+01*
Pyrene	129-00-0	*1.10E+02*	*1.10E+00*
Selenium	7782-49-2	5.00E+00	5.00E-02
Silver	7440-22-4	*1.83E+01*	*1.83E-01*
Strontium	7440-24-6	*2.19E+03*	*2.19E+01*
Styrene (V)	100-42-5	1.00E+01	1.00E-01
Sulfate	14808-79-8	5.00E+04*	5.00E+02*
1,1,2,2-Tetrachloroethane (V)	79-34-5	*8.95E-03*	*8.95E-05*
Tetrachloroethene (V)	127-18-4	5.00E-01	5.00E-03
Thallium	7440-28-0	2.00E-01	2.00E-03
Tin	7440-31-5	*2.19E+03*	*2.19E+01*
Toluene (V)	108-88-3	1.00E+02	1.00E+00
Toxaphene	8001-35-2	3.00E-01	3.00E-03
1,2,4-Trichlorobenzene (V)	120-82-1	7.00E+00	7.00E-02
1,1,1-Trichloroethane (V)	71-55-6	2.00E+01	2.00E-01
1,1,2-Trichlorbethane (V)	79-00-5	5.00E-01	5.00E-03
Trichloroethene (V)	79-01-6	5.00E-01	5.00E-03
2,4,5-Trichlorophenol	95-95-4	5.00E+00	5.00E-02
2,4,6-Trichlorophenol	88-06-2	*7.73E-01*	*7.73E-03*
Vanadium	7440-62-2	*2.56E+01*	*2.56E-01*
Vinyl acetate	108-05-4	*3.65E+03*	*3.65E+01*
Vinyl chloride (V)	75-01-4	2.00E-01	2.00E-03
Xylene (total)(V)	1330-20-7	1.00E+03	1.00E+01
Zinc	7440-66-6	*1.10E+03*	*1.10E+01*

184

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Appendix C
Building 776/777 Closure Project
Administrative Record

DOCUMENT	DRIVER
Administrative Record Listing	RFCA, ¶s 283-285; CERCLA, 40 CFR 300.800 *et seq.*
Joint Scoping Meeting Minutes/Disposition	FDPM, Section 3.3.7.2
Reconnaissance Level Characterization Report (RLCR)	RFCA, ¶120(g)
DRAFT Decommissioning Operations Plan (DOP)	RFCA, ¶107
DOP Responsiveness Summary	RFCA, ¶107
FINAL DOP	RFCA, ¶107
Pre-Demolition Survey	DPP, Sections 3.3.10 and 3.3.13; CERCLA, , 40 CFR 300.800 *et seq.*
Demolition Permit	FDPM, Section 6.3.4
Notification to CDPHE prior to demolition (required for asbestos abatement activities)	DOE Order 440.1, OSHA, 29 CFR 1910 *et seq.*
Air Pollutant Emission Notification (APEN), (required if 2000 lbs. dust/VOC emissions will be exceeded in a single event)	Colorado Air Quality Control Regulation No. 3
Post-Demolition Survey	CERCLA, 40 CFR 300.800 *et seq.*; DDCP,
Decommissioning Final Closeout Report	RFCA, ¶118

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Appendix D

Building 776/777 Closure Project Schedule
(pages 193-228)

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Activity ID	Activity Description	Orig Dur	Early Start	Early Finish	Total Float
035, WAD 035 776/777 CLSR Project					
1.1.06.12.01 776/777 CLUSTER LANDLORD FUNCTIONS					
D5BEGWPD35	Start WPD 35	0	01OCT98		0
1.1.06.12.01.01 776/777 CLUSTER COMPLIANCE SURVEILLANCE					
D5F0199A00	B776/777 Compliance Surveillance - Authorization	254	01OCT98	30SEP99	1
D5F0199E00	B776/777 Compliance Surveillance - Environmental	254	01OCT98	30SEP99	1
D5F0199M00	B776/777 Compliance Surveillance - Other	254	01OCT98	30SEP99	1
D5F0199M02	Glove Inspection/Changes B776/7 FY-99 20% of TTL	94	16NOV98*	31MAR99	129
D5F0100A00	B776/777 Compliance Surveillance - Authorization	254	01OCT99	29SEP00	1
D5F0100E00	B776/777 Compliance Surveillance - Environmental	254	01OCT99	29SEP00	1
D5F0100M00	B776/777 Compliance Surveillance - Other	254	01OCT99	29SEP00	1
D5F0101A00	B776/777 Compliance Surveillance - Authorization	253	02OCT00	28SEP01	1
D5F0101E00	B776/777 Compliance Surveillance - Environmental	253	02OCT00	28SEP01	1
D5F0101M00	B776/777 Compliance Surveillance - Other	253	02OCT00	28SEP01	1
D5F0102A00	B776/777 Landlord Compliance Surveillance FY-02	254	01OCT01	30SEP02	1
D5F0102E00	B776/777 Landlord - Environmental Surveill FY-02	254	01OCT01	30SEP02	1
D5F0102M00	B776/777 Landlord - Other Surveillance FY-02	254	01OCT01	30SEP02	1
D5F0103A00	B776/777 Landlord - Compliance Surveillance FY03	254	01OCT02	30SEP03	1
D5F0103E00	B776/777 Landlord - Environm'l Surveill FY-03	254	01OCT02	30SEP03	1
D5F0103M00	B776/777 Landlord - Other Surveillances FY-03	254	01OCT02	30SEP03	1
1.1.06.12.01.02 776/777 CLUSTER MAINTENANCE					
D5F0299M05	Pressure Safety JCO (Major IWCP)	63	01OCT98	31DEC98	1
D5F0299C00	Maintenance - Corrective	254	01OCT98	30SEP99	1
D5F0299M00	B776/777 Landlord - Major IWCP Maint FY-99	254	01OCT98	30SEP99	1
D5F0299P00	B776/777 Landlord - Preventative Maint FY-99	254	01OCT98	30SEP99	1
D5F0299R00	B776/777 Landlord - Routine Maintenance FY-99	254	01OCT98	30SEP99	1
D5F0200C00	B776/777 Landlord - Corrective Maintenance FY-00	254	01OCT99	29SEP00	1
D5F0200M00	B776/777 Landlord - Major IWCP Maint FY-00	254	01OCT99	29SEP00	1

FY98 FY00 FY01 FY02 FY03 FY04 FY05

Project Start 01OCT97
Project Finish 23SEP05
Data Date 01OCT98
Run Date 11OCT99

Early Bar
Progress Bar
Critical Activity

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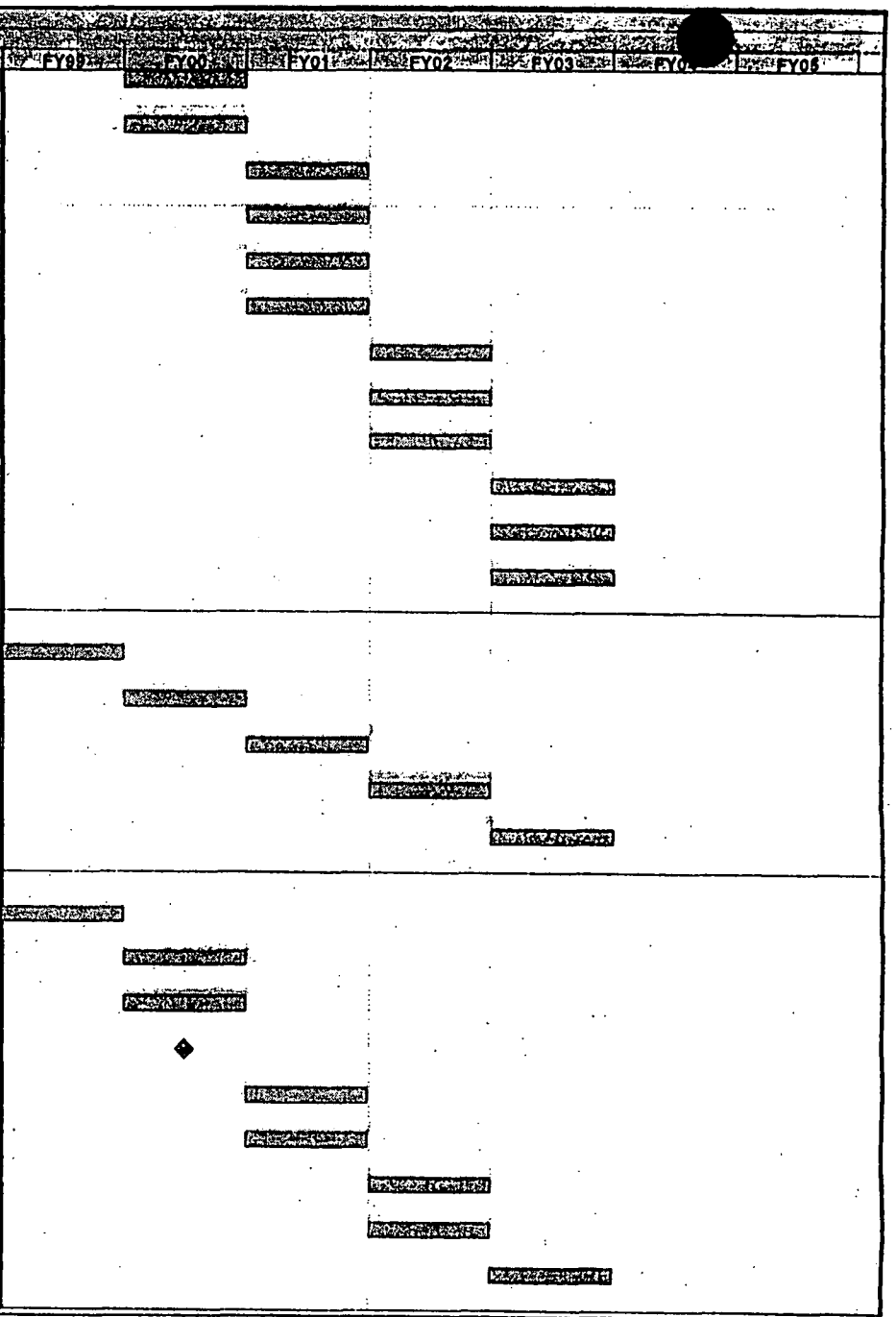
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Sheet 1 of 33

KAISER-HILL COMPANY
CLOSURE PROJECT BASELINE SCHEDULE
BUILDING 776/777 CLOSURE PROJECT

CLOSURE 2006 KAISER-HILL ROCKY FLATS CLOSURE PROJECT

Activity ID	Activity Description	Orig Dur	Early Start	Early Finish	Total Float
D5F0200P00	B776/777 Landlord - Preventative Maint FY-00	254	01OCT99	29SEP00	1
D5F0200R00	B776/777 Landlord - Routine Maintenance FY-00	254	01OCT99	29SEP00	1
D5F0201C00	B776/777 Landlord - Corrective Maintenance FY-01	253	02OCT00	28SEP01	1
D5F0201M00	B776/777 Landlord - Major IWCP Maintenance FY-01	253	02OCT00	28SEP01	1
D5F0201P00	B776/777 Landlord - Preventative Maint FY-01	253	02OCT00	28SEP01	1
D5F0201R00	B776/777 Landlord - Routine Maintenance FY-01	253	02OCT00	28SEP01	1
D5F0202C00	B776/777 Landlord - Corrective Maintenance FY-02	254	01OCT01	30SEP02	1
D5F0202P00	B776/777 Landlord - Preventative Maint FY-02	254	01OCT01	30SEP02	1
D5F0202R00	B776/777 Landlord - Routine Maintenance FY-02	254	01OCT01	30SEP02	1
D5F0203C00	B776/777 Landlord - Corrective Maintenance FY-03	254	01OCT02	30SEP03	1
D5F0203P00	B776/777 Landlord - Preventative Mtce FY-03	254	01OCT02	30SEP03	1
D5F0203R00	B776/777 Landlord - Routine Maintenance FY-03	254	01OCT02	30SEP03	1
1.1.06.12.01.03 776/777 CLUSTER OPERATIONS TECH SUPPORT					
D5F0399T00	B776/777 Landlord - Operations Tech Spt FY-99	254	01OCT98	30SEP99	1
D5F0300T00	B776/777 Landlord - Operations Tech Spt FY-00	254	01OCT99	29SEP00	1
D5F0301T00	B776/777 Landlord - Operations Tech Spt FY-01	253	02OCT00	28SEP01	1
D5F0302T00	B776/777 Landlord - Operations Tech Spt FY-02	228	01OCT01	30SEP02	1
D5F0303T00	B776/777 Landlord - Operations Tech Spt FY-03	228	01OCT02	30SEP03	1
1.1.06.12.01.04 776/777 CLUSTER OPERATIONS MANAGEMENT					
D5F0499M00	B776/777 Landlord - Operations Management FY-99	254	01OCT98	30SEP99	1
D5F0400M00	B776/777 Landlord - Operations Management FY-00	254	01OCT99	29SEP00	1
D5F0400M10	FY-00 Personnel Relo & Property Disposition	254	01OCT99	29SEP00	1
D5FDELE283	Complete B776/777 Nuclear Operatons	0		30MAR00	1
D5F0401M00	B776/777 Landlord - Operations Management FY-01	253	02OCT00	28SEP01	1
D5F0401M10	FY-01 Personnel Relo & Property Disposition	253	02OCT00	28SEP01	1
D5F0402M10	FY-02 Personnel Relo & Property Disposition	254	01OCT01	30SEP02	1
D5F0402MG0	B776/777 Landlord - Operations Management FY-02	254	01OCT01	30SEP02	1
D5F0403M10	FY-03 Personnel Relo & Property Disposition	254	01OCT02	30SEP03	1



Project Start 01OCT97
Project Finish 23SEP05
Data Date 01OCT99
Run Date 11OCT99

Early Bar
Progress Bar
Critical Activity

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BL05:W035

Sheet 2 of 33

KAISER-HILL COMPANY
CLOSURE PROJECT BASELINE SCHEDULE
BUILDING 776/777 CLOSURE PROJECT

CLOSURE 2006 KAISER-HILL
ROCKY FLATS CLOSURE PROJECT

Activity ID	Activity Description	Orig Dur	Early Start	Early Finish	Total Float
D5F0403MG0	B776/777 Landlord - Operations Management FY-03	254	01OCT02	30SEP03	1
D5FPROPERT	B776/777 Comp Personnel Relo & Property Disp'n	0		30SEP03	63
1.1.08.12.01.05	AUTH BASIS DEV AND IMPL B776/777				
D5F0599N91	A/B Imp Freeze Protection Program (DF)	10	01OCT98	15OCT98	158
D5F0599N30	A/B Imp Training Program (GC)	24	01OCT98	06NOV98	55
D5F0599N40	A/B Imp Organization and Management (DN)	24	01OCT98	06NOV98	103
D5F0599N35	A/B Imp - Emergency Preparedness Program (WT)	24	01OCT98	06NOV98	107
D5F0599N90	A/B Imp Hazardous Mtl Protection Program (JJW)	24	01OCT98	06NOV98	112
D5F0599N10	A/B Imp General Applications (JS)	24	01OCT98	06NOV98	126
D5F0599N20	A/B Imp Criticality Safety Program (RS)	24	01OCT98	06NOV98	127
D5F0599N15	A/B Imp Radiation Protection Program (EB)	24	01OCT98	06NOV98	181
D5F0599N80	A/B Imp BIO Maintenance (AD)	24	01OCT98	06NOV98	181
D5F0599N00	B776/777 BIO Approval Activities (REV 1)	28	01OCT98	12NOV98	177
D5F0599N25	A/B Imp Inventory Control Program (TT)	38	01OCT98	02DEC98	103
D5F0599N45	A/B Imp Fire Protection Program (BM)	50	01OCT98	21DEC98	110
D5F0599N92	A/B Imp Design Features (TBD1)	110	01OCT98	26MAR99	0
D5F0599NA5	A/B Imp Seal Cable Hole	113	01OCT98	31MAR99	92
D5F0599NA6	A/B Imp Fire Retardant Coating	113	01OCT98	31MAR99	92
D5F0599NA7	A/B Imp - Proof File Development and Maint (MJS)	150	01OCT98	27MAY99	55
D5F0599N05	A/B Imp - Project Management/Administrative Spt	228	01OCT98	30SEP99	0
D5F0599N94	A/B Imp Quality Assurance (DF)	24	19OCT98	23NOV98	156
D5F0599N96	A/B Imp BOA (CC)	50	02NOV98	21JAN99	0
D5F0599N60	A/B Imp Forklift Operational Controls (WT)	10	09NOV98	23NOV98	107
D5F0599N65	A/B Imp - WM, EP and Transportat'n Programs (DN)	24	09NOV98	17DEC98	103
D5F0599N50	A/B Imp Tank Controls (JJW)	24	09NOV98	17DEC98	112
D5F0599N55	A/B Imp Compressed Gas Controls (RS)	24	09NOV98	17DEC98	127
D5F0599NA1	A/B Imp - Criticality Safety System LCO/SER (JS)	40	09NOV98	14JAN99	126

FY99 | FY00 | FY01 | FY02 | FY03 | FY04 | FY05

Project Start 01OCT97
Project Finish 23SEP05
Data Date 01OCT98
Run Date 11OCT99

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Early Bar
Progress Bar
Critical Activity

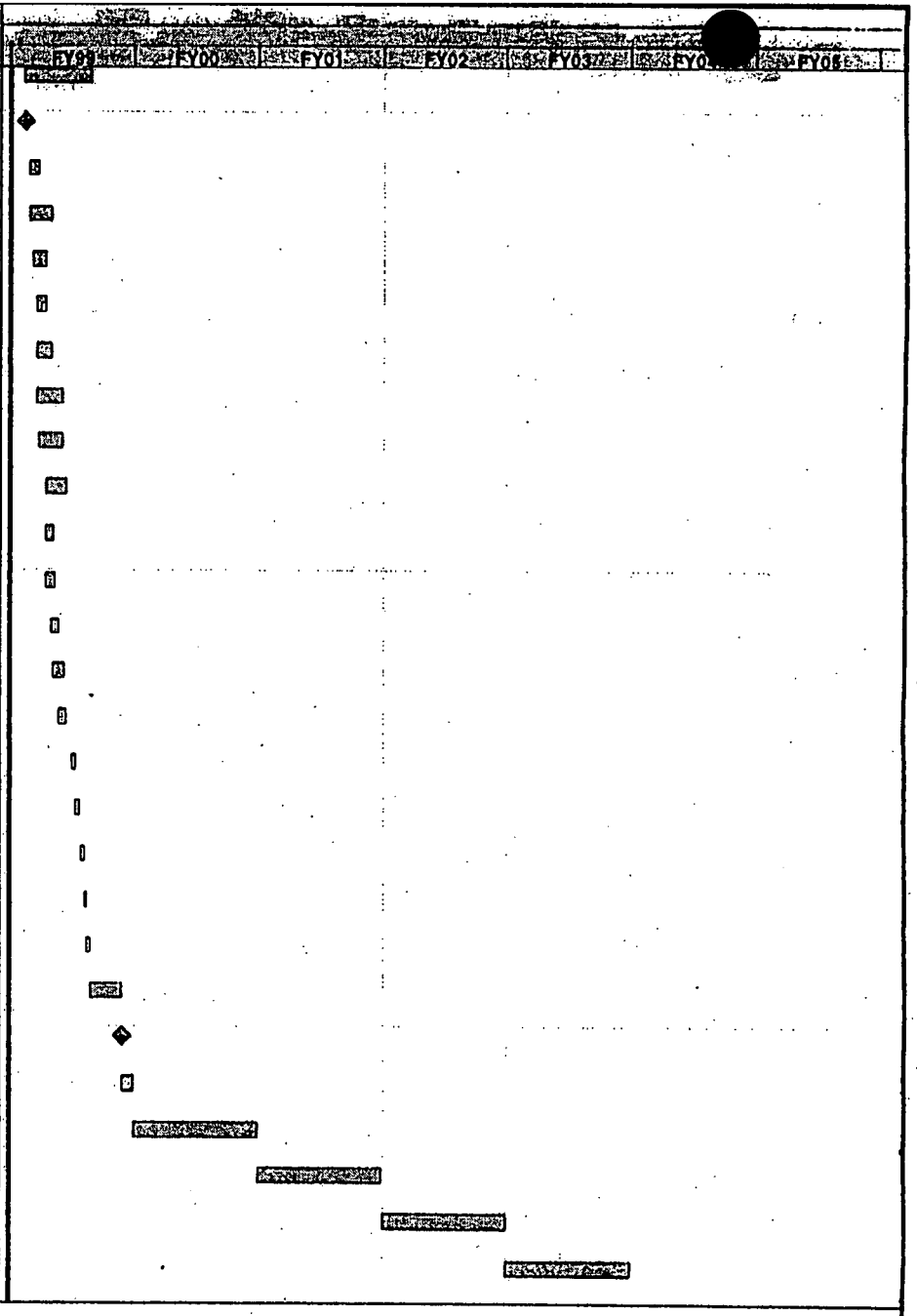
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Sheet 3 of 33

KAISER-HILL COMPANY
CLOSURE PROJECT BASELINE SCHEDULE
BUILDING 776/777 CLOSURE PROJECT

CLOSURE 2006 KAISER-HILL ROCKY FLATS CLOSURE PROJECT

Activity ID	Activity Description	Orig Dur	Early Start	Early Finish	Total Float
D5F0599NA4	A/B Imp Training Activities (GC)	126	09NOV98	27MAY99	55
D5F0599N02	B776/777 New A/B REV 1 Submitted to RFFO	0		12NOV98	177
D5F0599NB4	A/B Imp Work Control Document SMP (DF)	15	24NOV98	18DEC98	156
D5F0599NA3	A/B Imp Compressed Air & Ntl Gas LCO/SER (WT)	40	24NOV98	29JAN99	107
D5F0599N67	A/B Imp - Conduct of Operations Program (TT)	24	03DEC98	12JAN99	103
D5F0599NB3	A/B Imp Industrial Safety SMP (RS)	15	18DEC98	13JAN99	127
D5F0599N75	A/B Imp Configuration Management Program (DN)	24	18DEC98	27JAN99	103
D5F0599N99	A/B Imp Fire Suppression System LCO/SER (JJW)	45	18DEC98	01MAR99	112
D5F0599N98	A/B Imp HVAC System Act LCO/SER (BM)	45	22DEC98	03MAR99	110
D5F0599NA2	A/B Imp Electrical Power System LCO/SER (TT)	40	13JAN99	15MAR99	103
D5F0599NB5	A/B Imp Integrated Safety Management SMP (RS)	15	14JAN99	04FEB99	127
D5F0599NB2	A/B Imp Nuclear Safety SMP (JS)	15	15JAN99	08FEB99	126
D5F0599NB1	A/B Imp Occurrence Reporting SMP (DN)	15	28JAN99	18FEB99	103
D5F0599N85	A/B Imp Maintenance Program (WT)	24	01FEB99	09MAR99	107
D5F0599N70	A/B Imp Work Control Program (DN)	15	22FEB99	15MAR99	103
D5F0599NA8	A/B Imp Final Corrective Actions	9	29MAR99	09APR99	0
D5F0599NA9	A/B Imp Management Assessment	9	12APR99	23APR99	0
D5F0599ED1	Incorporate RFFO Technical Direction into BIO	10	26APR99	07MAY99	0
D5F0599NC1	A/B Imp Management Assessment Corrective Actions	4	10MAY99	13MAY99	0
D5F0599NC2	A/B Imp Independent Validation Review	9	17MAY99	27MAY99	0
D5F0599NC3	A/B Imp IVR Corrective Actions	62	28MAY99	25AUG99	0
D5FCPM1901	B776/777 A/B Implementation Complete	0		25AUG99*	0
D5F0599NC4	A/B Imp Revise BIO to Include D&D, Submit to DOE	25	26AUG99	30SEP99	1
D5F0500AB0	B776/777 Landlord - AB Maintenance FY-00	254	01OCT99	29SEP00	1
D5F0501A00	B776/777 Landlord - AB Maintenance FY-01	253	02OCT00	28SEP01	1
D5F0502RM0	B776/777 Landlord - AB Maintenance FY-02	254	01OCT01	30SEP02	1
D5F0503RM0	B776/777 Landlord - AB Maintenance FY-03	254	01OCT02	30SEP03	1



Project Start 01OCT97
Project Finish 28SEP05
Data Date 01OCT98
Run Date 11OCT98

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Sheet 4 of 33

KAISER-HILL COMPANY
CLOSURE PROJECT BASELINE SCHEDULE
BUILDING 776/777 CLOSURE PROJECT

CLOSURE 2006 KAISER-HILL

ROCKY FLATS CLOSURE PROJECT

Activity ID	Activity Description	Orig Dur	Early Start	Early Finish	Total Float
1.1.08.12.02 776/777 CLUSTER SNM REMOVAL OPERATIONS					
D5P9902020	FY-99 B776/777 Remove Holdup Area 1	62	01OCT98	30DEC98	192
D5P9902005	FY-99 B776/777 SNM Holdup Removal Project Mgmt	254	01OCT98	30SEP99	1
D5P9902030	FY-99 B776/777 Remove Holdup Area 2	60	26OCT98*	21JAN99	177
D5P9902040	FY-99 B776/777 Remove Holdup Area 3	60	18NOV98*	15FEB99	160
D5P9902050	FY-99 B776/777 Remove Holdup Area 4	60	15DEC98*	10MAR99	143
D5P9902150	FY-99 B776/777 Holdup Mtl Xfer to B707	191	04JAN99*	30SEP99	1
D5P9902060	FY-99 B776/777 Remove Holdup Area 5	59	11JAN99*	01APR99	127
D5P9902160	FY-99 B707 Thermal Stabilization of B776 Holdup	171	01FEB99	30SEP99	1
D5P9902070	FY-99 B776/777 Remove Holdup Area 6	60	02FEB99*	26APR99	110
D5P9902080	FY-99 B776/777 Remove Holdup Area 7	60	25FEB99*	19MAY99	93
D5P9902090	FY-99 B776/777 Remove Holdup Area 8	60	22MAR99*	14JUN99	76
D5P9902190	FY-99 Holdup Removal Planning for FY-00 5 Areas	129	31MAR99*	30SEP99	0
D5P99SCAN0	B776/777 Holdup Scans/Drum Movement	110	09APR99*	30SEP99	58
D5P9902100	FY-99 B776/777 Remove Holdup Area 9	60	13APR99*	07JUL99	60
D5P9902110	FY-99 B776/777 Remove Holdup Area 10	60	06MAY99*	30JUL99	43
D5P9902120	FY-99 B776/777 Remove Holdup Area 11	61	27MAY99*	23AUG99	27
D5P9902130	FY-99 B776/777 Remove Holdup Area 12	60	21JUN99*	14SEP99	12
D5P9902010	FY-99 B776/777 SNM Verification Walkdowns	64	01JUL99*	30SEP99	0
D5P9902140	FY-99 B776/777 Remove Holdup Area 13	61	07JUL99*	30SEP99	0
D5P9902M02	Complete Removal of Holdup from 13 Areas	0		30SEP99	0
D5P0002010	FY-00 SNM Holdup Scans	62	01OCT99	30DEC99	65
D5P0102005	B776/777 MAA Closure Planning Activities	127	01OCT99	31MAR00	0
D5P0002005	B776/777 SNM Holdup Removal Project Mgmt	190	01OCT99	29JUN00	1
D5HMILE306	FY01-T1 Holdup Removal Of Area ABV Safeguards	0		31MAR00	0
D5P0102010	B776/777 MAA Closure Execution Activities	42	03APR00	31MAY00	0
D5HMILE311	FY01-T2 Close MAA in B776/777 by 9/30/01	0		30JUN00	0

FY99 FY00 FY01 FY02 FY03 FY04 FY05

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Project Finish 23SEP05
Data Date 01OCT99
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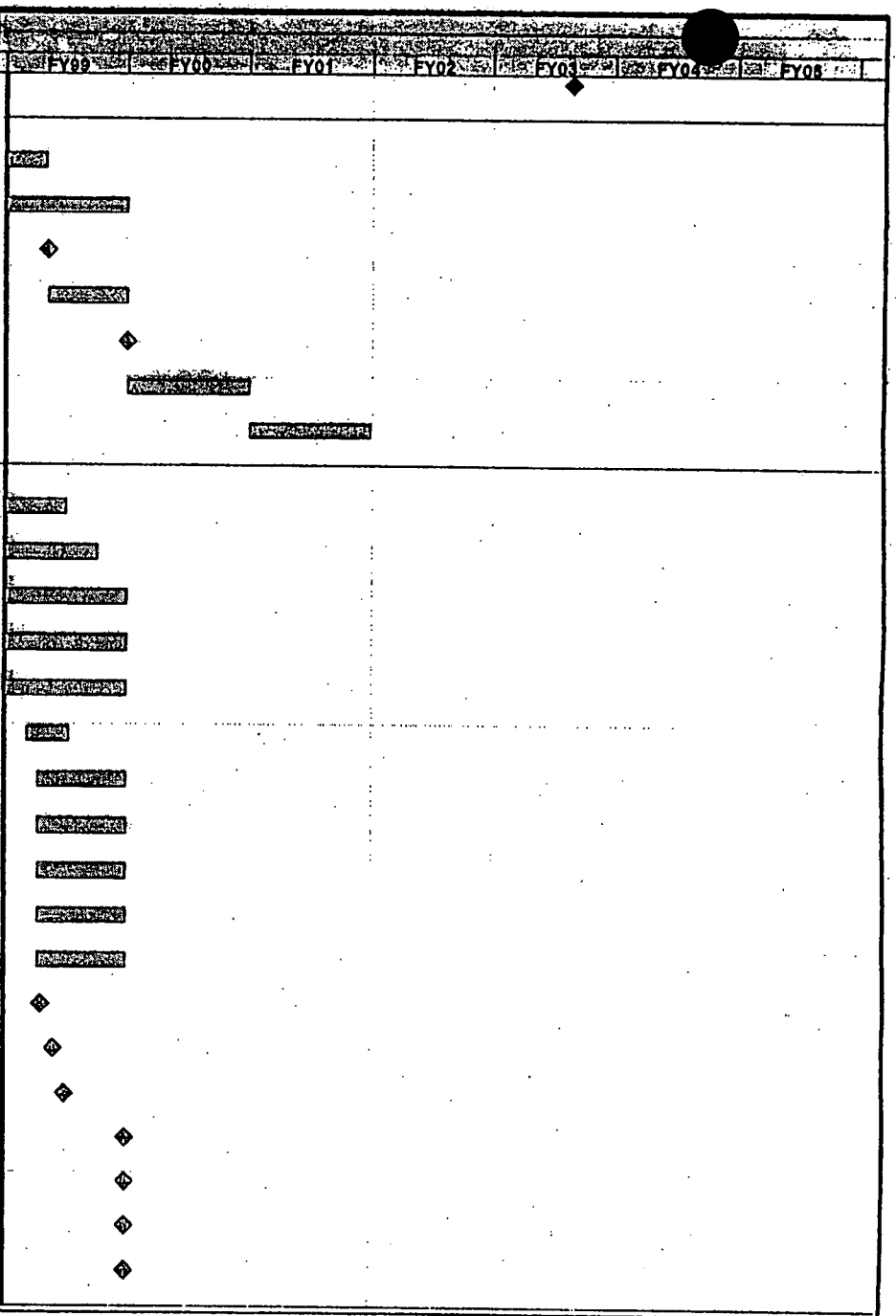
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Sheet 6 of 33

KAISER-HILL COMPANY
CLOSURE PROJECT BASELINE SCHEDULE
BUILDING 776/777 CLOSURE PROJECT

CLOSURE 2006 KAISER-HILL
ROCKY FLATS CLOSURE PROJECT

Activity ID	Activity Description	Orig Dur	Early Start	Early Finish	Total Float
D5PMILE323	Cmpl Rem'l of all B766/777 Holdup Requiring Stab	0		22MAY03	3
1.1.06.12.03.02 776/777 CLUSTER DEACT PLAN AND PROJ MGMT					
D5HD299MD1	Review and Incorp RFFO Comments on DOP	83	01OCT98	29JAN99	1
D5HD299P00	FY99 B776 Deact Planning and Project Management	254	01OCT98	30SEP99	0
D5HD299MD2	Submit DOP for Public Review and Comment	0	01FEB99		1
D5HD299MD3	Public Review Period and Inc Comments on DOP	171	01FEB99	30SEP99	1
D5HMILE175	B776 DOP CDPHE Approved	0		30SEP99	1
D5HD200P00	FY00 B776 Deact Planning and Project Management	254	01OCT99	29SEP00	1
D5HD201P00	FY01 B776 Deact Planning and Project Management	253	02OCT00	28SEP01	1
1.1.06.12.03.05 776/777 CLUSTER DEACT INITIAL PHY DEACT					
D5HD599G05	FY-99 Remove Oils/Solutions from GBs	126	01OCT98	31MAR99	0
D5HD599R30	FY-99 Remove Used Oils	190	01OCT98	30JUN99	64
D5HD599G01	FY-99 Remove Classified from Gloveboxes	254	01OCT98	30SEP99	0
D5HD599G15	FY-99 Remove Misc Items from Gloveboxes	254	01OCT98	30SEP99	0
D5HD599R35	FY-99 Rem 90% of Legacy Waste Drums	254	01OCT98	30SEP99	0
D5HD599A01	FY-99 Disposition B776/777 Actuators	82	03DEC98	12APR99	0
D5HD599R10	FY-99 Remove Classified from Rooms	191	04JAN99	30SEP99	0
D5HD599R15	FY-99 Rem Microwave Samples from B701	191	04JAN99	30SEP99	0
D5HD599T05	FY-99 Drain Tks T1&T2 Rem Raschig Rings	191	04JAN99	30SEP99	0
D5HD599T15	FY-99 Drain Vacuum Accumulators	191	04JAN99	30SEP99	0
D5HD599T20	FY-99 Drain Low Level Oils Tks B776/777	191	04JAN99	30SEP99	0
D5HD599RM1	Comp Rem'l of Combust liquid-bearing drums Rm134	0		15JAN99	0
D5HD599GM1	Remove bulk oils from 7 gloveboxes Rms 131&134E	0		26FEB99	0
D5HD599GM2	Comp Deactivation of 7 gloveboxes Rms 131 & 134E	0		31MAR99	0
D5HCPM1902	FY-99 Complete B776/777 Actuator Disposition	0		30SEP99	0
D5HD5991C3	FY-99 Comp Rem Misc Items from 8 GB Sets	0		30SEP99	0
D5HD5992B1	Comp Rem Used Oils Cont'rs from Rm131 & Rm477	0		30SEP99	0
D5HD599M22	B776/7 Cmpl Removal 90% Backlog Legacy Waste	0		30SEP99	0



Project Start 01OCT97
Project Finish 23SEP05
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Run Date 11OCT98
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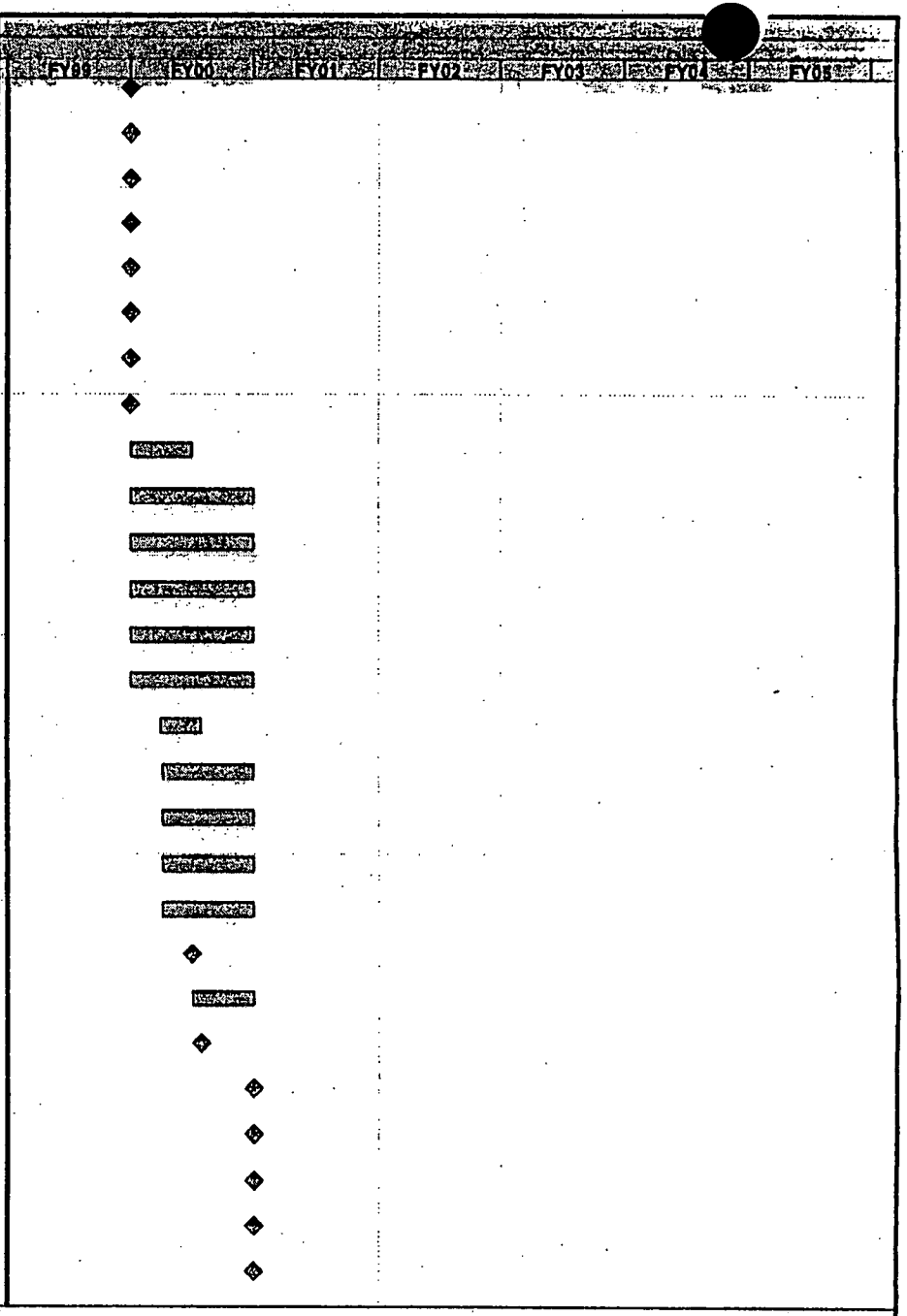
Sheet 6 of 33

KAISER-HILL COMPANY
CLOSURE PROJECT BASELINE SCHEDULE
BUILDING 776/777 CLOSURE PROJECT

CLOSURE 2006 KAISER-HILL ROCKY FLATS CLOSURE PROJECT

200

Activity ID	Activity Description	Orig Dur	Early Start	Early Finish	Total Float
D5HD599MS1	FY-99 Comp Draining LL Oil Tanks B776/7	0		30SEP99	0
D5HD599MS4	FY-99 Comp Rem B701 MicroTreatm't Spies	0		30SEP99	0
D5HD599MS7	FY-99 Comp Rem of oils/solutions 6 GBs	0		30SEP99	0
D5HD599MS9	FY-99 Comp Draing/Raschig Rem Tks T1,T2	0		30SEP99	0
D5HD599MSA	FY-99 Comp Vac'm Accumul drain to RCRA Sta	0		30SEP99	0
D5HD599MSB	FY-99 Comp Rem/Disp'n Classif'd Items	0		30SEP99	0
D5HD599PM1	FY-99 Comp Metric 1 PM 99/00-7.5R B776/7	0		30SEP99	0
D5HD599PM2	FY-99 Comp Metric 2 PM 99/00-7.5R B776/7	0		30SEP99	0
D5HD500G00	FY-00 B776/777 Glovebox Deactivation	127	01OCT99	31MAR00	0
D5HD500R35	Remove Remaining Legacy Waste Drums	254	01OCT99	29SEP00	1
D5HD599G16	FY-00 Remove Sources from Gloveboxes	254	01OCT99	29SEP00	1
D5HD599R20	FY-00 Remove Sources from Rooms	254	01OCT99	29SEP00	1
D5HD599R25	FY-00 Rem Loose Haz Materials from Rooms	254	01OCT99	29SEP00	1
D5HD599T25	FY-00 Drain/Remove Trichlorethane Line	254	01OCT99	29SEP00	1
D5HD500T05.	FY-00 Drain SRV Tanks (SR3, 4 & 5)	87	29DEC99	28APR00	0
D5HD500D10	FY-00 Drain Ancillary Piping Systems	192	03JAN00	29SEP00	1
D5HD500R10	FY-00 B776/777 Room Deact and Equipment Removal	192	03JAN00	29SEP00	1
D5HD500T10	Drn Tks T360,T370,T344 & T345 to RCRA Stable	192	03JAN00*	29SEP00	1
D5HD500T15	FY-00 Drain FBI Pilot Tanks to RCRA Stable	192	03JAN00	29SEP00	1
D5HD500MS2	FY-00 Clean out GBs in Sets 1,14,20,29,41 and 69	0		31MAR00	0
D5HD500R15	FY-00 Rem Classified Telecom Sys/Docs from Rooms	127	03APR00*	29SEP00	1
D5HD500M01	FY-00 Complete SR3,4&5 Tank Draining	0		28APR00	108
D5HMILE320	FY00-T5 Drain Mixed Residue Tanks Complete	0		28SEP00	1
D5HD500MS1	Comp Draining of Rem Tanks/Ancillary Eq to RCRA	0		29SEP00	1
D5HD500MS8	FY00 Comp Rem Radioact Sources from GB&Rms	0		29SEP00	1
D5HD599MS5	FY-00 Comp Rem of Loose Haz Mtls from Rms	0		29SEP00	1
D5HMILE499	B776/777 Complete Legacy Waste Removal	0		29SEP00	1



Project Start 01OCT97
Project Finish 23SEP05
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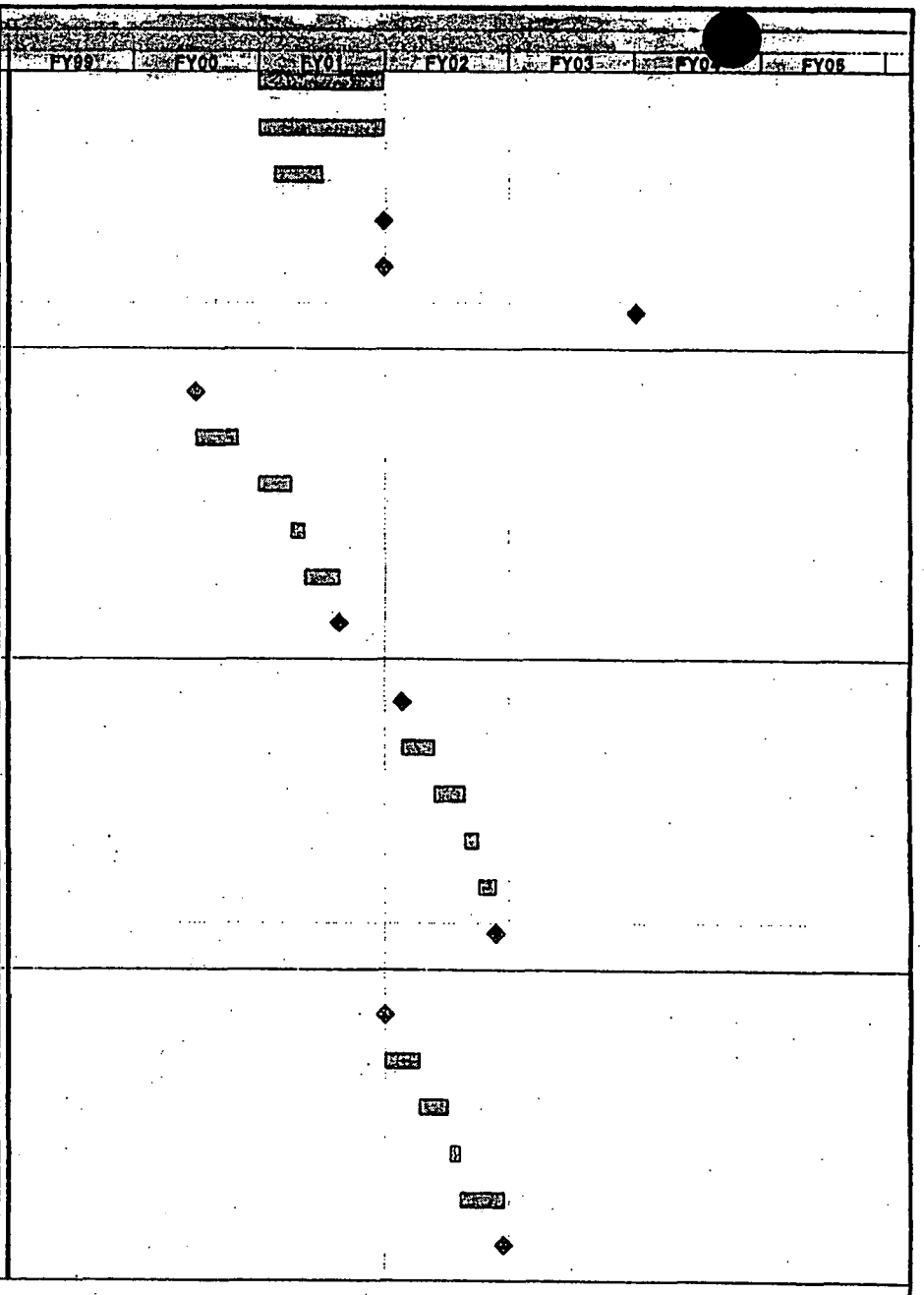
Sheet 7 of 33

KAISER-HILL COMPANY
CLOSURE PROJECT BASELINE SCHEDULE
BUILDING 776/777 CLOSURE PROJECT

CLOSURE 2006 KAISER-HILL
ROCKY FLATS CLOSURE PROJECT

202

Activity ID	Activity Description	Orig Dur	Early Start	Early Finish	Total Float
D5HD500T20	FY-01 Drain to RCRA stable Equip in Rm 146	253	02OCT00	28SEP01	1
D5HD501R05	FY-01 B776/777 Room Deact and Equipment Removal	253	02OCT00*	28SEP01	1
D5HD599R40	Clean out Advanced Size Reduction Area	97	13NOV00	02APR01	127
D5FMILE392	B776/777 Deactivation Complete	0		28SEP01	1
D5HD500MS3	FY-01 Comp Rem of Loose Haz Mils, Rms	0		28SEP01	1
D5HMILE465	Complete B776/777 Excess Property Removal	0		30SEP03	1
1.1.08.12.04.01 B776/777 DECOM RM 125 DIMENSIONAL MET GB					
D5J0100MS1	B776/777 Start Set 01 Decommissioning	0	03APR00*		320
D5J0100010	B776/777 Set 01 Planning and Engineering	78	03APR00	02AUG00	320
D5J0100020	B776/777 Set 01 Proj Specif Long Lead Procurem't	58	02OCT00*	03JAN01	284
D5J0100030	B776/777 Set 01 Isolation and Containment	26	04JAN01	13FEB01	284
D5J0100040	B776/777 Set 01 Dismantlement Tasks	64	14FEB01	23MAY01	284
D5J0100MF1	B776/777 Complete Set 01 Decommissioning	0		23MAY01	284
1.1.08.12.04.02 B776/7 DECOM SET 2-ROOM 126,132,133,137B					
D5J0200MS1	B776/777 Start Set 02 Decommissioning	0	19NOV01*		120
D5J0200010	B776/777 Set 02 Planning and Engineering	58	19NOV01	21FEB02	120
D5J0200020	B776/777 Set 02 Proj Specif Long Lead Procurem't	57	22FEB02	21MAY02	120
D5J0200030	B776/777 Set 02 Isolation and Containment	26	22MAY02	02JUL02	120
D5J0200040	B776/777 Set 02 Dismantlement Tasks	32	03JUL02	22AUG02	120
D5J0200MF1	B776/777 Complete Set 02 Decommissioning	0		22AUG02	120
1.1.08.12.04.03 B776/7 DECOM SET 3-HYDRAULIC OIL SYS,2ND					
D5J0300MS1	B776/777 Start Set 03 Decommissioning	0	04OCT01*		107
D5J0300010	B776/777 Set 03 Planning and Engineering	58	04OCT01	08JAN02	107
D5J0300020	B776/777 Set 03 Proj Specif Long Lead Procurem't	57	09JAN02	05APR02	107
D5J0300030	B776/777 Set 03 Isolation and Containment	20	08APR02	07MAY02	107
D5J0300040	B776/777 Set 03 Dismantlement Tasks	80	08MAY02	12SEP02	107
D5J0300MF1	B776/777 Complete Set 03 Decommissioning	0		12SEP02	107



Project Start 01OCT97
Project Finish 23SEP05
Data Date 01OCT99
Run Date 11OCT99

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Sheet 6 of 33

KAISER-HILL COMPANY
CLOSURE PROJECT BASELINE SCHEDULE
BUILDING 776/777 CLOSURE PROJECT

CLOSURE KAISER-HILL

ROCKY FLATS CLOSURE PROJECT

Activity ID	Activity Description	Orig Dur	Early Start	Early Finish	Total Float
1.1.06.12.04.04 B776/7 DECOM SET 4-PART R131 DLINE & GBX					
D5J0400MS1	B776/777 Start Set 04 Decommissioning	0	02OCT00*		0
D5J0400010	B776/777 Set 04 Planning and Engineering	58	02OCT00	03JAN01	0
D5J0400020	B776/777 Set 04 Proj Specif Long Lead Procurem't	65	04JAN01	16APR01	0
D5J0400030	B776/777 Set 04 Isolation and Containment	70	17MAY01	06SEP01	0
D5J0400040	B776/777 Set 04 Dismantlement Tasks	149	09OCT01*	04JUN02	0
D5J0400MF1	B776/777 Complete Set 04 Decommissioning	0		04JUN02	0
1.1.06.12.04.05 B776/7 DECOM SET 5-PART R131 DLINE & GBX					
D5J0500MS1	B776/777 Start Set 05 Decommissioning	0	03APR00*		36
D5J0500010	B776/777 Set 05 Planning and Engineering	78	03APR00	02AUG00	36
D5J0500020	B776/777 Set 05 Proj Specif Long Lead Procurem't	58	02OCT00*	03JAN01	0
D5J0500030	B776/777 Set 05 Isolation and Containment	62	01NOV00	09FEB01	0
D5J0500040	B776/777 Set 05 Dismantlement Tasks	145	12FEB01	27SEP01	0
D5J0500MF1	B776/777 Complete Set 05 Decommissioning	0		27SEP01	0
1.1.06.12.04.06 B776/7 DECOM SET 6-PART R131 DLINE & GBX					
D5J0600MS1	B776/777 Start Set 06 Decommissioning	0	02FEB00*		74
D5J0600010	B776/777 Set 06 Planning and Engineering	78	02FEB00	02JUN00	74
D5J0600020	B776/777 Set 06 Proj Specif Long Lead Procurem't	58	02OCT00*	03JAN01	0
D5J0600030	B776/777 Set 06 Isolation and Containment	84	01NOV00	15MAR01	0
D5J0600040	B776/777 Set 06 Dismantlement Tasks	167	09JAN01	27SEP01	0
D5J0600MF1	B776/777 Complete Set 06 Decommissioning	0		27SEP01	0
1.1.06.12.04.07 B776/7 DECOM SET 7-TANKS 1103,1104,1106.					
D5J0700MS1	B776/777 Start Set 07 Decommissioning	0	04OCT99		0
D5J0700020	B776/777 Set 07 Proj Specif Long Lead Procurem't	11	04OCT99	19OCT99	26
D5J0700022	B776/777 Set 07 Mgmt Review Prep (1st Tank)	19	04OCT99	01NOV99	0
D5J0700025	B776/777 Set 07 Conduct Management Review	18	02NOV99	01DEC99	0
D5J0700040	B776/777 Set 07 Dismantlement Tasks	38	02DEC99	01FEB00	0
D5J0700MF1	B776/777 Complete Set 07 Decommissioning	0		01FEB00	98

FY99 FY00 FY01 FY02 FY03 FY04 FY05

Project Start 01OCT97
Project Finish 23SEP05
Data Date 01OCT99
Run Date 11OCT99

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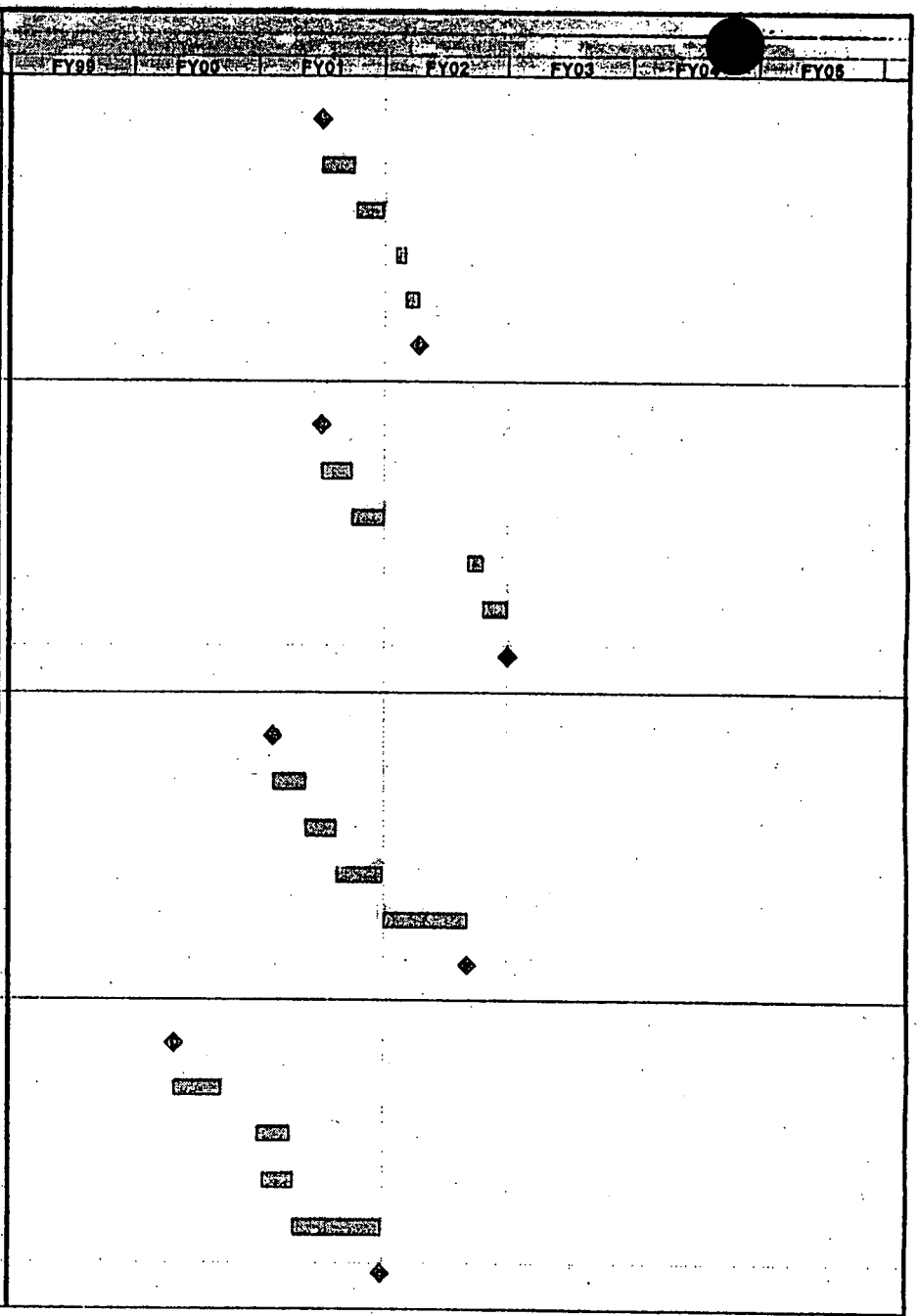
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Sheet 9 of 33

KAISER-HILL COMPANY
CLOSURE PROJECT BASELINE SCHEDULE
BUILDING 776/777 CLOSURE PROJECT

CLOSURE 2006 KAISER-HILL
ROCKY FLATS CLOSURE PROJECT

Activity ID	Activity Description	Orig Dur	Early Start	Early Finish	Total Float
1.1.06.12.04.08 B776/7 DECOM SET 8-R120,131,AREA 90,49,1					
D5J0800MS1	B776/777 Start Set 08 Decommissioning	0	03APR01*		205
D5J0800010	B776/777 Set 08 Planning and Engineering	60	03APR01	05JUL01	205
D5J0800020	B776/777 Set 08 Proj Specif Long Lead Procurem't	53	09JUL01	27SEP01	205
D5J0800030	B776/777 Set 08 Isolation and Containment	15	07NOV01	03DEC01	180
D5J0800040	B776/777 Set 08 Dismantlement Tasks	23	04DEC01	10JAN02	180
D5J0800MF1	B776/777 Complete Set 08 Decommissioning	0		10JAN02	180
1.1.06.12.04.09 B776/7-SET 09-RM 134E EXCLUDING GBS					
D5J0900MS1	B776/777 Start Set 09 Decommissioning	0	03APR01*		156
D5J0900010	B776/777 Set 09 Planning and Engineering	58	03APR01	02JUL01	156
D5J0900020	B776/777 Set 09 Proj Specif Long Lead Procurem't	58	03JUL01	01OCT01	156
D5J0900030	B776/777 Set 09 Isolation and Containment	25	05JUN02	15JUL02	2
D5J0900040	B776/777 Set 09 Dismantlement Tasks	48	16JUL02	30SEP02	15
D5J0900MF1	B776/777 Complete Set 09 Decommissioning	0		30SEP02	15
1.1.06.12.04.10 B776/7-SET 10-RM 134E GB505,509,751,752,					
D5J1000MS1	B776/777 Start Set 10 Decommissioning	0	13NOV00*		0
D5J1000010	B776/777 Set 10 Planning and Engineering	58	13NOV00	14FEB01	0
D5J1000020	B776/777 Set 10 Proj Specif Long Lead Procurem't	56	15FEB01	14MAY01	0
D5J1000030	B776/777 Set 10 Isolation and Containment	86	15MAY01	27SEP01	0
D5J1000040	B776/777 Set 10 Dismantlement Tasks	155	01OCT01	04JUN02	0
D5J1000MF1	B776/777 Complete Set 10 Decommissioning	0		04JUN02	0
1.1.06.12.04.11 B776/7-SET 11-RM 134E GB748,747,748 AND					
D5J1100MS1	B776/777 Start Set 11 Decommissioning	0	02FEB00*		118
D5J1100010	B776/777 Set 11 Planning and Engineering	85	02FEB00	14JUN00	118
D5J1100020	B776/777 Set 11 Proj Specif Long Lead Procurem't	57	02OCT00*	02JAN01	51
D5J1100030	B776/777 Set 11 Isolation and Containment	55	17OCT00	15JAN01	51
D5J1100040	B776/777 Set 11 Dismantlement Tasks	162	16JAN01	27SEP01	51
D5J1100MF1	B776/777 Complete Set 11 Decommissioning	0		27SEP01	155



Project Start 01OCT97
Project Finish 23SEP05
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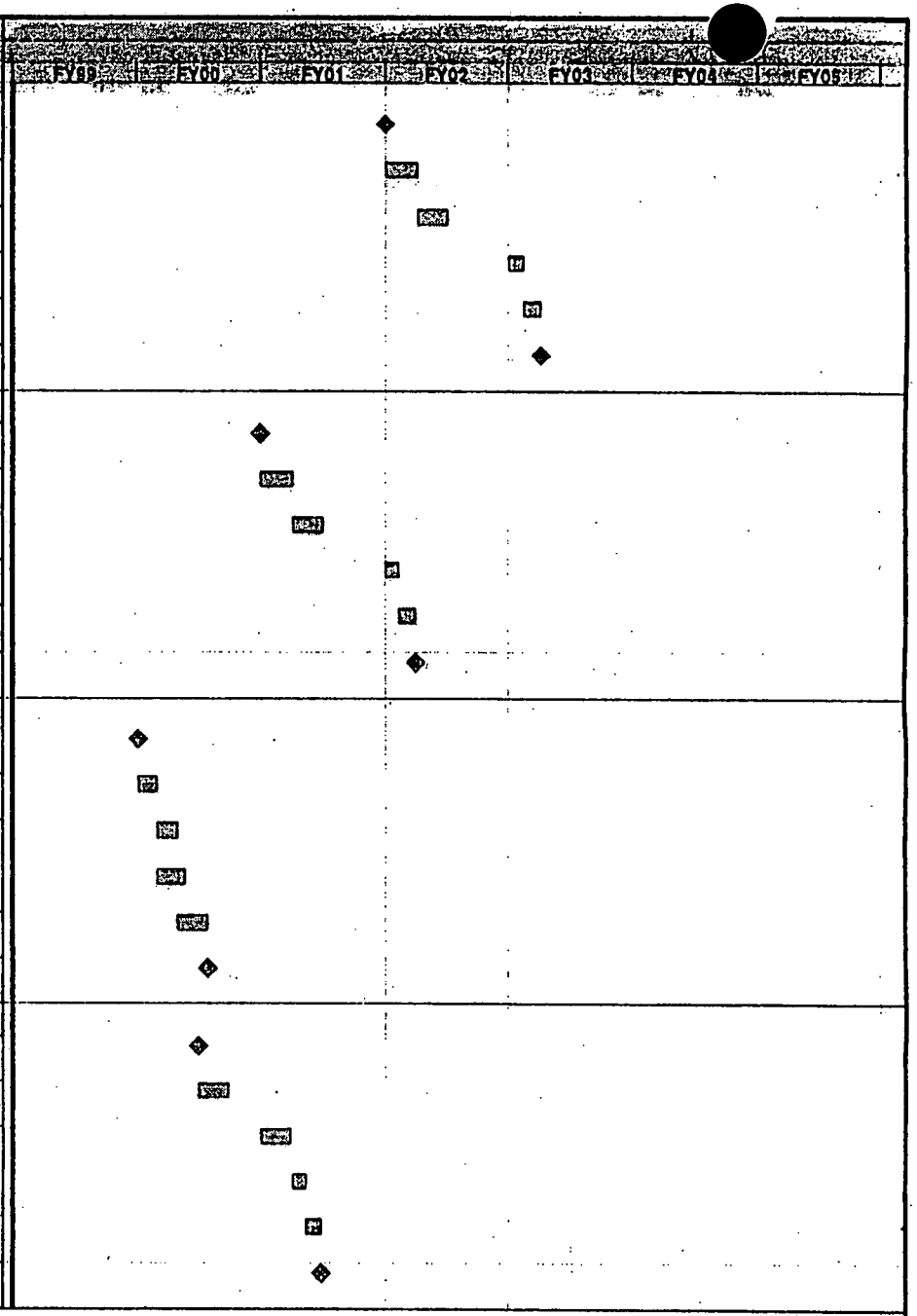
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Sheet 10 of 33

KAISER-HILL COMPANY
CLOSURE PROJECT BASELINE SCHEDULE
BUILDING 776/777 CLOSURE PROJECT

CLOSURE 2006 KAISER-HILL
ROCKY FLA[illegible]OSURE PROJECT

Activity ID	Activity Description	Orig Dur	Early Start	Early Finish	Tot Float
1.1.06.12.04.12 B776/7-SET 12-RM 401, 403, 404, 405, 406					
D5J1200MS1	B776/777 Start Set 12 Decommissioning	0	01OCT01*		154
D5J1200010	B776/777 Set 12 Planning and Engineering	58	01OCT01	02JAN02	154
D5J1200020	B776/777 Set 12 Proj Specif Long Lead Procurem't	56	03JAN02	01APR02	154
D5J1200030	B776/777 Set 12 Isolation and Containment	27	01OCT02*	11NOV02	40
D5J1200040	B776/777 Set 12 Dismantlement Tasks	30	12NOV02	31DEC02	40
D5J1200MF1	B776/777 Complete Set 12 Decommissioning	0		31DEC02	40
1.1.06.12.04.13 B776/7-SET 13-RM 402, 402A, 416, 416B, 4					
D5J1300MS1	B776/777 Start Set 13 Decommissioning	0	02OCT00*		284
D5J1300010	B776/777 Set 13 Planning and Engineering	58	02OCT00	03JAN01	284
D5J1300020	B776/777 Set 13 Proj Specif Long Lead Procurem't	56	04JAN01	02APR01	284
D5J1300030	B776/777 Set 13 Isolation and Containment	27	01OCT01*	08NOV01	171
D5J1300040	B776/777 Set 13 Dismantlement Tasks	30	12NOV01	31DEC01	171
D5J1300MF1	B776/777 Complete Set 13 Decommissioning	0		31DEC01	171
1.1.06.12.04.14 B776/7-SET 14-RM 416, 417 AND ASSOCIATED					
D5J1400MS1	B776/777 Start Set 14 Decommissioning	0	04OCT99		40
D5J1400010	B776/777 Set 14 Planning and Engineering	36	04OCT99	30NOV99	40
D5J1400030	B776/777 Set 14 Isolation and Containment	38	01DEC99	31JAN00	40
D5J1400020	B776/777 Set 14 Proj Specif Long Lead Procurem't	53	01DEC99	23FEB00	62
D5J1400040	B776/777 Set 14 Dismantlement Tasks	57	01FEB00	27APR00	40
D5J1400MF1	B776/777 Complete Set 14 Decommissioning	0		27APR00	40
1.1.06.12.04.15 B776/7-ROOM 416A (VAULT)					
D5J1500MS1	B776/777 Start Set 15 Decommissioning	0	03APR00*		413
D5J1500010	B776/777 Set 15 Planning and Engineering	58	03APR00	30JUN00	413
D5J1500020	B776/777 Set 15 Proj Specif Long Lead Procurem't	56	02OCT00*	29DEC00	357
D5J1500030	B776/777 Set 15 Isolation and Containment	27	02JAN01	12FEB01	357
D5J1500040	B776/777 Set 15 Dismantlement Tasks	30	13FEB01	29MAR01	357
D5J1500MF1	B776/777 Complete Set 15 Decommissioning	0		29MAR01	357



Project Start 01OCT97
Project Finish 23SEP05
Data Date 01OCT99
Run Date 11OCT99

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Sheet 11 of 33

KAISER-HILL COMPANY
CLOSURE PROJECT BASELINE SCHEDULE
BUILDING 776/777 CLOSURE PROJECT

CLOSURE 2006 KAISER-HILL
ROCKY FLATS CLOSURE PROJECT

Activity ID	Activity Description	Orig Dur	Early Start	Early Finish	Total Float
1.1.06.12.04.16 B776/7-RM 426, 427, 427A AND 428					
D5J1600MS1	B776/777 Start Set 16 Decommissioning	0	04OCT01*		54
D5J1600010	B776/777 Set 16 Planning and Engineering	58	04OCT01	03JAN02	54
D5J1600020	B776/777 Set 16 Proj Specif Long Lead Procurem't	58	07JAN02	04APR02	54
D5J1600030	B776/777 Set 16 Isolation and Containment	27	05APR02	16MAY02	54
D5J1600040	B776/777 Set 16 Dismantlement Tasks	30	17MAY02	03JUL02	54
D5J1600MF1	B776/777 Complete Set 16 Decommissioning	0		03JUL02	54
1.1.06.12.04.17 B776/7-RM 430 GB481					
D5J1700MS1	B776/777 Start Set 17 Decommissioning	0	04OCT99		6
D5J1700030	B776/777 Set 17 Isolation and Containment	20	04OCT99	02NOV99	6
D5J1700020	B776/777 Set 17 Proj Specif Long Lead Procurem't	20	04OCT99	02NOV99	55
D5J1700040	B776/777 Set 17 Dismantlement Tasks	38	02DEC99*	01FEB00	38
D5J1700MF1	B776/777 Complete Set 17 Decommissioning	0		01FEB00	38
1.1.06.12.04.18 B776/7-RM 430 GB 360-362, 370-373, 368					
D5J1800MS1	B776/777 Start Set 18 Decommissioning	0	02OCT00*		27
D5J1800010	B776/777 Set 18 Planning and Engineering	58	02OCT00	29DEC00	27
D5J1800020	B776/777 Set 18 Proj Specif Long Lead Procurem't	75	02JAN01	26APR01	27
D5J1800030	B776/777 Set 18 Isolation and Containment	75	30APR01	24AUG01	27
D5J1800040	B776/777 Set 18 Dismantlement Tasks	120	01OCT01*	09APR02	6
D5J1800MF1	B776/777 Complete Set 18 Decommissioning	0		09APR02	6
1.1.06.12.04.19 B776/7-RM 154A					
D5J1900MS1	B776/777 Start Set 19 Decommissioning	0	13MAR00*		419
D5J1900010	B776/777 Set 19 Planning and Engineering	58	13MAR00	12JUN00	419
D5J1900020	B776/777 Set 19 Proj Specif Long Lead Procurem't	45	02OCT00*	12DEC00	350
D5J1900030	B776/777 Set 19 Isolation and Containment	28	13DEC00	24JAN01	350
D5J1900040	B776/777 Set 19 Dismantlement Tasks	49	01OCT01	17DEC01	194
D5J1900MF1	B776/777 Complete Set 19 Decommissioning	0		17DEC01	194
1.1.06.12.04.20 B776/7-RM 430 GB 401,402 HOOD AREA AND R					
D5J2000MS1	B776/777 Start Set 20 Decommissioning	0	04OCT99		0

FY99 FY00 FY01 FY02 FY03 FY04 FY05

Project Start	01OCT97	Early Bar
Project Finish	23SEP05	Progress Bar
Data Date	01OCT99	Critical Activity
Run Date	11OCT99	

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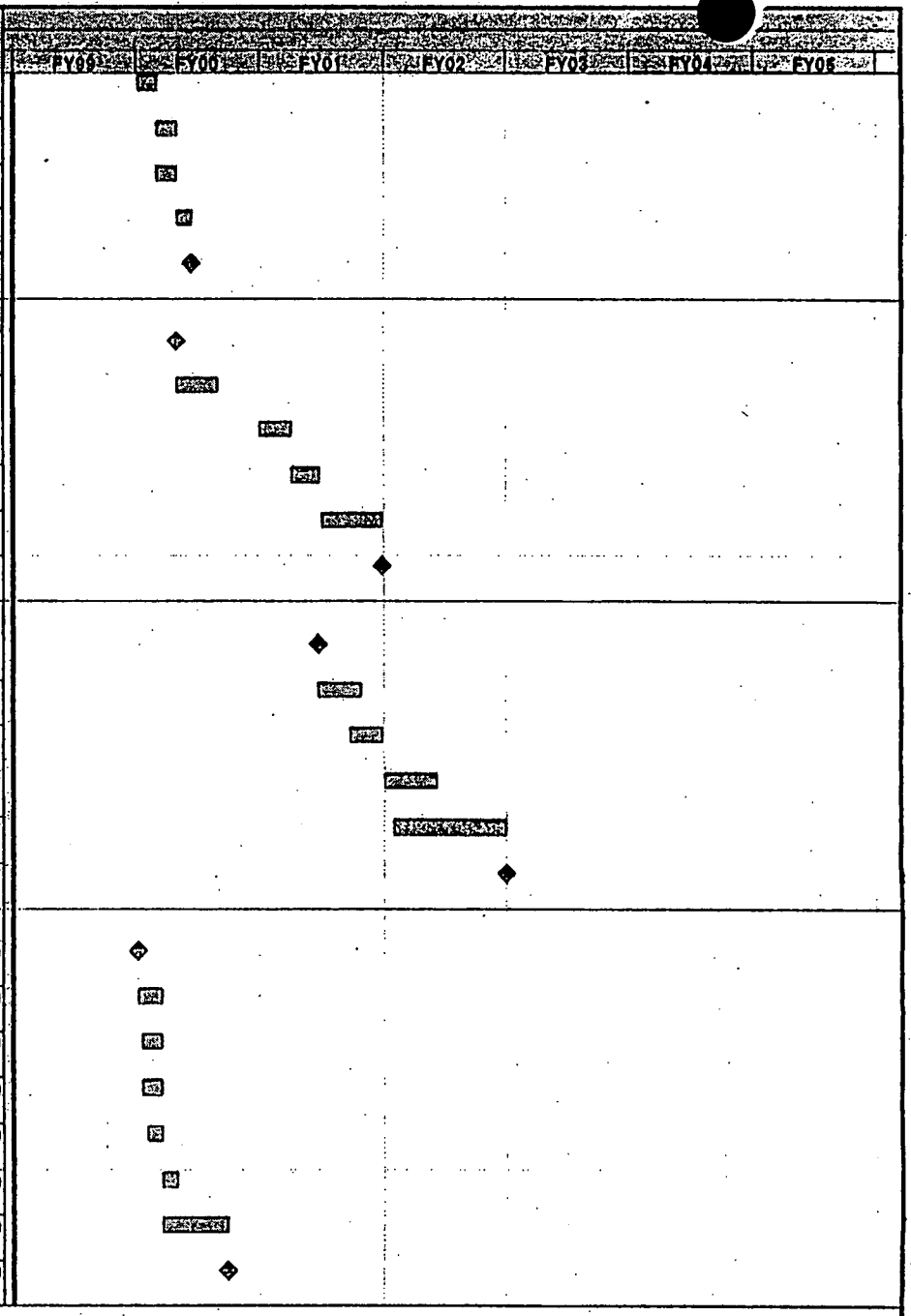
Sheet 12 of 33

KAISER-HILL COMPANY
CLOSURE PROJECT BASELINE SCHEDULE
BUILDING 776/777 CLOSURE PROJECT

CLOSURE 2006 KAISER-HILL ROCKY FLATS CLOSURE PROJECT

L02

Activity ID	Activity Description	Orig Dur	Early Start	Early Finish	Total Float
D5J2000010	B776/777 Set 20 Planning and Engineering	38	04OCT99	30NOV99	0
D5J2000020	B776/777 Set 20 Proj Specif Long Lead Procurem't	38	01DEC99	31JAN00	1
D5J2000030	B776/777 Set 20 Isolation and Containment	39	01DEC99	01FEB00	0
D5J2000040	B776/777 Set 20 Dismantlement Tasks	28	02FEB00	15MAR00	0
D5J2000MF1	B776/777 Complete Set 20 Decommissioning	0		15MAR00	0
1.1.06.12.04.21	B776/7-RM 430 GB 404, 408, 409, 426, 427				
D5J2100MS1	B776/777 Start Set 21 Decommissioning	0	02FEB00*		118
D5J2100010	B776/777 Set 21 Planning and Engineering	78	02FEB00	02JUN00	118
D5J2100020	B776/777 Set 21 Proj Specif Long Lead Procurem't	58	02OCT00*	03JAN01	64
D5J2100030	B776/777 Set 21 Isolation and Containment	55	04JAN01	29MAR01	64
D5J2100040	B776/777 Set 21 Dismantlement Tasks	114	02APR01	27SEP01	64
D5J2100MF1	B776/777 Complete Set 21 Decommissioning	0		27SEP01	64
1.1.06.12.04.22	B776/7-RM 430 GB 442-448,451,452,454,456				
D5J2200MS1	B776/777 Start Set 22 Decommissioning	0	23MAR01*		98
D5J2200010	B776/777 Set 22 Planning and Engineering	78	23MAR01	25JUL01	138
D5J2200020	B776/777 Set 22 Proj Specif Long Lead Procurem't	58	27JUN01	26SEP01	98
D5J2200030	B776/777 Set 22 Isolation and Containment	97	01OCT01*	05MAR02	97
D5J2200040	B776/777 Set 22 Dismantlement Tasks	208	31OCT01	30SEP02	97
D5J2200MF1	B776/777 Complete Set 22 Decommissioning	0		30SEP02	97
1.1.06.12.04.23	B776/7-RM 430 GB 515, ASSOC R-LINE AND G				
D5J2300MS1	B776/777 Start Set 23 Decommissioning	0	04OCT99		0
D5J2300020	B776/777 Set 23 Proj Specif Long Lead Procurem't	48	04OCT99	15DEC99	0
D5J2300050	B776/777 Set 23 Modify Rm127 Wall for Access	37	18OCT99	15DEC99	0
D5J2300022	B776/777 Set 23 Mgmt Review Prep (1st hot box)	36	19OCT99	15DEC99	0
D5J2300030	B776/777 Set 23 Isolation and Containment	26	03NOV99	15DEC99	0
D5J2300025	B776/777 Set 23 Conduct Mgmt Review/CAs	27	16DEC99	28JAN00	0
D5J2300040	B776/777 Set 23 Dismantlement Tasks	125	16DEC99	30JUN00	0
D5J2300MF1	B776/777 Complete Set 23 Decommissioning	0		30JUN00	0



Project Start 01OCT97
Project Finish 23SEP05
Data Date 01OCT99
Run Date 11OCT99

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Sheet 13 of 33

KAISER-HILL COMPANY
CLOSURE PROJECT BASELINE SCHEDULE
BUILDING 776/777 CLOSURE PROJECT

CLOSURE 2006 KAISER-HILL
ROCKY FLATS CLOSURE PROJECT

208

Activity ID	Activity Description	Orig Dur.	Early Start	Early Fin	Total Float
1.1.06.12.04.24 B776/B-RM 430 GB756, 758-764 AND ASSOC M					
D5J2400MS1	B776/777 Start Set 24 Decommissioning	0	04OCT00*		175
D5J2400010	B776/777 Set 24 Planning and Engineering	58	04OCT00	08JAN01	175
D5J2400020	B776/777 Set 24 Proj Specif Long Lead Procurem't	56	09JAN01	04APR01	175
D5J2400030	B776/777 Set 24 Isolation and Containment	30	15NOV01*	07JAN02	34
D5J2400040	B776/777 Set 24 Dismantlement Tasks	61	08JAN02	10APR02	34
D5J2400MF1	B776/777 Complete Set 24 Decommissioning	0		10APR02	34
1.1.06.12.04.25 B776/7-ROOM 430, RCRA AREAS 90.67, 95.01					
D5J2500MS1	B776/777 Start Set 25 Decommissioning	0	03DEC01*		119
D5J2500010	B776/777 Set 25 Planning and Engineering	58	03DEC01	05MAR02	119
D5J2500020	B776/777 Set 25 Proj Specif Long Lead Procurem't	52	06MAR02	23MAY02	119
D5J2500030	B776/777 Set 25 Isolation and Containment	27	28MAY02	09JUL02	119
D5J2500040	B776/777 Set 25 Dismantlement Tasks	30	10JUL02	23AUG02	119
D5J2500MF1	B776/777 Complete Set 25 Decommissioning	0		23AUG02	119
1.1.06.12.04.26 B776/7-TANKS T1, T2, F1/-ROOM 430, RCRA					
D5J2600MS1	B776/777 Start Set 26 Decommissioning	0	03NOV99		6
D5J2600020	B776/777 Set 26 Proj Specif Long Lead Procurem't	49	03NOV99	24JAN00	6
D5J2600040	B776/777 Set 26 Dismantlement Tasks	38	02FEB00	30MAR00	0
D5J2600MF1	B776/777 Complete Set 26 Decommissioning	0		30MAR00	0
1.1.06.12.04.27 B776/7-ROOMS 432, 432A,B,C,D, 440 AND GB					
D5J2700MS1	B776/777 Start Set 27 Decommissioning	0	01NOV01*		110
D5J2700010	B776/777 Set 27 Planning and Engineering	58	01NOV01	05FEB02	110
D5J2700020	B776/777 Set 27 Proj Specif Long Lead Procurem't	56	06FEB02	02MAY02	110
D5J2700030	B776/777 Set 27 Isolation and Containment	30	03MAY02	19JUN02	110
D5J2700040	B776/777 Set 27 Dismantlement Tasks	50	12JUL02	30SEP02	97
D5J2700MF1	B776/777 Complete Set 27 Decommissioning	0		30SEP02	97
1.1.06.12.04.28 B776/7-ROOM 433					
D5J2800MS1	B776/777 Start Set 28 Decommissioning	0	01FEB01*		295
D5J2800010	B776/777 Set 28 Planning and Engineering	58	01FEB01	02MAY01	295

FY99 FY00 FY01 FY02 FY03 FY04 FY05

Project Start 01OCT97
Project Finish 23SEP05
Data Date 01OCT99
Run Date 11OCT99

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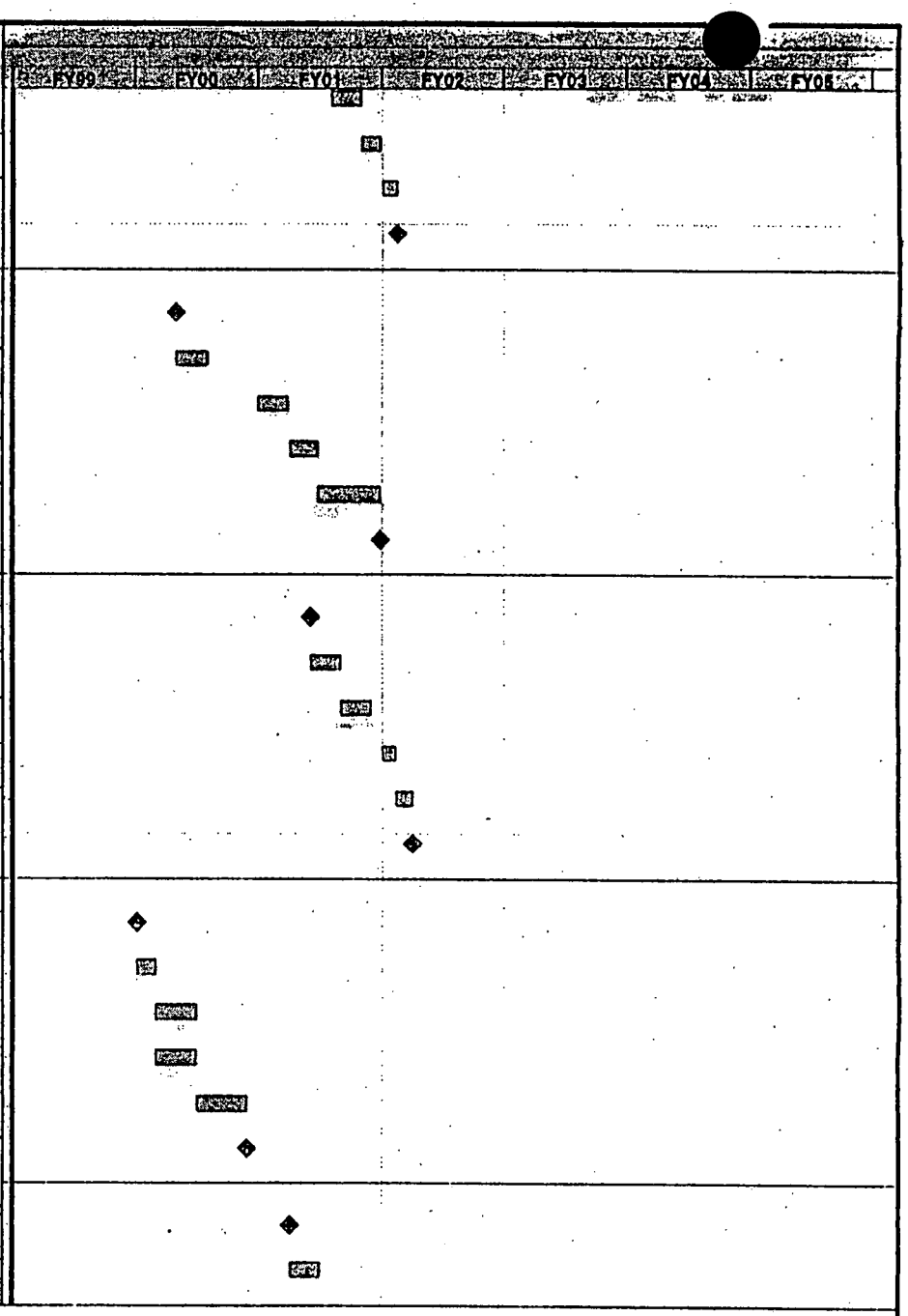
Sheet 14 of 33

KAISER-HILL COMPANY
CLOSURE PROJECT BASELINE SCHEDULE
BUILDING 776/777 CLOSURE PROJECT

CLOSURE KAISER-HILL

ROCKY FLA[illegible] CLOSURE PROJECT

Activity ID	Activity Description	Orig Dur	Early Start	Early Finish	Total Float
D5J2800020	B776/777 Set 28 Proj Specif Long Lead Procurem't	56	03MAY01	31JUL01	295
D5J2800030	B776/777 Set 28 Isolation and Containment	37	01AUG01	27SEP01	295
D5J2800040	B776/777 Set 28 Dismantlement Tasks	30	01OCT01	14NOV01	295
D5J2800MF1	B776/777 Complete Set 28 Decommissioning	0		14NOV01	295
1.1.06.12.04.29	B776/7-ROOM 437 GB A1, A2, A3 AND ASSOCI				
D5J2900MS1	B776/777 Start Set 29 Decommissioning	0	02FEB00*		249
D5J2900010	B776/777 Set 29 Planning and Engineering	58	02FEB00	02MAY00	249
D5J2900020	B776/777 Set 29 Proj Specif Long Lead Procurem't	56	02OCT00*	29DEC00	155
D5J2900030	B776/777 Set 29 Isolation and Containment	56	02JAN01	28MAR01	155
D5J2900040	B776/777 Set 29 Dismantlement Tasks	115	29MAR01	27SEP01	155
D5J2900MF1	B776/777 Complete Set 29 Decommissioning	0		27SEP01	155
1.1.06.12.04.30	B776/7-ROOM 442 (VAULT)				
D5J3000MS1	B776/777 Start Set 30 Decommissioning	0	05MAR01*		205
D5J3000010	B776/777 Set 30 Planning and Engineering	58	05MAR01	01JUN01	205
D5J3000020	B776/777 Set 30 Proj Specif Long Lead Procurem't	56	04JUN01	29AUG01	205
D5J3000030	B776/777 Set 30 Isolation and Containment	26	01OCT01*	07NOV01	187
D5J3000040	B776/777 Set 30 Dismantlement Tasks	30	08NOV01	28DEC01	187
D5J3000MF1	B776/777 Complete Set 30 Decommissioning	0		28DEC01	187
1.1.06.12.04.31	B776/7-ROOM 433 AND NDT LINE				
D5J3100MS1	B776/777 Start Set 31 Decommissioning	0	04OCT99		143
D5J3100010	B776/777 Set 31 Planning and Engineering	36	04OCT99	30NOV99	143
D5J3100020	B776/777 Set 31 Proj Specif Long Lead Procurem't	75	01DEC99	28MAR00	143
D5J3100030	B776/777 Set 31 Isolation and Containment	75	01DEC99	28MAR00	143
D5J3100040	B776/777 Set 31 Dismantlement Tasks	95	29MAR00	25AUG00	143
D5J3100MF1	B776/777 Complete Set 31 Decommissioning	0		25AUG00	143
1.1.06.12.04.32	B776/7-RM 444, 446-450, 436 AND RCRA ARE				
D5J3200MS1	B776/777 Start Set 32 Decommissioning	0	03JAN01*		243
D5J3200010	B776/777 Set 32 Planning and Engineering	58	03JAN01	03APR01	243



Project Start 01OCT97
Project Finish 23SEP05
Data Date 01OCT99
Run Date 11OCT99

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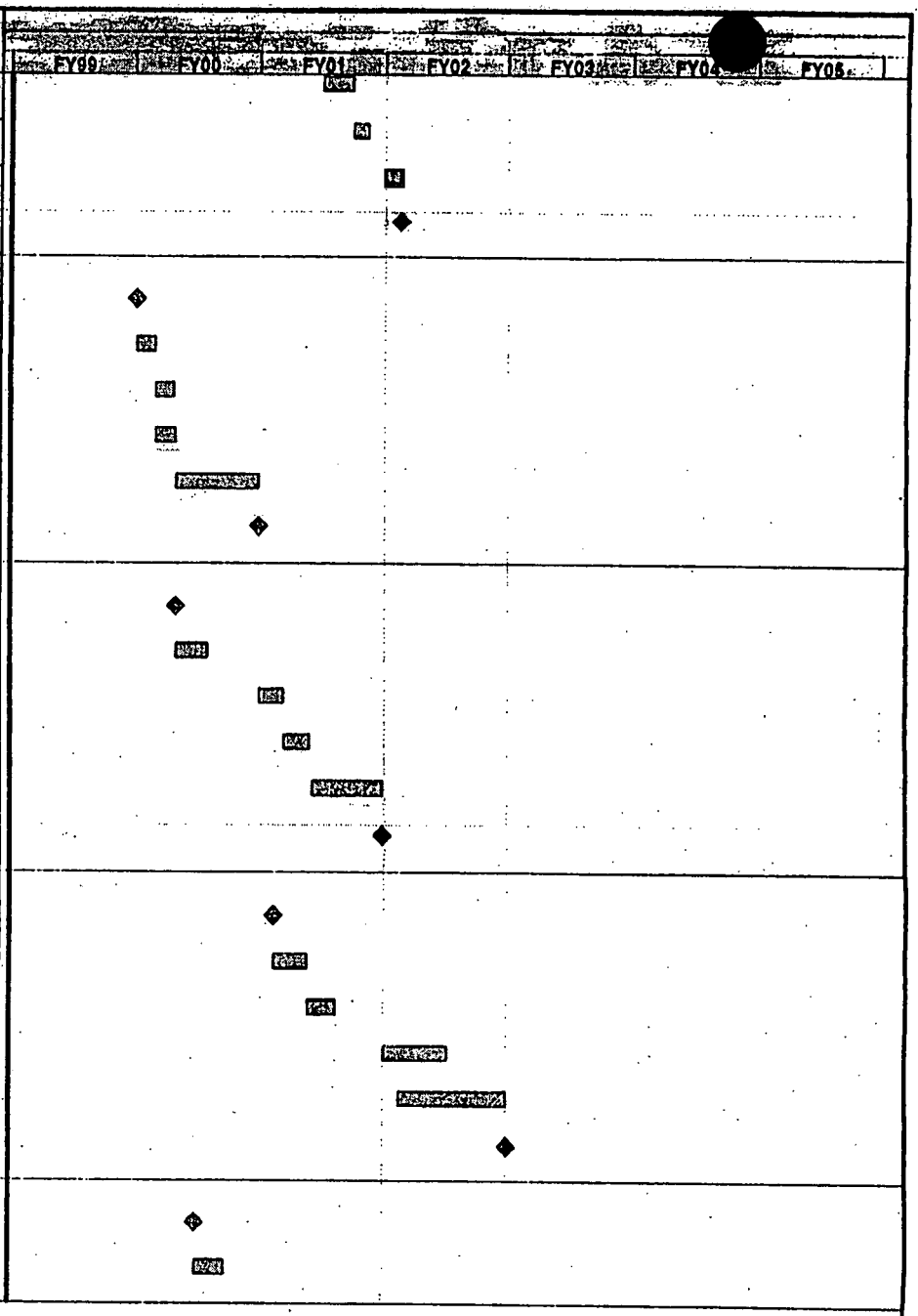
Sheet 15 of 33

KAISER-HILL COMPANY
CLOSURE PROJECT BASELINE SCHEDULE
BUILDING 776/777 CLOSURE PROJECT

CLOSURE 2006 KAISER-HILL ROCKY FLATS CLOSURE PROJECT

012

Activity ID	Activity Description	Orig Dur	Early Start	Early Finish	Total Float
D5J3200020	B776/777 Set 32 Proj Specif Long Lead Procurem't	56	04APR01	25JUN01	243
D5J3200030	B776/777 Set 32 Isolation and Containment	26	02JUL01	10AUG01	243
D5J3200040	B776/777 Set 32 Dismantlement Tasks	30	01OCT01*	14NOV01	213
D5J3200MF1	B776/777 Complete Set 32 Decommissioning	0		14NOV01	213
1.1.06.12.04.33 B776/7-ROOM 445 AND GB494, 495, 499-502					
D5J3300MS1	B776/777 Start Set 33 Decommissioning	0	04OCT99		0
D5J3300010	B776/777 Set 33 Planning and Engineering	36	04OCT99	30NOV99	0
D5J3300020	B776/777 Set 33 Proj Specif Long Lead Procurem't	35	01DEC99	26JAN00	3
D5J3300030	B776/777 Set 33 Isolation and Containment	38	01DEC99	31JAN00	0
D5J3300040	B776/777 Set 33 Dismantlement Tasks	153	01FEB00	28SEP00	0
D5J3300MF1	B776/777 Complete Set 33 Decommissioning	0		28SEP00	0
1.1.06.12.04.34 B776/7-ROOM 452 GB 522, 548, 022, 027, 0					
D5J3400MS1	B776/777 Start Set 34 Decommissioning	0	02FEB00*		169
D5J3400010	B776/777 Set 34 Planning and Engineering	58	02FEB00	02MAY00	169
D5J3400020	B776/777 Set 34 Proj Specif Long Lead Procurem't	45	02OCT00*	12DEC00	75
D5J3400030	B776/777 Set 34 Isolation and Containment	50	13DEC00	01MAR01	75
D5J3400040	B776/777 Set 34 Dismantlement Tasks	132	05MAR01	27SEP01	75
D5J3400MF1	B776/777 Complete Set 34 Decommissioning	0		27SEP01	75
1.1.06.12.04.35 B776/7-ROOM 452 GB 523-526, 530, 532, 53					
D5J3500MS1	B776/777 Start Set 35 Decommissioning	0	17NOV00*		157
D5J3500010	B776/777 Set 35 Planning and Engineering	58	17NOV00	21FEB01	157
D5J3500020	B776/777 Set 35 Proj Specif Long Lead Procurem't	56	22FEB01	18MAY01	157
D5J3500030	B776/777 Set 35 Isolation and Containment	122	01OCT01	11APR02	75
D5J3500040	B776/777 Set 35 Dismantlement Tasks	198	15NOV01	30SEP02	75
D5J3500MF1	B776/777 Complete Set 35 Decommissioning	0		30SEP02	75
1.1.06.12.04.36 B776/7-ROOM 452 AND 476 GB 544 AND 543 A					
D5J3600MS1	B776/777 Start Set 36 Decommissioning	0	03APR00*		240
D5J3600010	B776/777 Set 36 Planning and Engineering	58	03APR00	30JUN00	240



Project Start 01OCT97
Project Finish 23SEP05
Data Date 01OCT98
Run Date 11OCT99

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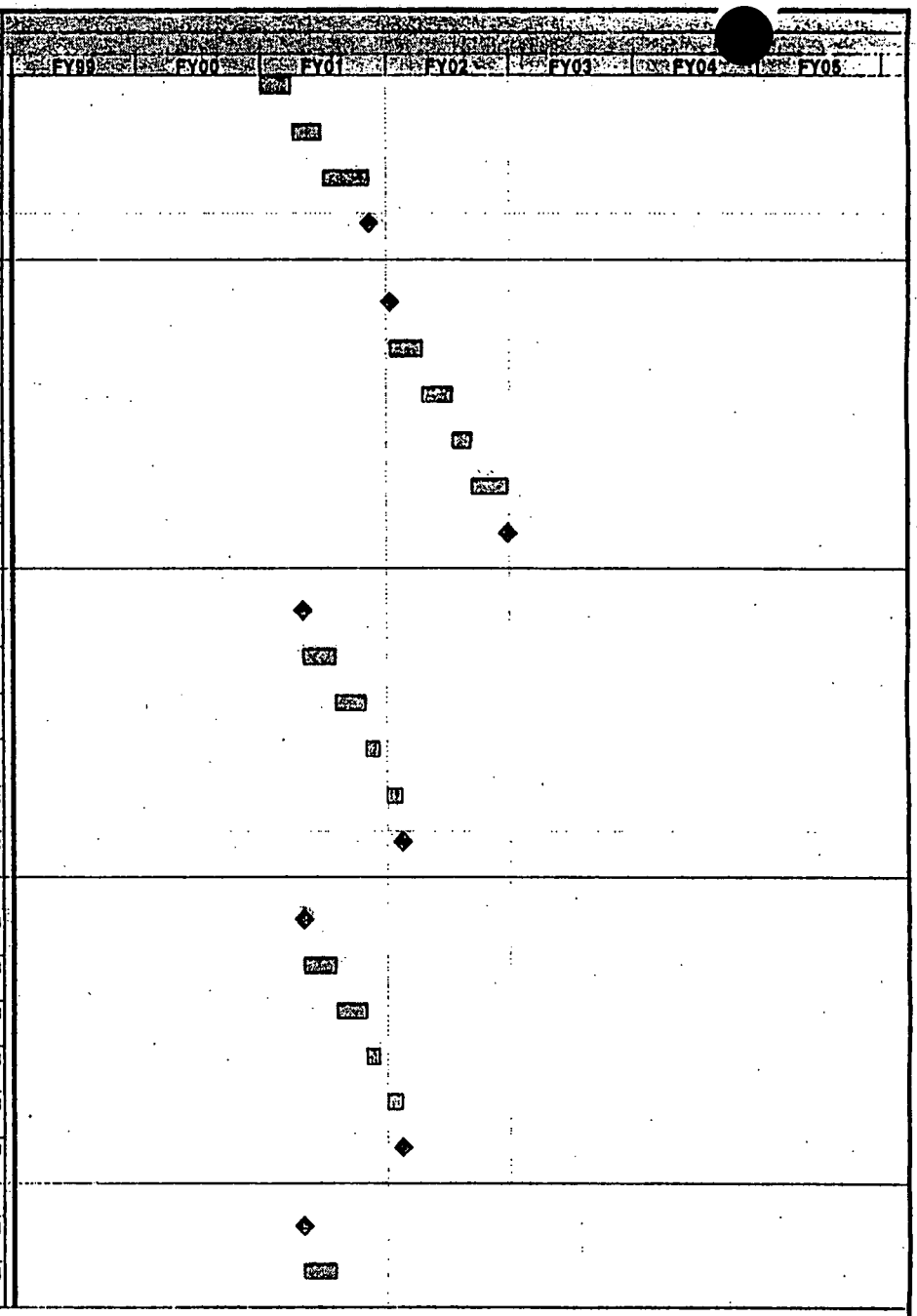
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Sheet 18 of 33

KAISER-HILL COMPANY
CLOSURE PROJECT BASELINE SCHEDULE
BUILDING 776/777 CLOSURE PROJECT

CLOSURE 2006 KAISER-HILL
ROCKY FLATS CLOSURE PROJECT

Activity ID	Activity Description	Orig Dur	Early Start	Early Finish	Total Float
D5J3600020	B776/777 Set 36 Proj Specif Long Lead Procurem't	58	02OCT00*	29DEC00	184
D5J3600030	B776/777 Set 36 Isolation and Containment	57	02JAN01	29MAR01	184
D5J3600040	B776/777 Set 36 Dismantlement Tasks	65	02APR01	13AUG01	184
D5J3600MF1	B776/777 Complete Set 36 Decommissioning	0		13AUG01	184
1.1.08.12.04.37	B776/7-ROOM 453, 454, AND 460				
D5J3700MS1	B776/777 Start Set 37 Decommissioning	0	15OCT01*		101
D5J3700010	B776/777 Set 37 Planning and Engineering	58	15OCT01	16JAN02	101
D5J3700020	B776/777 Set 37 Proj Specif Long Lead Procurem't	56	17JAN02	15APR02	101
D5J3700030	B776/777 Set 37 Isolation and Containment	34	16APR02	08JUN02	101
D5J3700040	B776/777 Set 37 Dismantlement Tasks	67	10JUN02	23SEP02	101
D5J3700MF1	B776/777 Complete Set 37 Decommissioning	0		23SEP02	101
1.1.08.12.04.38	B776/7-ROOMS 455-457, 461 AND 458				
D5J3800MS1	B776/777 Start Set 38 Decommissioning	0	01FEB01*		223
D5J3800010	B776/777 Set 38 Planning and Engineering	58	01FEB01	02MAY01	223
D5J3800020	B776/777 Set 38 Proj Specif Long Lead Procurem't	56	03MAY01	31JUL01	223
D5J3800030	B776/777 Set 38 Isolation and Containment	27	01AUG01	12SEP01	223
D5J3800040	B776/777 Set 38 Dismantlement Tasks	30	01OCT01*	14NOV01	213
D5J3800MF1	B776/777 Complete Set 38 Decommissioning	0		14NOV01	213
1.1.08.12.04.39	B776/7-ROOMS 459 AND 459A				
D5J3900MS1	B776/777 Start Set 39 Decommissioning	0	01FEB01*		223
D5J3900010	B776/777 Set 39 Planning and Engineering	58	01FEB01	02MAY01	223
D5J3900020	B776/777 Set 39 Proj Specif Long Lead Procurem't	58	03MAY01	31JUL01	223
D5J3900030	B776/777 Set 39 Isolation and Containment	27	01AUG01	12SEP01	223
D5J3900040	B776/777 Set 39 Dismantlement Tasks	30	01OCT01*	14NOV01	213
D5J3900MF1	B776/777 Complete Set 39 Decommissioning	0		14NOV01	213
1.1.08.12.04.40	B776/7-ROOM 462 -A VAULT				
D5J4000MS1	B776/777 Start Set 40 Decommissioning	0	01FEB01*		224
D5J4000010	B776/777 Set 40 Planning and Engineering	58	01FEB01	02MAY01	224



Project Start 01OCT97
Project Finish 23SEP05
Data Date 01OCT99
Run Date 11OCT99

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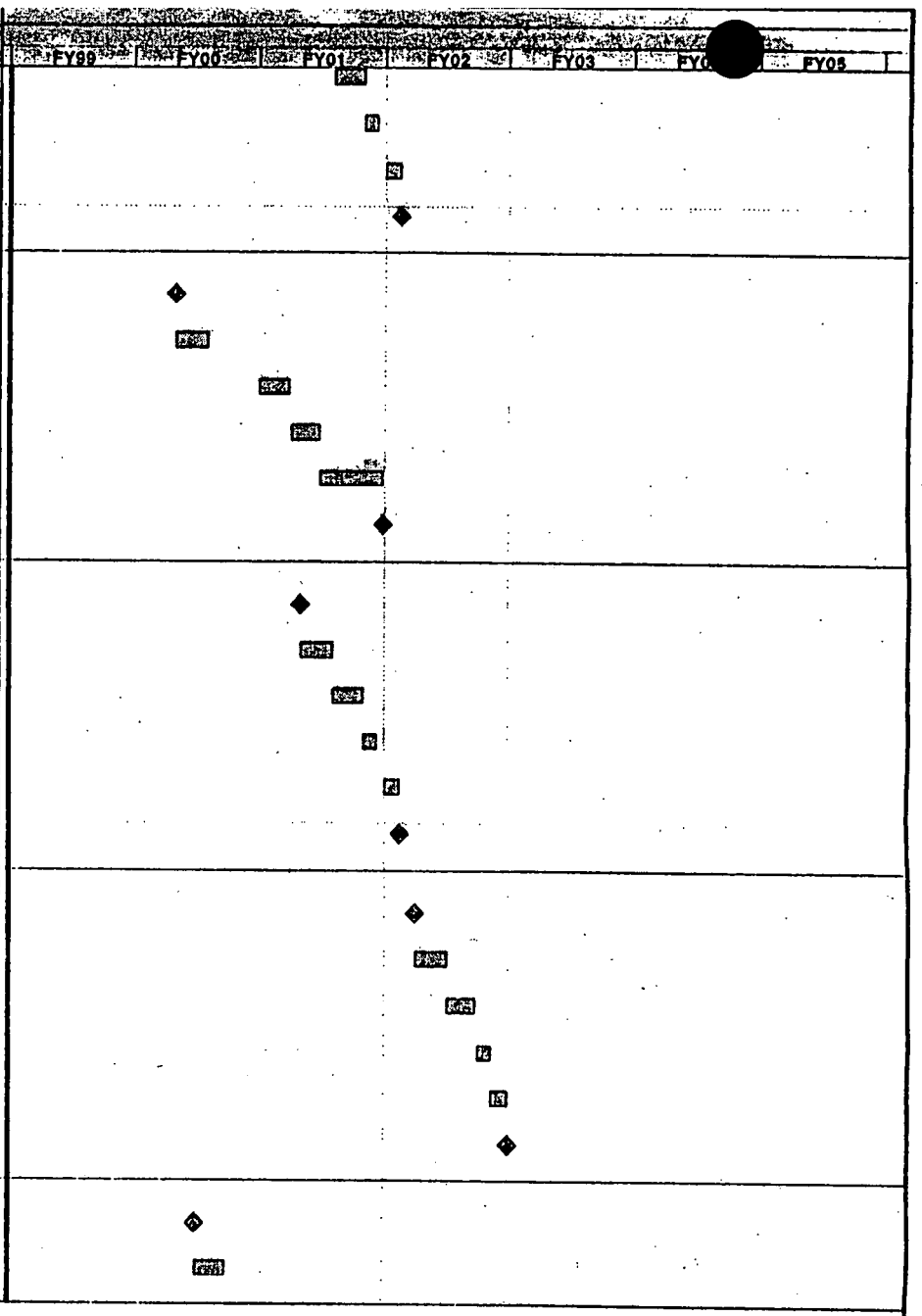
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Sheet 17 of 33

KAISER-HILL COMPANY
CLOSURE PROJECT BASELINE SCHEDULE
BUILDING 776/777 CLOSURE PROJECT

CLOSURE 2006 KAISER-HILL
ROCKY FLATS CLOSURE PROJECT

Activity ID	Activity Description	Orig Dur	Early Start	Early Finish	Total Float
D5J4000020	B776/777 Set 40 Proj Specif Long Lead Procurem't	56	03MAY01	31JUL01	224
D5J4000030	B776/777 Set 40 Isolation and Containment	26	01AUG01	11SEP01	224
D5J4000040	B776/777 Set 40 Dismantlement Tasks	30	01OCT01*	14NOV01	213
D5J4000MF1	B776/777 Complete Set 40 Decommissioning	0		14NOV01	213
1.1.06.12.04.41	B776/7-ROOM 463 AND GB A4-A9 AND A11				
D5J4100MS1	B776/777 Start Set 41 Decommissioning	0	02FEB00*		249
D5J4100010	B776/777 Set 41 Planning and Engineering	58	02FEB00	02MAY00	249
D5J4100020	B776/777 Set 41 Proj Specif Long Lead Procurem't	56	02OCT00*	29DEC00	155
D5J4100030	B776/777 Set 41 Isolation and Containment	54	02JAN01	26MAR01	155
D5J4100040	B776/777 Set 41 Dismantlement Tasks	117	27MAR01	27SEP01	155
D5J4100MF1	B776/777 Complete Set 41 Decommissioning	0		27SEP01	155
1.1.06.12.04.42	B776/7-ROOM 464, 477, 477A, 463A AND 463				
D5J4200MS1	B776/777 Start Set 42 Decommissioning	0	01FEB01*		224
D5J4200010	B776/777 Set 42 Planning and Engineering	58	01FEB01	02MAY01	224
D5J4200020	B776/777 Set 42 Proj Specif Long Lead Procurem't	56	03MAY01	31JUL01	224
D5J4200030	B776/777 Set 42 Isolation and Containment	26	01AUG01	11SEP01	224
D5J4200040	B776/777 Set 42 Dismantlement Tasks	30	01OCT01*	14NOV01	213
D5J4200MF1	B776/777 Complete Set 42 Decommissioning	0		14NOV01	213
1.1.06.12.04.43	B776/7-ROOMS 465 AND 465A				
D5J4300MS1	B776/777 Start Set 43 Decommissioning	0	02JAN02*		98
D5J4300010	B776/777 Set 43 Planning and Engineering	58	02JAN02	02APR02	98
D5J4300020	B776/777 Set 43 Proj Specif Long Lead Procurem't	56	03APR02	26JUN02	98
D5J4300030	B776/777 Set 43 Isolation and Containment	26	01JUL02	09AUG02	98
D5J4300040	B776/777 Set 43 Dismantlement Tasks	30	12AUG02	26SEP02	98
D5J4300MF1	B776/777 Complete Set 43 Decommissioning	0		26SEP02	98
1.1.06.12.04.44	B776/7-ROOMS 466-472, 474 AND 474D				
D5J4400MS1	B776/777 Start Set 44 Decommissioning	0	03APR00*		356
D5J4400010	B776/777 Set 44 Planning and Engineering	58	03APR00	30JUN00	356



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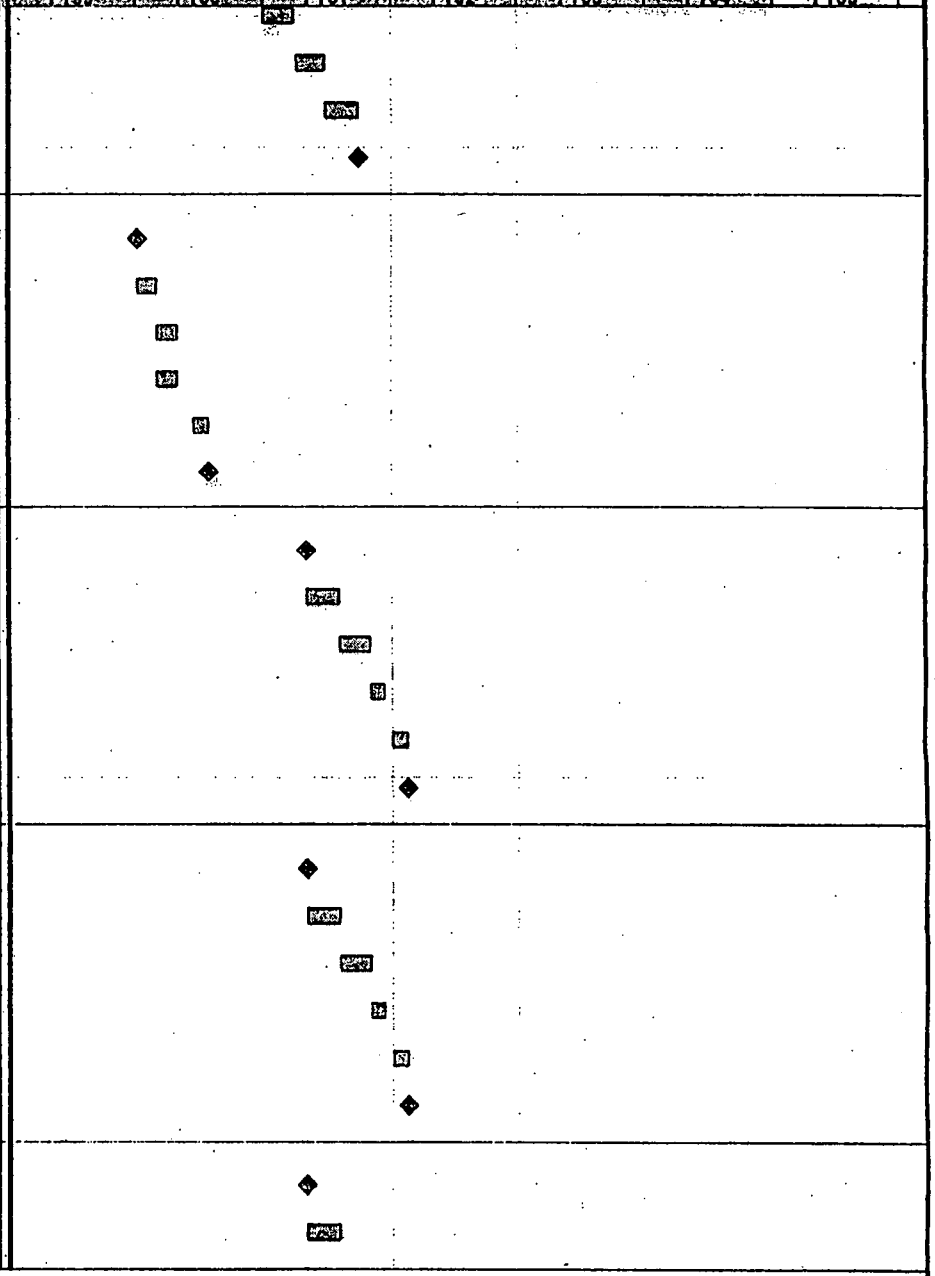
Sheet 18 of 33

KAISER-HILL COMPANY
CLOSURE PROJECT BASELINE SCHEDULE
BUILDING 776/777 CLOSURE PROJECT

CLOSURE 2006 KAISER-HILL
ROCKY FLA[illegible] CLOSURE PROJECT

213

Activity ID	Activity Description	Orig Dur	Early Start	Early Finish	Total Float
D5J4400020	B776/777 Set 44 Proj Specif Long Lead Procurem't	58	02OCT00*	29DEC00	300
D5J4400030	B776/777 Set 44 Isolation and Containment	56	02JAN01	28MAR01	300
D5J4400040	B776/777 Set 44 Dismantlement Tasks	58	29MAR01	28JUN01	300
D5J4400MF1	B776/777 Complete Set 44 Decommissioning	0		28JUN01	300
1.1.06.12.04.45 B776/7-ROOMS 473 AND 476					
D5J4500MS1	B776/777 Start Set 45 Decommissioning	0	04OCT99		29
D5J4500010	B776/777 Set 45 Planning and Engineering	38	04OCT99	30NOV99	29
D5J4500030	B776/777 Set 45 Isolation and Containment	38	01DEC99	31JAN00	29
D5J4500020	B776/777 Set 45 Proj Specif Long Lead Procurem't	38	01DEC99	31JAN00	47
D5J4500040	B776/777 Set 45 Dismantlement Tasks	28	16MAR00	27APR00	0
D5J4500MF1	B776/777 Complete Set 45 Decommissioning	0		27APR00	40
1.1.06.12.04.46 B776/7-ROOM 478 - B VAULT					
D5J4600MS1	B776/777 Start Set 46 Decommissioning	0	01FEB01*		224
D5J4600010	B776/777 Set 46 Planning and Engineering	58	01FEB01	02MAY01	224
D5J4600020	B776/777 Set 46 Proj Specif Long Lead Procurem't	56	03MAY01	31JUL01	224
D5J4600030	B776/777 Set 46 Isolation and Containment	26	01AUG01	11SEP01	224
D5J4600040	B776/777 Set 46 Dismantlement Tasks	30	01OCT01*	14NOV01	213
D5J4600MF1	B776/777 Complete Set 46 Decommissioning	0		14NOV01	213
1.1.06.12.04.47 B776/7-ROOMS 479, 481/483, 483A, 483B AN					
D5J4700MS1	B776/777 Start Set 47 Decommissioning	0	01FEB01*		224
D5J4700010	B776/777 Set 47 Planning and Engineering	58	01FEB01	02MAY01	224
D5J4700020	B776/777 Set 47 Proj Specif Long Lead Procurem't	56	03MAY01	31JUL01	224
D5J4700030	B776/777 Set 47 Isolation and Containment	26	01AUG01	11SEP01	224
D5J4700040	B776/777 Set 47 Dismantlement Tasks	30	01OCT01*	14NOV01	213
D5J4700MF1	B776/777 Complete Set 47 Decommissioning	0		14NOV01	213
1.1.06.12.04.48 B776/7-KATHABAR SYSTEM (EXCLUDING INSIDE					
D5J4800MS1	B776/777 Start Set 48 Decommissioning	0	01FEB01*		205
D5J4800010	B776/777 Set 48 Planning and Engineering	58	01FEB01	02MAY01	205



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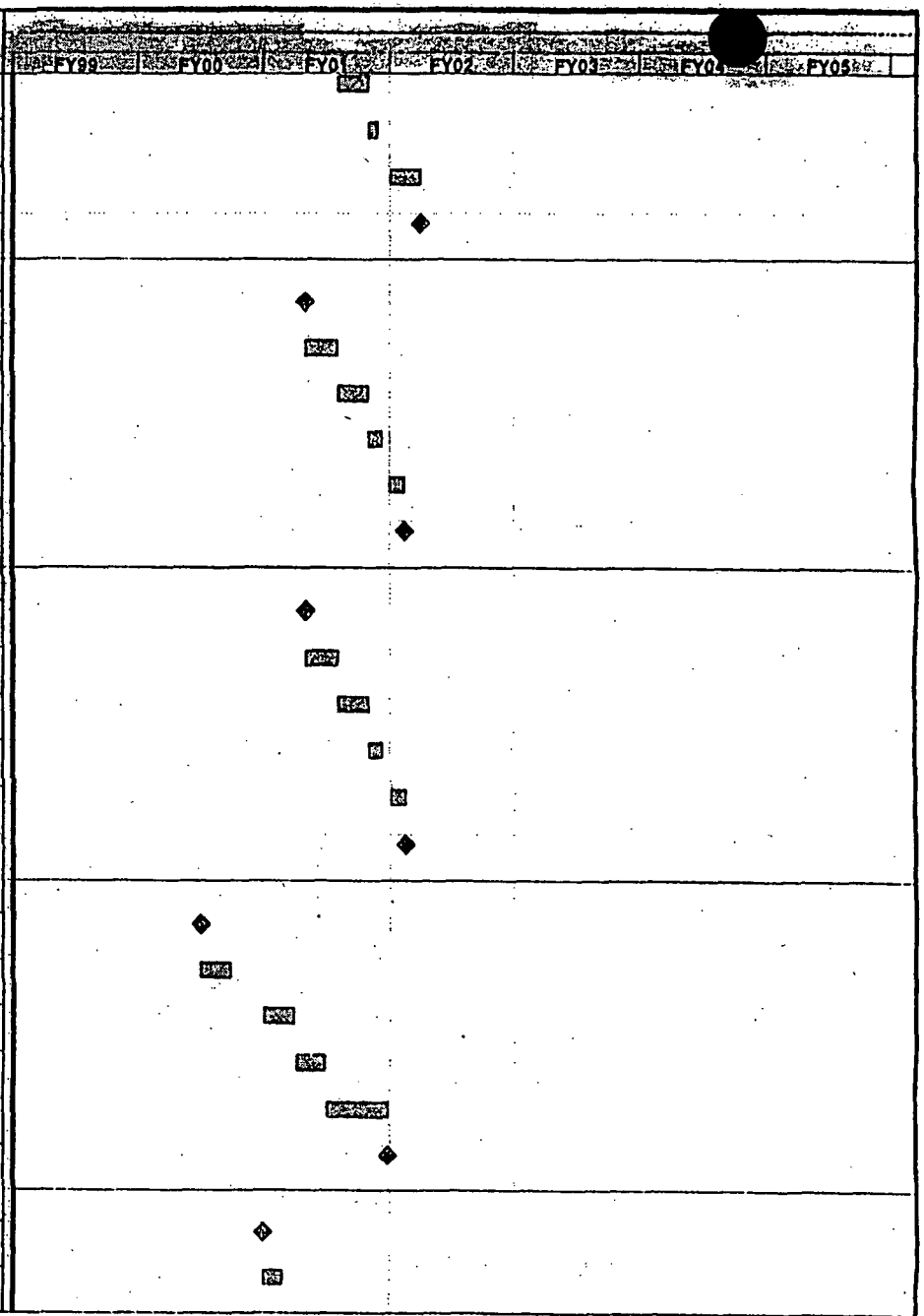
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Sheet 19 of 33

KAISER-HILL COMPANY
CLOSURE PROJECT BASELINE SCHEDULE
BUILDING 776/777 CLOSURE PROJECT

CLOSURE 2006 KAISER-HILL
ROCKY FLATS CLOSURE PROJECT

Activity ID	Activity Description	Orig Dur	Early Start	Early Finish	Total Float
D5J4800020	B776/777 Set 48 Proj Specif Long Lead Procurem't	56	03MAY01	31JUL01	205
D5J4800030	B776/777 Set 48 Isolation and Containment	20	01AUG01	30AUG01	205
D5J4800040	B776/777 Set 48 Dismantlement Tasks	55	01OCT01*	27DEC01	188
D5J4800MF1	B776/777 Complete Set 48 Decommissioning	0		27DEC01	188
1.1.06.12.04.49 B776/7-MODULAB					
D5J4900MS1	B776/777 Start Set 49 Decommissioning	0	01FEB01*		224
D5J4900010	B776/777 Set 49 Planning and Engineering	58	01FEB01	02MAY01	224
D5J4900020	B776/777 Set 49 Proj Specif Long Lead Procurem't	56	03MAY01	31JUL01	224
D5J4900030	B776/777 Set 49 Isolation and Containment	28	01AUG01	11SEP01	224
D5J4900040	B776/777 Set 49 Dismantlement Tasks	30	01OCT01*	14NOV01	213
D5J4900MF1	B776/777 Complete Set 49 Decommissioning	0		14NOV01	213
1.1.06.12.04.50 B776/7-PUTs 101, 103, 103A, 104, 104A, C, E,					
D5J5000MS1	B776/777 Start Set 50 Decommissioning	0	01FEB01*		224
D5J5000010	B776/777 Set 50 Planning and Engineering	58	01FEB01	02MAY01	224
D5J5000020	B776/777 Set 50 Proj Specif Long Lead Procurem't	56	03MAY01	31JUL01	224
D5J5000030	B776/777 Set 50 Isolation and Containment	28	01AUG01	11SEP01	224
D5J5000040	B776/777 Set 50 Dismantlement Tasks	30	01OCT01*	14NOV01	213
D5J5000MF1	B776/777 Complete Set 50 Decommissioning	0		14NOV01	213
1.1.06.12.04.51 B776/7-GB,N ROOMS 154A, 046, 495, 496, 4					
D5J5100MS1	B776/777 Start Set 51 Decommissioning	0	03APR00*		211
D5J5100010	B776/777 Set 51 Planning and Engineering	58	03APR00	30JUN00	211
D5J5100020	B776/777 Set 51 Proj Specif Long Lead Procurem't	56	02OCT00*	29DEC00	155
D5J5100030	B776/777 Set 51 Isolation and Containment	57	02JAN01	29MAR01	155
D5J5100040	B776/777 Set 51 Dismantlement Tasks	114	02APR01	27SEP01	155
D5J5100MF1	B776/777 Complete Set 51 Decommissioning	0		27SEP01	155
1.1.06.12.04.52 B776/7-TANKS T360 AND T370, GB361 AND 37					
D5J5200MS1	B776/777 Start Set 52 Decommissioning	0	02OCT00*		215
D5J5200010	B776/777 Set 52 Planning and Engineering	35	02OCT00	27NOV00	215



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Project Finish 23SEP05
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Run Date 11OCT99

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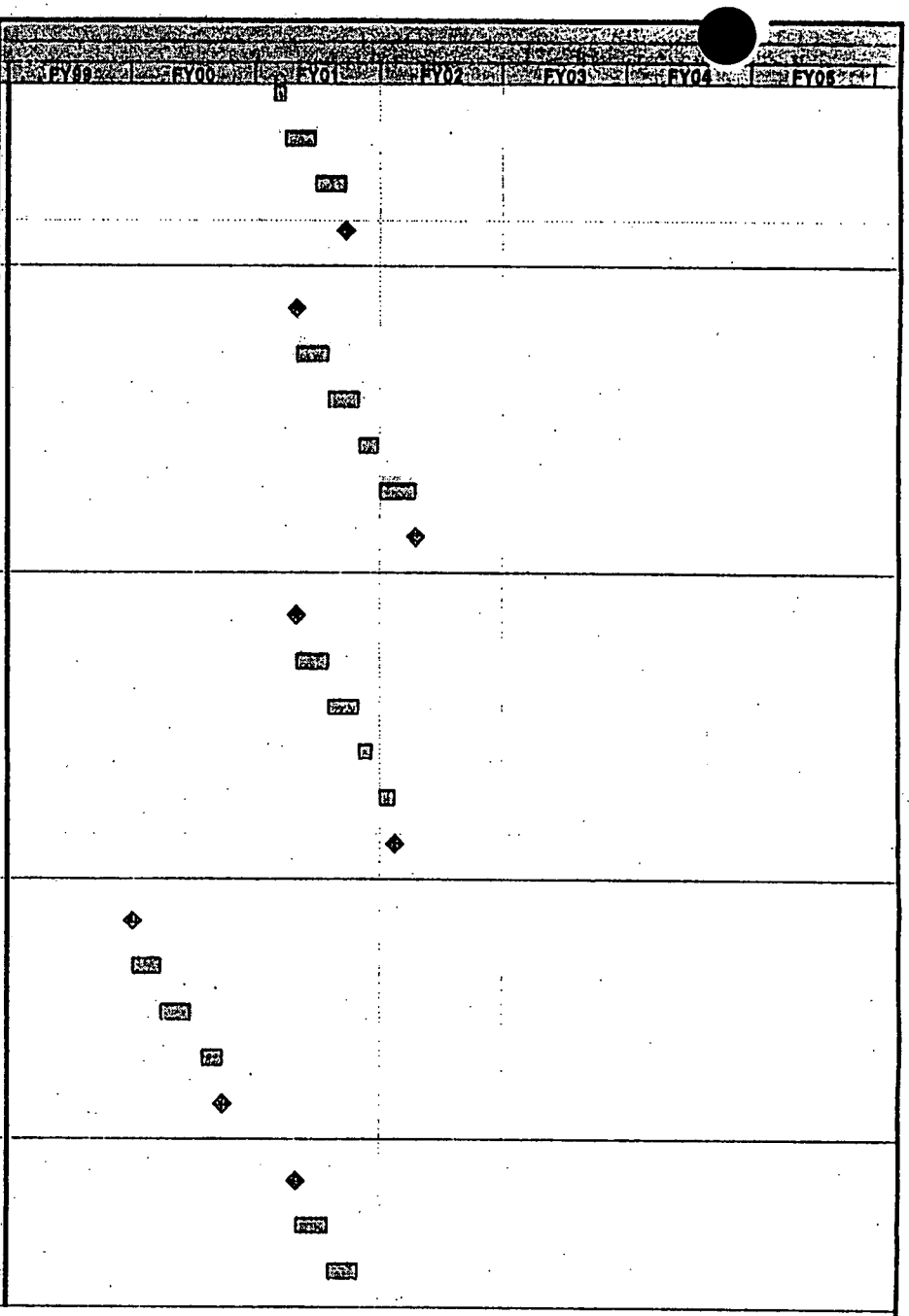
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Sheet 20 of 33

KAISER-HILL COMPANY
CLOSURE PROJECT BASELINE SCHEDULE
BUILDING 776/777 CLOSURE PROJECT

CLOSURE 2006 KAISER-HILL
ROCKY FLA... SURE PROJECT

Activity ID	Activity Description	Orig Dur	Early Start	Early Finish	Total Float
D5J5200020	B776/777 Set 52 Proj Specif Long Lead Procurem't	18	28NOV00	26DEC00	215
D5J5200030	B776/777 Set 52 Isolation and Containment	58	27DEC00	27MAR01	215
D5J5200040	B776/777 Set 52 Dismantlement Tasks	56	28MAR01	25JUN01	215
D5J5200MF1	B776/777 Complete Set 52 Decommissioning	0		25JUN01	215
1.1.06.12.04.53	B776/7-ROOM 152 VAULT, RCRA AREA 90.85				
D5J5300MS1	B776/777 Start Set 53 Decommissioning	0	01FEB01*		175
D5J5300010	B776/777 Set 53 Planning and Engineering	58	01FEB01	02MAY01	175
D5J5300020	B776/777 Set 53 Proj Specif Long Lead Procurem't	56	03MAY01	31JUL01	175
D5J5300030	B776/777 Set 53 Isolation and Containment	37	01AUG01	27SEP01	175
D5J5300040	B776/777 Set 53 Dismantlement Tasks	68	01OCT01*	17JAN02	175
D5J5300MF1	B776/777 Complete Set 53 Decommissioning	0		17JAN02	175
1.1.06.12.04.54	B776/7-ROOM 154, 154B, 155, 161B, 153 DO				
D5J5400MS1	B776/777 Start Set 54 Decommissioning	0	01FEB01*		222
D5J5400010	B776/777 Set 54 Planning and Engineering	58	01FEB01	02MAY01	222
D5J5400020	B776/777 Set 54 Proj Specif Long Lead Procurem't	56	03MAY01	31JUL01	222
D5J5400030	B776/777 Set 54 Isolation and Containment	26	01AUG01	11SEP01	222
D5J5400040	B776/777 Set 54 Dismantlement Tasks	32	01OCT01*	16NOV01	211
D5J5400MF1	B776/777 Complete Set 54 Decommissioning	0		16NOV01	211
1.1.06.12.04.55	B776/7-TANKS SRV3-5, GB0001, RCRA AREA 9				
D5J5500MS1	B776/777 Start Set 55 Decommissioning	0	04OCT99		63
D5J5500010	B776/777 Set 55 Planning and Engineering	52	04OCT99	27DEC99	63
D5J5500020	B776/777 Set 55 Proj Specif Long Lead Procurem't	56	28DEC99	23MAR00	63
D5J5500040	B776/777 Set 55 Dismantlement Tasks	40	01MAY00	30JUN00	0
D5J5500MF1	B776/777 Complete Set 55 Decommissioning	0		30JUN00	0
1.1.06.12.04.56	B776/7-ROOM 161				
D5J5600MS1	B776/777 Start Set 56 Decommissioning	0	01FEB01*		222
D5J5600010	B776/777 Set 56 Planning and Engineering	58	01FEB01	02MAY01	222
D5J5600020	B776/777 Set 56 Proj Specif Long Lead Procurem't	56	03MAY01	31JUL01	222



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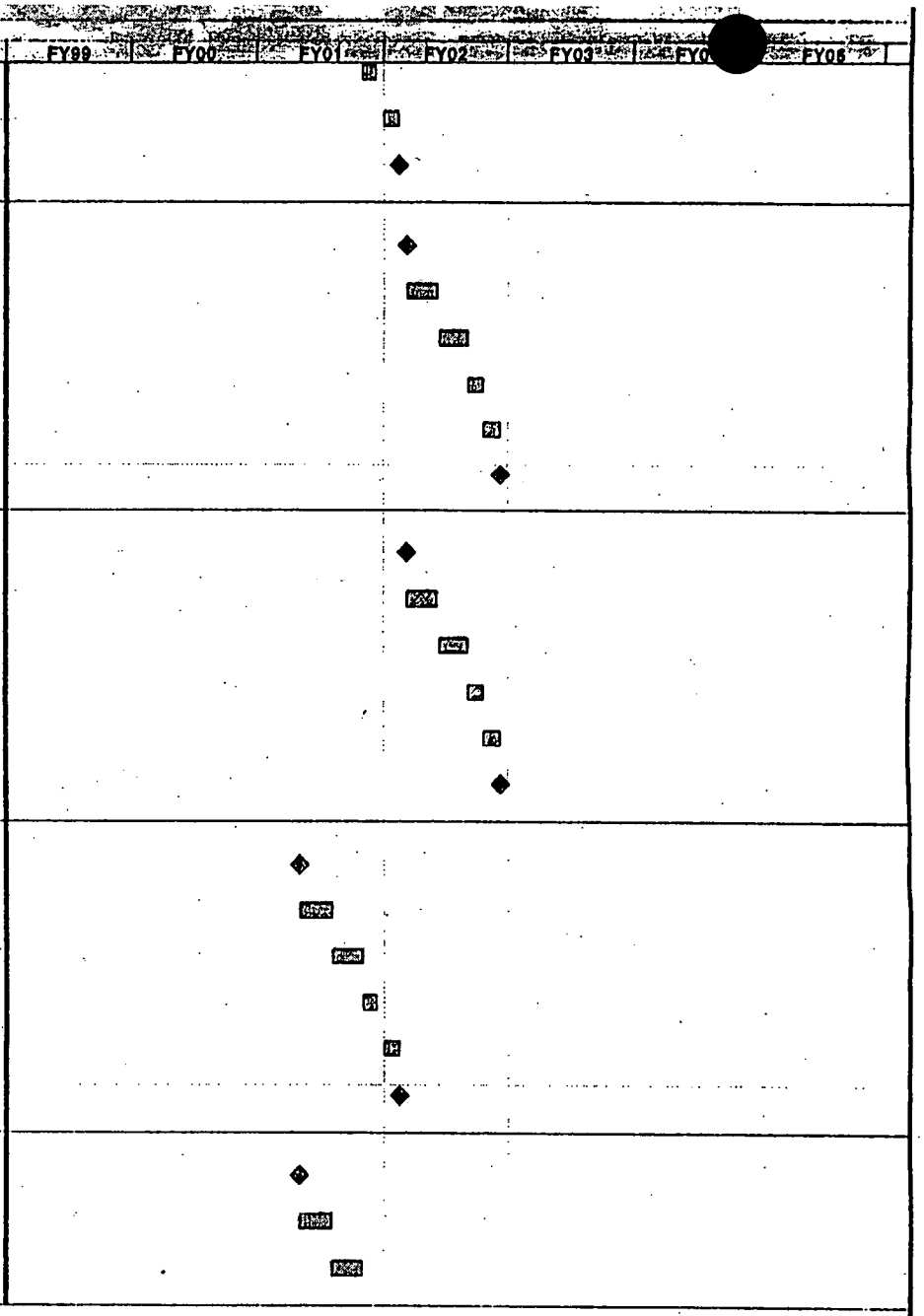
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Sheet 21 of 33

KAISER-HILL COMPANY
CLOSURE PROJECT BASELINE SCHEDULE
BUILDING 776/777 CLOSURE PROJECT

CLOSURE 2006 KAISER-HILL
ROCKY FLATS CLOSURE PROJECT

Activity ID	Activity Description	Orig Dur	Early Start	Early Finish	Total Float
D5J5600030	B776/777 Set 56 Isolation and Containment	26	01AUG01	11SEP01	222
D5J5600040	B776/777 Set 56 Dismantlement Tasks	32	01OCT01*	16NOV01	211
D5J5600MF1	B776/777 Complete Set 56 Decommissioning	0		16NOV01	211
1.1.06.12.04.57 B776/7-ROOM 158, 160, 159A, 159, 159B, 1					
D5J5700MS1	B776/777 Start Set 57 Decommissioning	0	06DEC01*		111
D5J5700010	B776/777 Set 57 Planning and Engineering	58	06DEC01	08MAR02	111
D5J5700020	B776/777 Set 57 Proj Specif Long Lead Procurem't	56	11MAR02	05JUN02	111
D5J5700030	B776/777 Set 57 Isolation and Containment	26	06JUN02	17JUL02	111
D5J5700040	B776/777 Set 57 Dismantlement Tasks	32	18JUL02	06SEP02	111
D5J5700MF1	B776/777 Complete Set 57 Decommissioning	0		06SEP02	111
1.1.06.12.04.58 B776/7-ROOMS 157, 158 AND DOCK 4					
D5J5800MS1	B776/777 Start Set 58 Decommissioning	0	06DEC01*		111
D5J5800010	B776/777 Set 58 Planning and Engineering	58	06DEC01	08MAR02	111
D5J5800020	B776/777 Set 58 Proj Specif Long Lead Procurem't	56	11MAR02	05JUN02	111
D5J5800030	B776/777 Set 58 Isolation and Containment	26	06JUN02	17JUL02	111
D5J5800040	B776/777 Set 58 Dismantlement Tasks	32	18JUL02	06SEP02	111
D5J5800MF1	B776/777 Complete Set 58 Decommissioning	0		06SEP02	111
1.1.06.12.04.59 B776/7-ROOMS 138, 139, 144, 147					
D5J5900MS1	B776/777 Start Set 59 Decommissioning	0	01FEB01*		222
D5J5900010	B776/777 Set 59 Planning and Engineering	58	01FEB01	02MAY01	222
D5J5900020	B776/777 Set 59 Proj Specif Long Lead Procurem't	56	03MAY01	31JUL01	222
D5J5900030	B776/777 Set 59 Isolation and Containment	26	01AUG01	11SEP01	222
D5J5900040	B776/777 Set 59 Dismantlement Tasks	32	01OCT01*	16NOV01	211
D5J5900MF1	B776/777 Complete Set 59 Decommissioning	0		16NOV01	211
1.1.06.12.04.60 B776/7-ROOMS 148, 148A,B,C					
D5J6000MS1	B776/777 Start Set 60 Decommissioning	0	01FEB01*		220
D5J6000010	B776/777 Set 60 Planning and Engineering	58	01FEB01	02MAY01	220
D5J6000020	B776/777 Set 60 Proj Specif Long Lead Procurem't	58	03MAY01	31JUL01	220



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Data Date 01OCT99
Run Date 11OCT99

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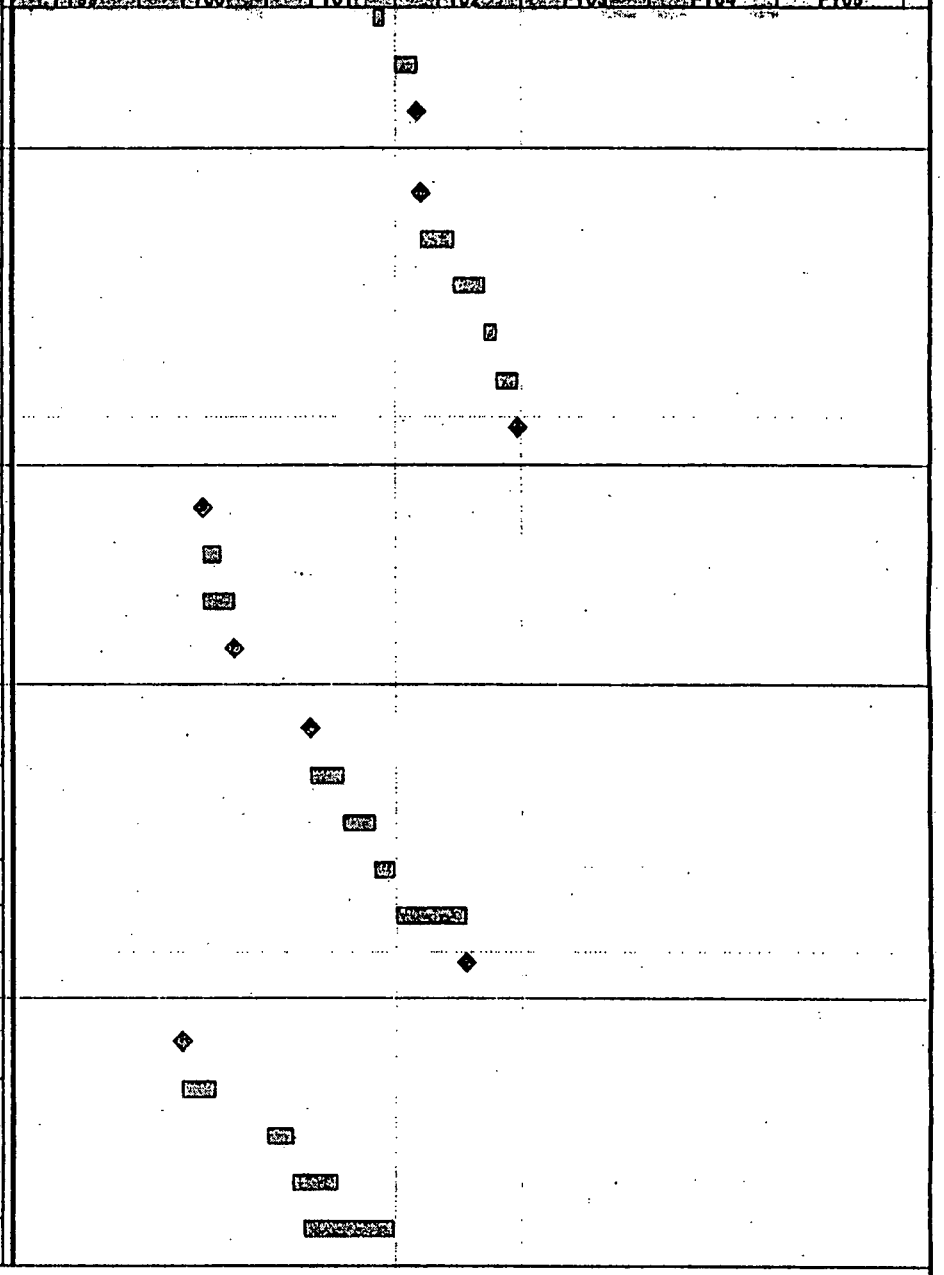
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Sheet 22 of 33

KAISER-HILL COMPANY
CLOSURE PROJECT BASELINE SCHEDULE
BUILDING 776/777 CLOSURE PROJECT

CLOSURE KAISER-HILL 2006 ROCKY FLATS CLOSURE PROJECT

Activity ID	Activity Description	Orig Dur	Early Start	Early Finish	Total Float
D5J6000030	B776/777 Set 60 Isolation and Containment	20	01AUG01	30AUG01	220
D5J6000040	B776/777 Set 60 Dismantlement Tasks	40	01OCT01*	03DEC01	203
D5J6000MF1	B776/777 Complete Set 60 Decommissioning	0		03DEC01	203
1.1.06.12.04.61	B776/7-ROOM 135 (PILOT FBI) RCRA AREA 49				
D5J6100MS1	B776/777 Start Set 61 Decommissioning	0	14DEC01*		104
D5J6100010	B776/777 Set 61 Planning and Engineering	58	14DEC01	18MAR02	104
D5J6100020	B776/777 Set 61 Proj Specif Long Lead Procurem't	56	19MAR02	13JUN02	104
D5J6100030	B776/777 Set 61 Isolation and Containment	20	14JUN02	16JUL02	104
D5J6100040	B776/777 Set 61 Dismantlement Tasks	40	17JUL02	18SEP02	104
D5J6100MF1	B776/777 Complete Set 61 Decommissioning	0		18SEP02	104
1.1.06.12.04.62	B776/7-TANKS FBI 1 ABD FBI 2 AND ASSOC R				
D5J6200MS1	B776/777 Start Set 62 Decommissioning	0	03APR00		0
D5J6200020	B776/777 Set 62 Proj Specif Long Lead Procurem't	32	03APR00	19MAY00	1
D5J6200040	B776/777 Set 62 Dismantlement Tasks	58	03APR00	30JUN00	0
D5J6200MF1	B776/777 Complete Set 62 Decommissioning	0		30JUN00	0
1.1.06.12.04.63	B776/7-ROOMS 118, 118A,B,C,D,E,F,G,H AND				
D5J6300MS1	B776/777 Start Set 63 Decommissioning	0	01FEB01*		116
D5J6300010	B776/777 Set 63 Planning and Engineering	58	01FEB01	02MAY01	116
D5J6300020	B776/777 Set 63 Proj Specif Long Lead Procurem't	56	03MAY01	31JUL01	116
D5J6300030	B776/777 Set 63 Isolation and Containment	37	01AUG01	27SEP01	116
D5J6300040	B776/777 Set 63 Dismantlement Tasks	127	01OCT01*	19APR02	116
D5J6300MF1	B776/777 Complete Set 63 Decommissioning	0		19APR02	116
1.1.06.12.04.64	B776/7-SARF (AREA 512, 513, 515, 517, 51				
D5J6400MS1	B776/777 Start Set 64 Decommissioning	0	02FEB00*		249
D5J6400010	B776/777 Set 64 Planning and Engineering	58	02FEB00	02MAY00	249
D5J6400020	B776/777 Set 64 Proj Specif Long Lead Procurem't	45	02OCT00*	12DEC00	155
D5J6400030	B776/777 Set 64 Isolation and Containment	80	13DEC00	18APR01	155
D5J6400040	B776/777 Set 64 Dismantlement Tasks	162	16JAN01	27SEP01	155



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Project Finish 23SEP05
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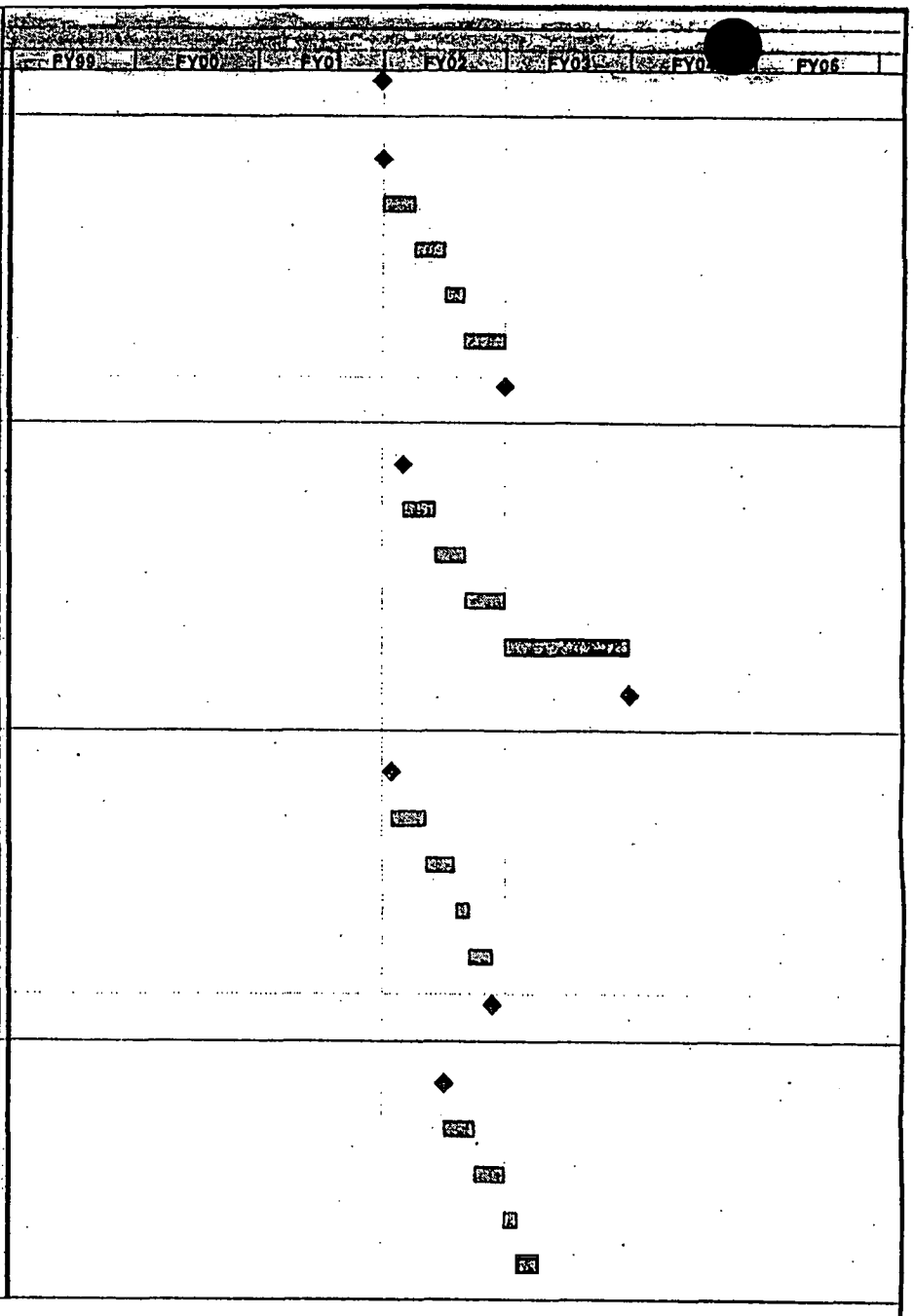
Sheet 23 of 33

KAISER-HILL COMPANY
CLOSURE PROJECT BASELINE SCHEDULE
BUILDING 776/777 CLOSURE PROJECT

CLOSURE 2006 KAISER-HILL
ROCKY FLATS CLOSURE PROJECT

812

Activity ID	Activity Description	Orig Dur	Early Start	Early Finish	Total Float
D5J8400MF1	B776/777 Complete Set 64 Decommissioning	0		27SEP01	155
1.1.06.12.04.65 B776/7-ROOM 150, 150A, 136, 127J AND 141					
D5J8500MS1	B776/777 Start Set 65 Decommissioning	0	01OCT01*		97
D5J8500010	B776/777 Set 65 Planning and Engineering	58	01OCT01	02JAN02	97
D5J8500020	B776/777 Set 65 Proj Specif Long Lead Procurem't	56	03JAN02	01APR02	97
D5J8500030	B776/777 Set 65 Isolation and Containment	37	02APR02	29MAY02	97
D5J8500040	B776/777 Set 65 Dismantlement Tasks	77	30MAY02	30SEP02	97
D5J8500MF1	B776/777 Complete Set 65 Decommissioning	0		30SEP02	97
1.1.06.12.04.66 B776/7-ASRF INCLUDING RDA,MDA,TA ,J177,J					
D5J8600MS1	B776/777 Start Set 66 Decommissioning	0	05DEC01*		0
D5J8600010	B776/777 Set 66 Planning and Engineering	58	05DEC01	07MAR02	0
D5J8600020	B776/777 Set 66 Proj Specif Long Lead Procurem't	56	08MAR02	04JUN02	0
D5J8600030	B776/777 Set 66 Isolation and Containment	73	05JUN02	30SEP02	0
D5J8600040	B776/777 Set 66 Dismantlement Tasks	228	01OCT02	30SEP03	0
D5J8600MF1	B776/777 Complete Set 66 Decommissioning	0		30SEP03	0
1.1.06.12.04.67 B776/7-ROOMS 134, 123, 137, RCRA AREA 49					
D5J8700MS1	B776/777 Start Set 67 Decommissioning	0	01NOV01*		176
D5J8700010	B776/777 Set 67 Planning and Engineering	58	01NOV01	05FEB02	176
D5J8700020	B776/777 Set 67 Proj Specif Long Lead Procurem't	57	06FEB02	03MAY02	176
D5J8700030	B776/777 Set 67 Isolation and Containment	26	06MAY02	14JUN02	176
D5J8700040	B776/777 Set 67 Dismantlement Tasks	40	17JUN02	19AUG02	176
D5J8700MF1	B776/777 Complete Set 67 Decommissioning	0		19AUG02	176
1.1.06.12.04.68 B776/7-ROOM 1, 127, 127A, 127B, RCRA ARE					
D5J8800MS1	B776/777 Start Set 68 Decommissioning	0	03APR02*		38
D5J8800010	B776/777 Set 68 Planning and Engineering	58	03APR02	02JUL02	38
D5J8800020	B776/777 Set 68 Proj Specif Long Lead Procurem't	55	03JUL02	30SEP02	38
D5J8800030	B776/777 Set 68 Isolation and Containment	26	01OCT02	07NOV02	38
D5J8800040	B776/777 Set 68 Dismantlement Tasks	33	11NOV02	06JAN03	38



Project Start 01OCT97
Project Finish 23SEP05
Data Date 01OCT99
Run Date 11OCT99

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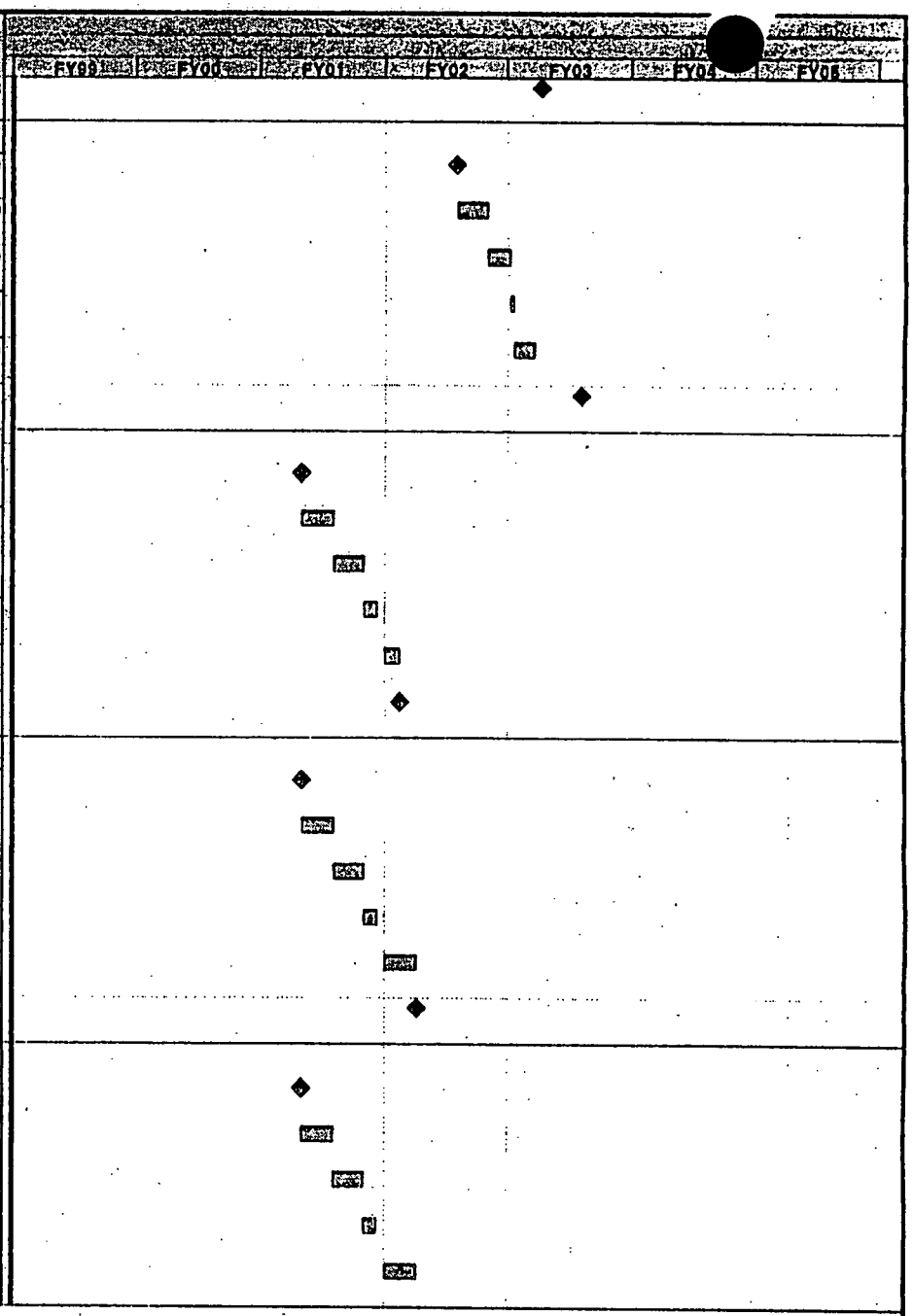
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Sheet 24 of 33

KAISER-HILL COMPANY
CLOSURE PROJECT BASELINE SCHEDULE
BUILDING 776/777 CLOSURE PROJECT

CLOSURE 2006 KAISER-HILL
ROCKY FLATS CLOSURE PROJECT

Activity ID	Activity Description	Orig Dur	Early Start	Early Finish	Total Float
D5J6800MF1	B776/777 Complete Set 68 Decommissioning	0		06JAN03	38
1.1.06.12.04.69 B776/7-TANK T1A, T1B, T2A, T2B, T3 AND A					
D5J6900MS1	B776/777 Start Set 69 Decommissioning	0	01MAY02*		179
D5J6900010	B776/777 Set 69 Planning and Engineering	58	01MAY02	31JUL02	179
D5J6900020	B776/777 Set 69 Proj Specif Long Lead Procurem't	38	01AUG02	01OCT02	179
D5J6900030	B776/777 Set 69 Isolation and Containment	10	02OCT02	16OCT02	179
D5J6900040	B776/777 Set 69 Dismantlement Tasks	38	17OCT02	17DEC02	179
D5J6900MF1	B776/777 Complete Set 69 Decommissioning	0		02MAY03	93
1.1.06.12.04.70 B776/7-ROOM 230, 230A, 231, 231A, 232, 2					
D5J7000MS1	B776/777 Start Set 70 Decommissioning	0	01FEB01*		224
D5J7000010	B776/777 Set 70 Planning and Engineering	58	01FEB01	02MAY01	224
D5J7000020	B776/777 Set 70 Proj Specif Long Lead Procurem't	56	03MAY01	31JUL01	224
D5J7000030	B776/777 Set 70 Isolation and Containment	28	01AUG01	11SEP01	224
D5J7000040	B776/777 Set 70 Dismantlement Tasks	30	01OCT01*	14NOV01	213
D5J7000MF1	B776/777 Complete Set 70 Decommissioning	0		14NOV01	213
1.1.06.12.04.71 B776/7-SUPERDRI AIR DRYING SYSTEM 2D FLO					
D5J7100MS1	B776/777 Start Set 71 Decommissioning	0	01FEB01*		196
D5J7100010	B776/777 Set 71 Planning and Engineering	58	01FEB01	02MAY01	196
D5J7100020	B776/777 Set 71 Proj Specif Long Lead Procurem't	56	03MAY01	31JUL01	196
D5J7100030	B776/777 Set 71 Isolation and Containment	28	01AUG01	11SEP01	196
D5J7100040	B776/777 Set 71 Dismantlement Tasks	58	01OCT01*	02JAN02	185
D5J7100MF1	B776/777 Complete Set 71 Decommissioning	0		02JAN02	185
1.1.06.12.04.72 B776/7-GLOVEBOX DRY AIR DRYING SYSTEM 2D					
D5J7200MS1	B776/777 Start Set 72 Decommissioning	0	01FEB01*		196
D5J7200010	B776/777 Set 72 Planning and Engineering	58	01FEB01	02MAY01	196
D5J7200020	B776/777 Set 72 Proj Specif Long Lead Procurem't	56	03MAY01	31JUL01	196
D5J7200030	B776/777 Set 72 Isolation and Containment	28	01AUG01	11SEP01	196
D5J7200040	B776/777 Set 72 Dismantlement Tasks	58	01OCT01*	02JAN02	185



Project Start 01OCT97
Project Finish 23SEP05
Data Date 01OCT99
Run Date 11OCT99

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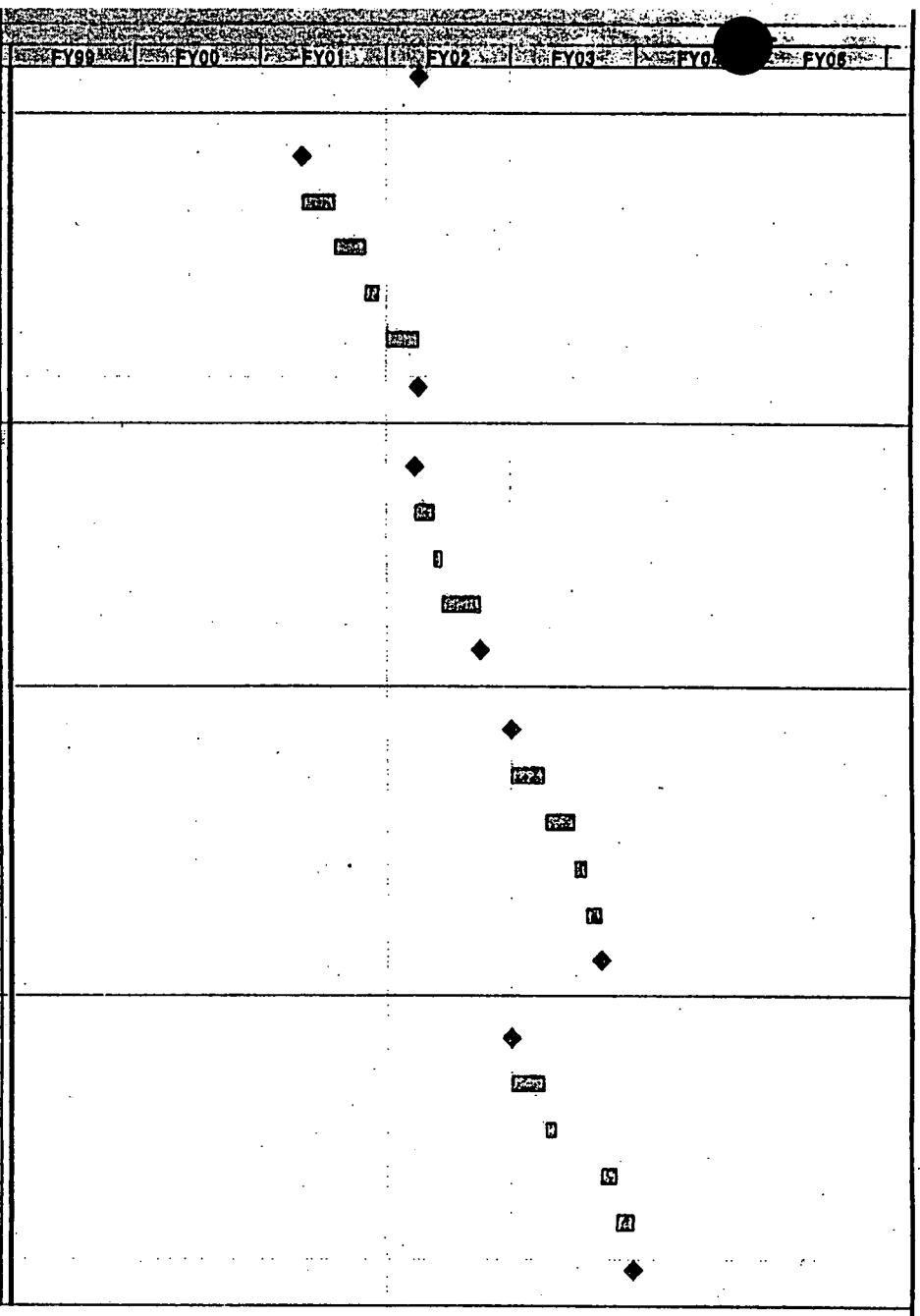
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Sheet 26 of 33

KAISER-HILL COMPANY
CLOSURE PROJECT BASELINE SCHEDULE
BUILDING 776/777 CLOSURE PROJECT

CLOSURE 2006 KAISER-HILL
ROCKY FLATS CLOSURE PROJECT

Activity ID	Activity Description	Orig Dur	Early Start	Early Finish	Total Float
D5J7200MF1	B776/777 Complete Set 72 Decommissioning	0		02JAN02	185
1.1.06.12.04.73 B776/7-REMAINDER OF 2D FLOOR EQUIPMENT N					
D5J7300MS1	B776/777 Start Set 73 Decommissioning	0	01FEB01*		196
D5J7300010	B776/777 Set 73 Planning and Engineering	58	01FEB01	02MAY01	196
D5J7300020	B776/777 Set 73 Proj Specif Long Lead Procurem't	56	03MAY01	31JUL01	196
D5J7300030	B776/777 Set 73 Isolation and Containment	28	01AUG01	11SEP01	196
D5J7300040	B776/777 Set 73 Dismantlement Tasks	58	01OCT01*	02JAN02	185
D5J7300MF1	B776/777 Complete Set 73 Decommissioning	0		02JAN02	185
1.1.06.12.04.74 B776/7-BUILDING 702, 712, AND 712A					
D5J7400MS1	B776/777 Start Set 74 Decommissioning	0	24DEC01*		397
D5J7400010	B776/777 Set 74 Planning and Engineering	35	24DEC01	18FEB02	397
D5J7400030	B776/777 Set 74 Isolation and Containment	15	19FEB02	12MAR02	397
D5J7400040	B776/777 Set 74 Dismantlement Tasks	71	13MAR02	02JUL02	397
D5J7400MF1	B776/777 Complete Set 74 Decommissioning	0		02JUL02	397
1.1.06.12.04.75 B776/7-BUILDING 781					
D5J7500MS1	B776/777 Start Set 75 Decommissioning	0	01OCT02*		122
D5J7500010	B776/777 Set 75 Planning and Engineering	58	01OCT02	02JAN03	122
D5J7500020	B776/777 Set 75 Proj Specif Long Lead Procurem't	58	06JAN03	01APR03	122
D5J7500030	B776/777 Set 75 Isolation and Containment	20	02APR03	01MAY03	122
D5J7500040	B776/777 Set 75 Dismantlement Tasks	30	02MAY03	18JUN03	122
D5J7500MF1	B776/777 Complete Set 75 Decommissioning	0		18JUN03	122
1.1.06.12.04.76 B776/7-BUILDING 701					
D5J7600MS1	B776/777 Start Set 76 Decommissioning	0	01OCT02*		208
D5J7600010	B776/777 Set 76 Planning and Engineering	58	01OCT02	02JAN03	208
D5J7600020	B776/777 Set 76 Proj Specif Long Lead Procurem't	20	06JAN03	04FEB03	208
D5J7600030	B776/777 Set 76 Isolation and Containment	26	19JUN03	30JUL03	122
D5J7600040	B776/777 Set 76 Dismantlement Tasks	30	31JUL03	17SEP03	122
D5J7600MF1	B776/777 Complete Set 76 Decommissioning	0		17SEP03	122



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Project Finish 23SEP05
Data Date 01OCT99
Run Date 11OCT99

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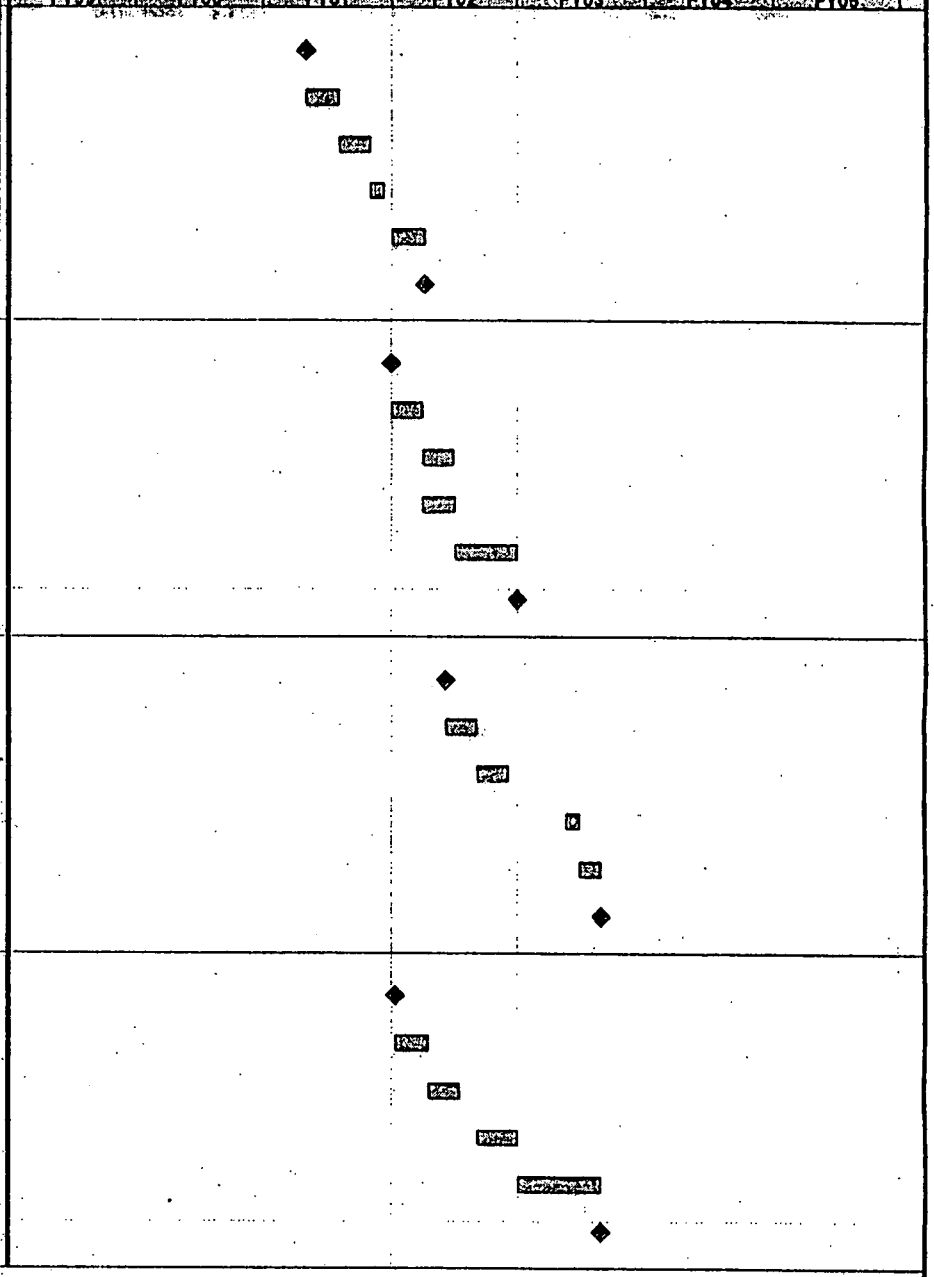
Sheet 26 of 33

KAISER-HILL COMPANY
CLOSURE PROJECT BASELINE SCHEDULE
BUILDING 776/777 CLOSURE PROJECT

CLOSURE KAISER-HILL 2006 ROCKY FLATS CLOSURE PROJECT

122

Activity ID	Activity Description	Orig Dur	Early Start	Early Finish	Total Float
1.1.08.12.04.77 B776/7-CHILLERS #2 AND #3					
D5J7700MS1	B776/777 Start Set 77 Decommissioning	0	01FEB01*		196
D5J7700010	B776/777 Set 77 Planning and Engineering	58	01FEB01	02MAY01	196
D5J7700020	B776/777 Set 77 Proj Specif Long Lead Procurem't	58	03MAY01	31JUL01	196
D5J7700030	B776/777 Set 77 Isolation and Containment	28	01AUG01	11SEP01	196
D5J7700040	B776/777 Set 77 Dismantlement Tasks	58	01OCT01*	02JAN02	185
D5J7700MF1	B776/777 Complete Set 77 Decommissioning	0		02JAN02	185
1.1.08.12.04.78 B776/7-MISC. UNUSED PIPE					
D5J7800MS1	B776/777 Start Set 78 Decommissioning	0	01OCT01*		191
D5J7800010	B776/777 Set 78 Planning and Engineering	57	01OCT01	31DEC01	191
D5J7800020	B776/777 Set 78 Proj Specif Long Lead Procurem't	58	02JAN02	28MAR02	285
D5J7800030	B776/777 Set 78 Isolation and Containment	60	02JAN02	04APR02	191
D5J7800040	B776/777 Set 78 Dismantlement Tasks	110	05APR02	26SEP02	191
D5J7800MF1	B776/777 Complete Set 78 Decommissioning	0		26SEP02	191
1.1.08.12.04.79 B776/7-CRITICALITY SYSTEMS					
D5J7900MS1	B776/777 Start Set 79 Decommissioning	0	05MAR02*		183
D5J7900010	B776/777 Set 79 Planning and Engineering	58	05MAR02	03JUN02	183
D5J7900020	B776/777 Set 79 Proj Specif Long Lead Procurem't	58	04JUN02	29AUG02	183
D5J7900030	B776/777 Set 79 Isolation and Containment	28	17FEB03	26MAR03	80
D5J7900040	B776/777 Set 79 Dismantlement Tasks	37	27MAR03	22MAY03	80
D5J7900MF1	B776/777 Complete Set 79 Decommissioning	0		22MAY03	80
1.1.08.12.04.80 B776/7-ZONE 1					
D5J8000MS1	B776/777 Start Set 80 Decommissioning	0	15OCT01*		34
D5J8000010	B776/777 Set 80 Planning and Engineering	58	15OCT01	16JAN02	34
D5J8000020	B776/777 Set 80 Proj Specif Long Lead Procurem't	58	17JAN02	15APR02	34
D5J8000030	B776/777 Set 80 Isolation and Containment	73	05JUN02	30SEP02	2
D5J8000040	B776/777 Set 80 Dismantlement Tasks	148	01OCT02	22MAY03	2
D5J8000MF1	B776/777 Complete Set 80 Decommissioning	0		22MAY03	2



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Project Finish 23SEP05
Data Date 01OCT99
Run Date 11OCT99

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Sheet 27 of 33

KAISER-HILL COMPANY
CLOSURE PROJECT BASELINE SCHEDULE
BUILDING 776/777 CLOSURE PROJECT

CLOSURE KAISER-HILL 2006 ROCKY FLATS CLOSURE PROJECT

222

Activity ID	Activity Description	Orig Dur	Early Start	Early Finish	Total Float
D5JMILE405	B776/777 Zone 1 Ventilation Shutdown	0		22MAY03	3
1.1.06.12.04.81 B776/7-CARGO3					
D5J8100MS1	B776/777 Start Set 81 Decommissioning	0	15APR02*		172
D5J8100010	B776/777 Set 81 Planning and Engineering	58	15APR02	15JUL02	172
D5J8100020	B776/777 Set 81 Proj Specif Long Lead Procurem't	48	16JUL02	30SEP02	172
D5J8100030	B776/777 Set 81 Isolation and Containment	28	18FEB03*	27MAR03	88
D5J8100040	B776/777 Set 81 Dismantlement Tasks	30	31MAR03	14MAY03	88
D5J8100MF1	B776/777 Complete Set 81 Decommissioning	0		14MAY03	88
1.1.06.12.04.82 B776/7-BUILDING SHELL					
D5J8200MS1	B776/777 Start Set 82 Decommissioning	0	25OCT01*		0
D5JA100002	Perform Final Building Surveys for B776/777	115	25OCT01	29APR02	0
D5JA100005	Prep Procurem't Pkg for Demo Plan Preparation	21	17JAN02	19FEB02	6
D5JA100MS1	Issue Procurem't Pkg RFP for B776/777 Demo Plan	0		19FEB02	6
D5JA100010	Vendors Respond to RFP for Demolition Plan Prep	38	20FEB02	18APR02	6
D5JA100MS2	Award Subcontract for Demolition Plan Preparat'n	0		18APR02	6
D5JA100003	Prep/Review/Approve B776/7Demolition Survey Plan	113	30APR02	24OCT02	0
D5JA100015	Develop B776/777 Demolition Plan	171	30APR02	29JAN03	0
D5JA100MS3	Submit B776/777 Demolition Plan to DOE	0		29JAN03	0
D5JA100020	DOE Review and Incorp Comments into Demo Plan	19	30JAN03	27FEB03	0
D5JA100MS4	Submit B776/777 Demo Plan to Regulators (DOE)	0		27FEB03	0
D5JA100025	Regulators Review/Comment on B776/777 Demo Plan	39	03MAR03	30APR03	0
D5JA100035	Purchase and Install B776/777 Containment System	95	03MAR03	29JUL03	0
D5JA100MS5	Receive Regulators Comments- B776/777 Demo Plan	0		30APR03	0
D5JA100022	Decontaminate Second Floor B776/777	57	30APR03	29JUL03	39
D5JA100030	Incorporate Regulators Comments into Demo Plan	58	01MAY03	29JUL03	0
D5JA100032	Prep/Issue Demo RFP, Receive/Review Submittals	58	01MAY03	29JUL03	0
D5X71357	Cmpl B776/7 PWTSN Flow/Transfer Utility Water	0		02MAY03	93
D5JA100MS6	B776/777 Demolition Plan Approved	0		29JUL03	0

FY99 FY00 FY01 FY02 FY03 FY04 FY05

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Run Date 11OCT99

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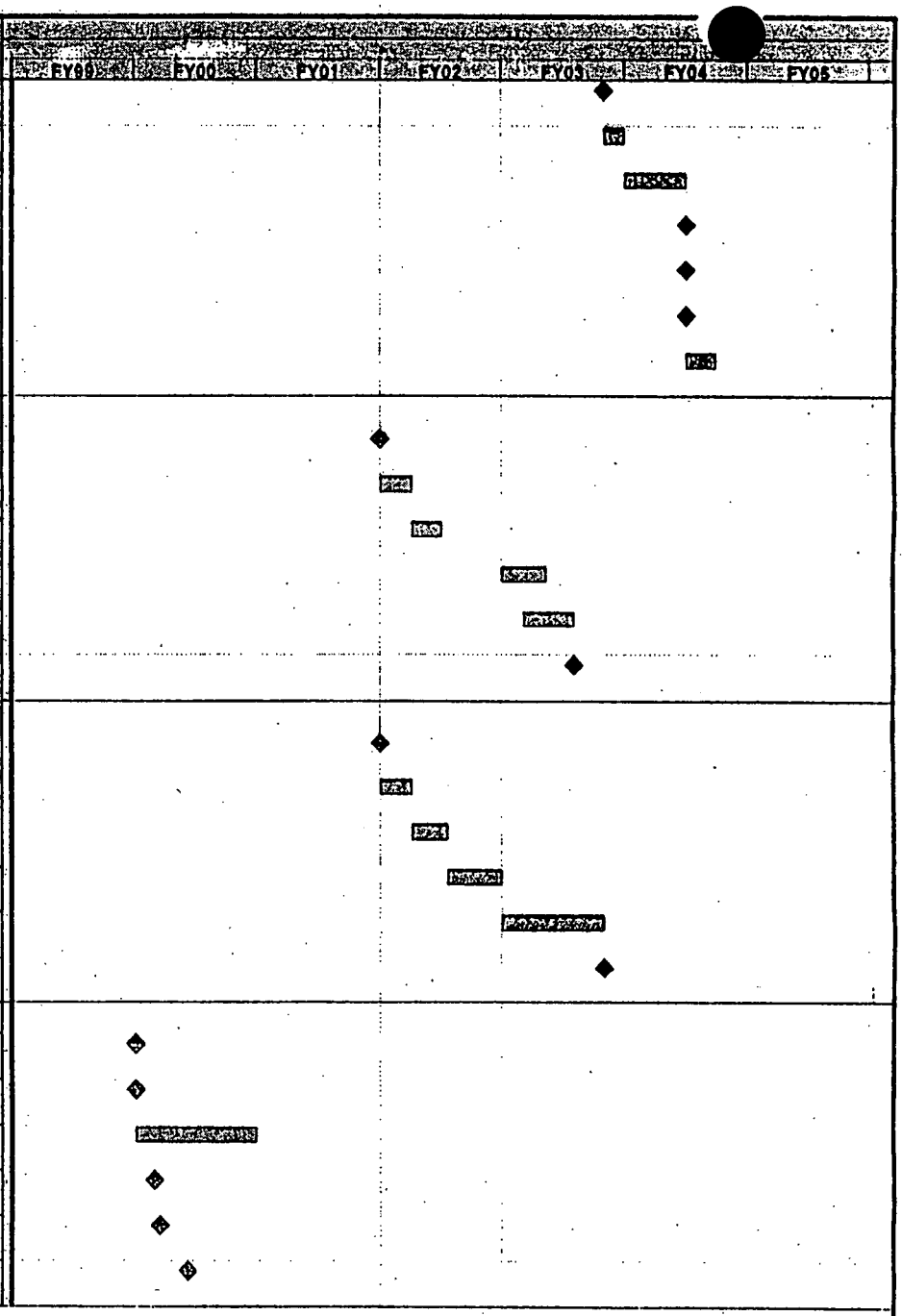
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Sheet 28 of 33

KAISER-HILL COMPANY
CLOSURE PROJECT BASELINE SCHEDULE
BUILDING 776/777 CLOSURE PROJECT

CLOSURE KAISER-HILL
ROCKY FLATS CLOSURE PROJECT

Activity ID	Activity Description	Orig Dur	Early Start	Early Finish	Total Float
D5JA100MS7	Award B776/777 Demolition Contract	0		29JUL03	0
D5JA100036	Mobilize and Prepare for B776/777 Demolition	39	30JUL03	30SEP03	0
D5JA100040	Demolish B776/777 and Out Buildings	114	01OCT03	31MAR04	0
D5JMILE414	Complete B776/777 Demolition	0		31MAR04	0
D5J4006000	WAD 35 B776/777 - Finish Decommissioning (MR8)	0		31MAR04	511
D5J4006M50	D&D Complete B776/7	0		31MAR04	511
D5J8306DD3	B776/777 Prep/Rev/Issue Final Completion Report	55	01APR04	25JUN04	570
1.1.06.12.04.83	B776/7-ZONE AND BUILDING UTILITIES				
D5J8300MS1	B776/777 Start Set 83 Decommissioning	0	01OCT01*		129
D5J8300010	B776/777 Set 83 Planning and Engineering	58	01OCT01	02JAN02	129
D5J8300020	B776/777 Set 83 Proj Specif Long Lead Procurem't	56	03JAN02	01APR02	129
D5J8300030	B776/777 Set 83 Isolation and Containment	82	01OCT02*	10FEB03	15
D5J8300040	B776/777 Set 83 Dismantlement Tasks	95	04DEC02	02MAY03	15
D5J8300MF1	B776/777 Complete Set 83 Decommissioning	0		02MAY03	15
1.1.06.12.04.84	B776/777 SET 84-BURIED EQMT & TAM FLOORS				
D5J8400MS1	B776/777 Start Set 84 Decommissioning	0	01OCT01*		0
D5J8400010	B776/777 Set 84 Planning and Engineering	58	01OCT01	02JAN02	0
D5J8400020	B776/777 Set 84 Proj Specif Long Lead Procurem't	68	03JAN02	18APR02	0
D5J8400040	B776/777 Set 84 Dismantlement Tasks (1st 1/2)	102	19APR02	30SEP02	0
D5J8400045	B776/777 Set 84 Dismantlement Tasks (2d 1/2)	189	01OCT02	29JUL03	0
D5J8400MF1	B776/777 Complete Set 84 Decommissioning	0		29JUL03	0
1.1.06.12.04.AA	B776/7-DECOM PLNG & PROJECT MGMT				
D5J0001000	Initiate B776/777 Decommissioning	0	04OCT99		0
D5JDELE172	B776/777 Start D&D	0	04OCT99*		0
D5J00AA010	FY-00 B776/777 Decommissioning Project Mgmt	227	04OCT99	28SEP00	1
D5SBIRDMS4	B776/777 Hard Side SRU BIO Changes Complete	0		30NOV99	0
D5SBIRDMS2	B776/777 Hard Side SRU Operational Room 430	0		15DEC99	0
D5STECHMS1	B776/777 Technology Demo BIO Changes Complete	0		09MAR00	1



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Run Date 11OCT99

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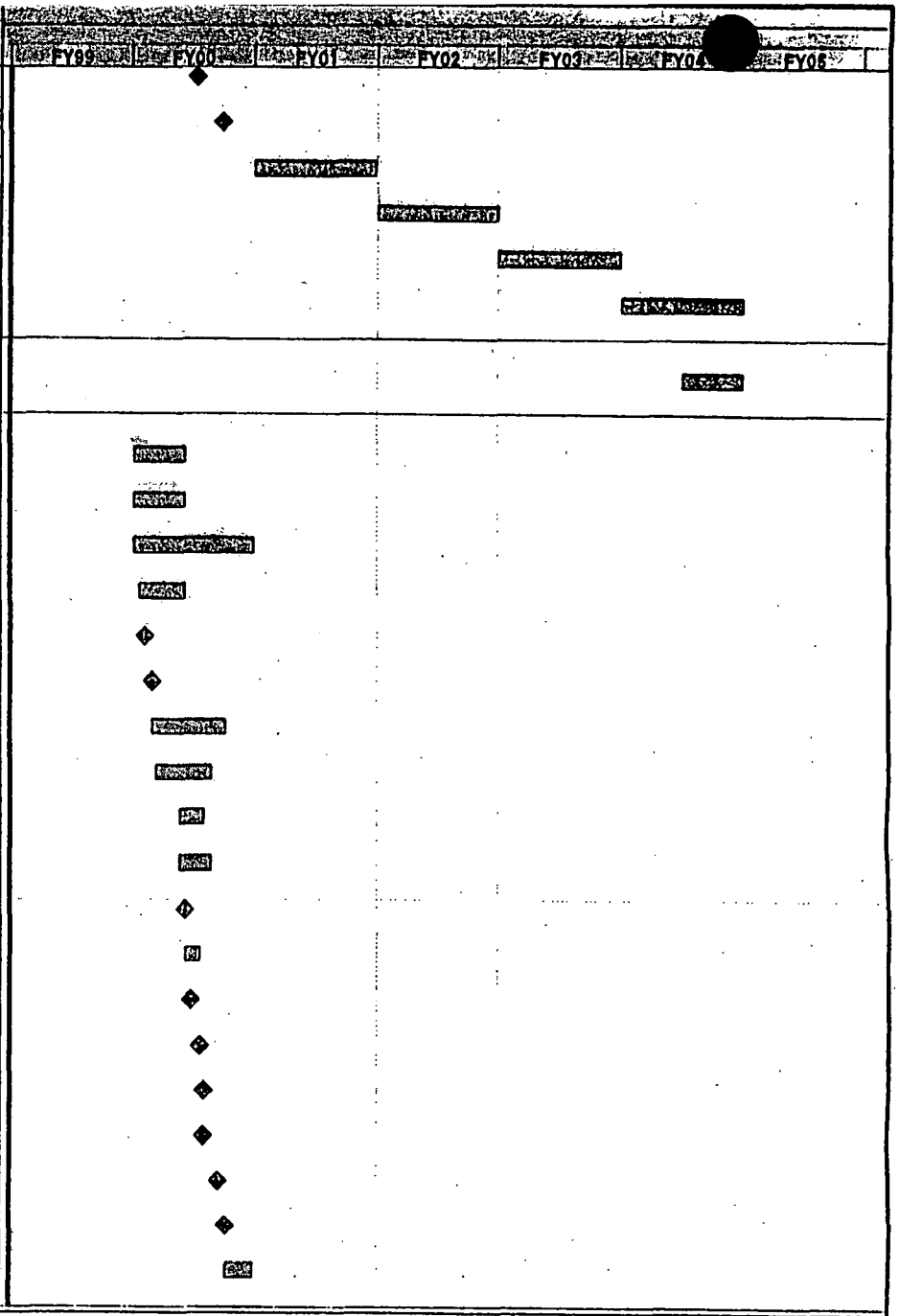
Sheet 29 of 33

KAISER-HILL COMPANY
CLOSURE PROJECT BASELINE SCHEDULE
BUILDING 776/777 CLOSURE PROJECT

CLOSURE KAISER-HILL

ROCKY FLATS CLOSURE PROJECT

Activity ID	Activity Description	Orig Dur	Early Start	Early Finish	Total Flt
D5STECHMS[redacted]	776/777 Technology Demonstration Complete	0		10APR00	1
D5J0SUPERB	99/00-SS07.5b Complete	0		30JUN00	0
D5J00AA110	FY-01 B776/777 Decommissioning Project Mgmt	227	02OCT00	27SEP01	1
D5J00AA210	FY-02 B776/777 Decommissioning Project Mgmt	228	01OCT01	30SEP02	1
D5J00AA310	FY-03 B776/777 Decommissioning Project Mgmt	228	01OCT02	30SEP03	1
D5J00AA410	FY-04 B776/777 Decommissioning Project Mgmt	228	01OCT03	29SEP04	1
1.1.06.12.04.CA	B776/777 CLUSTER CLOSURE ACTIVITIES				
D5K5007CC0	WAD 35 B778/777 - Cluster Closure Activities	114	01APR04	29SEP04	511
1.1.06.12.04.SR.01	B776/777 ROBOTIC SIZE REDUCTION SYSTEM				
D5RRSRU110	Remote Robotic Size Reduction Facility Modificat	97	04OCT99*	07MAR00	10
D5RRSRU120	Remote Robotic Size Reduction Phase I - Design	99	04OCT99*	09MAR00	0
D5RRSRU100	Remote Robotic Size Reduction Project Management	227	04OCT99*	28SEP00	1
D5RRSRU130	R-Robotic SRU Phase II - Demonstration	87	21OCT99*	09MAR00	0
D5RRSRUMS1	Remote Robotic SRU - Vendor Submit 90% Design Pk	0		05NOV99	0
D5RRSRUMS2	Remote Robotic SRU - Final Design Approved	0		29NOV99	0
D5RRSRU180	Remote Robotic SRU Phase IV Startup in B776/777	141	30NOV99	11JUL00	0
D5RRSRU160	Remote Robotic SRU - RFETS Procedure Development	105	14DEC99	25MAY00	0
D5RRSRU150	Remote Robotic SRU - BIO Update	43	24FEB00	01MAY00	0
D5RRSRU170	Remote Robotic SRU - RFETS Training	60	24FEB00	25MAY00	0
D5RRSRUMS3	Remote Robotic SRU - Complete Offsite Demonstrat	0		09MAR00	0
D5RRSRU140	Remote Robotic SRU Phase III RFETS Installation	28	10MAR00	21APR00	0
D5RRSRUMS4	Remote Robotic SRU - Unit Received at RFETS	0		24MAR00	0
D5RRSRUMS5	Remote Robotic SRU - Comp System Installation	0		21APR00	0
D5RRSRUMS9	Remote Robotic SRU - BIO Update Complete	0		01MAY00	0
D5RRSRUMS6	Remote Robotic SRU - Complete Cold Startup	0		05MAY00	0
D5RRSRUMS7	Remote Robotic SRU - Complete Hot Startup	0		19JUN00	0
D5RRSRUMS8	Remote Robotic SRU - Begin Full Scale Operations	0		11JUL00	0
D5RRSRU190	Remote Robotic SRU - Final Pymt	51	12JUL00	28SEP00	0



Project Start 01OCT97
Project Finish 23SEP05
Data Date 01OCT98
Run Date 11OCT98

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Sheet 30 of 33

KAISER-HILL COMPANY
CLOSURE PROJECT BASELINE SCHEDULE
BUILDING 776/777 CLOSURE PROJECT

CLOSURE 2006 KAISER-HILL
ROCKY FLA[redacted]SURE PROJECT

522

Activity ID	Activity Description	Orig Dur	Early Start	Early Finish	Total Float
D5RRSRU200	FY01 Remote Robotic Size Reduction Maintenance	227	02OCT00	27SEP01	1
D5RRSRU300	FY02 Remote Robotic Size Reduction Maintenance	228	01OCT01	30SEP02	1
D5RRSRU400	FY03 Remote Robotic Size Reduction Maintenance	228	01OCT02	30SEP03	1
1.1.06.12.04.SR.02	B776/777 HARD SIDED SIZE REDUCTION SYSTE				
D5SBIRD050	B776/777 Hard Side SRU - Preliminary Engineering	19	01SEP99*	30SEP99	0
D5SBIRD140	B776/777 Hard Side SRU Procure/Install	36	04OCT99	30NOV99	0
D5SBIRD145	B776/777 Hard Side SRU BIO Update	36	04OCT99	30NOV99	0
D5SBIRD150	B776/777 Hard Side SRU Procedure Development	36	04OCT99	30NOV99	0
D5SBIRD100	B776/777 Hard Side SRU Project Mgmt	45	04OCT99	14DEC99	0
D5SBIRDMS1	B776/777 Hard Side SRU - Unit Received at RFETS	0		18OCT99	0
D5SBIRD130	B776/777 Hard Side SRU Facility Modifications	26	19OCT99	30NOV99	0
D5SBIRD160	B776/777 Hard Side SRU Training	26	19OCT99	30NOV99	0
D5SBIRDMS3	B776/777 Hard Side SRU Unit Installat'n Complete	0		30NOV99	0
D5SBIRD170	B776/777 Hard Side SRU Readiness Demonstration	10	01DEC99	15DEC99	0
1.1.06.12.04.SR.03	B776/777 D&D TECHNOLOGY DEMONSTRATIONS				
D5STECH140	B776/777 Technology Demo Procedure Development	50	14DEC99	01MAR00	1
D5STECH100	B776/777 Technology Demo SRU Project Mgmt	52	14DEC99	06MAR00	1
D5STECH130	B776/777 Technology Demonstration BIO Update	55	14DEC99	09MAR00	1
D5STECH120	B776/777 Technology Demonstration Procurement	40	21DEC99	23FEB00	1
D5STECH110	B776/777 Facility Mods for Technology Demo	58	21DEC99	22MAR00	1
D5STECH150	B776/777 Technology Demonstration Training	13	02MAR00	22MAR00	1
D5STECH160	B776/777 Technology Demonstration Readiness Demo	12	23MAR00	10APR00	1
1.1.06.12.05	776/777 CLUSTER CLOSURE				
D5FDELE560	Complete B776/777 Closure	0		29SEP04	511
1.1.06.12.06	REMEDIATE/CONTAIN 776/777 CLUSTER HIGH R				
D5RFS04776	VUL RFSW77604 Fire protection program weakness	0		28FEB00	405
D5F2042801	VUL RFP776A BREACHED PITS IN VAULT	0		28SEP01	1
D5RF776001	VUL RF776/77701 plastic contact w/ Pu cont HEU M	0		28SEP01	1

FY99 FY00 FY01 FY02 FY03 FY04 FY05

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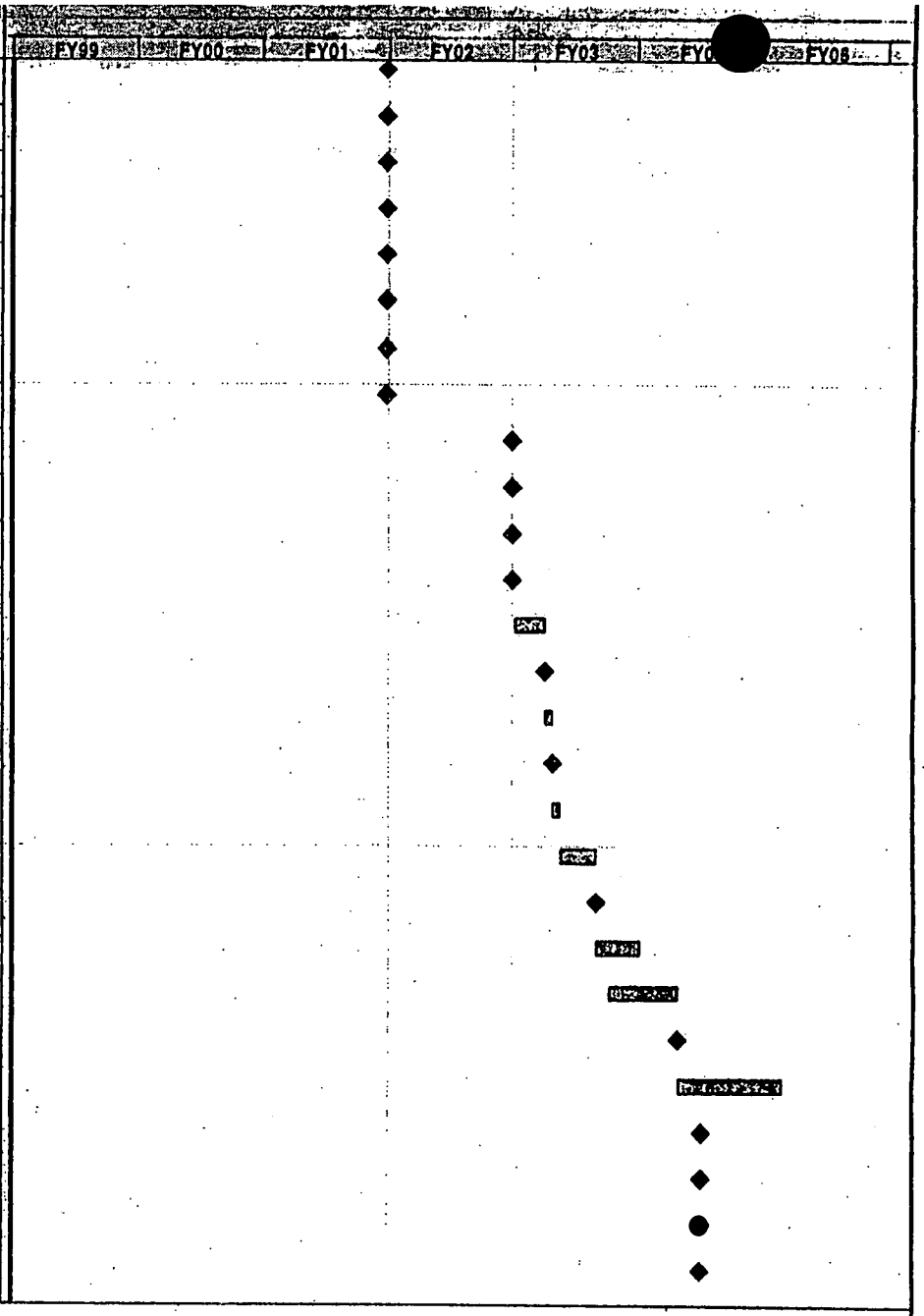
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Sheet 31 of 33

KAISER-HILL COMPANY
CLOSURE PROJECT BASELINE SCHEDULE
BUILDING 776/777 CLOSURE PROJECT

CLOSURE 2006 KAISER-HILL
ROCKY FLATS CLEANUP PROJECT

Activity ID	Activity Description	Orig Dur	Early Start	Early Finish	Total Float
D5RF776002	VUL RF776/77702 AB Doc not include 776 Hazard/Op	0		28SEP01	1
D5RFP77603	VUL RFP776/77703 Storage Pu solution in plastic	0		28SEP01	1
D5RFP77613	VUL RFPSW776SI3 Inventory delta due to holdup	0		28SEP01	1
D5RFS02776	VUL RFSW77602 Crit safety inst weakness/vul	0		28SEP01	1
D5RFS03776	VUL RFSW77603 Layoffs/loss of exp personnel	0		28SEP01	1
D5RFS05776	VUL RFSW77605 Lack cont fire water runoff cont	0		28SEP01	1
D5RFS07776	VUL RFSW77607 Crit safe controls for mtrl	0		28SEP01	1
D5RFS08776	VUL RFSW77608 Emp aware fissle mtrl presence	0		28SEP01	1
D5MFP0776H	VUL RFPSW776H RES WASTE DRUMS BLOCKING EGRES	0		30SEP02	1,551
D5MFP0776N	VUL RFPSW776N RES WASTE DRUMS IN HALL/WORK A	0		30SEP02	1,551
D5MFP77606	VUL RFP77606 BREACH OF MATL. STORAGE CONTAINERS	0		30SEP02	1,551
D5MFP77607	VUL RFP77607 MATL. FIRE IN RES. STOR. CONTAINERS	0		30SEP02	1,551
D5ER673100	SAP Preparation - IHSS Group 700-3	60	03OCT02	30DEC02	0
D5ER673110	SAP Approval by Agencies - IHSS Group 700-3	0		30DEC02	0
D5ER673120	Procurement and Field Prep - IHSS Group 700-3	15	31DEC02	21JAN03	0
D5ER673130	Contract Award - IHSS Group 700-3	0		21JAN03	0
D5ER673140	Readiness Assessment - IHSS Group 700-3	15	22JAN03	11FEB03	0
D5ER673150	Field Sampling, Lab Analysis - IHSS Group 700-3	75	12FEB03	28MAY03	0
D5ER673160	Data Collection Completed - IHSS Group 700-3	0		28MAY03	0
D5ER673170	Prepare Summary/NFA - IHSS Group 700-3	90	29MAY03	03OCT03	0
D5ER673180	Prepare Decision Document - IHSS 700-3	135	11JUL03	22JAN04	0
D5ER673200	Decision Document Approval - IHSS Group 700-3	0		22JAN04	0
D5ER673210	Procurement and Field Prep - IHSS Grouping 700-3	214	23JAN04	22NOV04	0
D5RFPS776A	VUL RFPSW776A Emp exposure alarm sys/high noise	0		31MAR04	1,003
D5RFPS776D	VUL RFPSW776D Rubber Gloves/plastic bags on GBs	0		31MAR04	1,003
D5RFPS776E	VUL RFPSW776E Contamination from out use equip	0		31MAR04	1,003
D5RFPS776F	VUL RFPSW776F Age/limited MC&A counting equip	0		31MAR04	1,003



Project Start 01OCT97
Project Finish 23SEP05
Data Date 01OCT99
Run Date 11OCT99

Early Bar
Progress Bar
Critical Activity

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BL05:W035

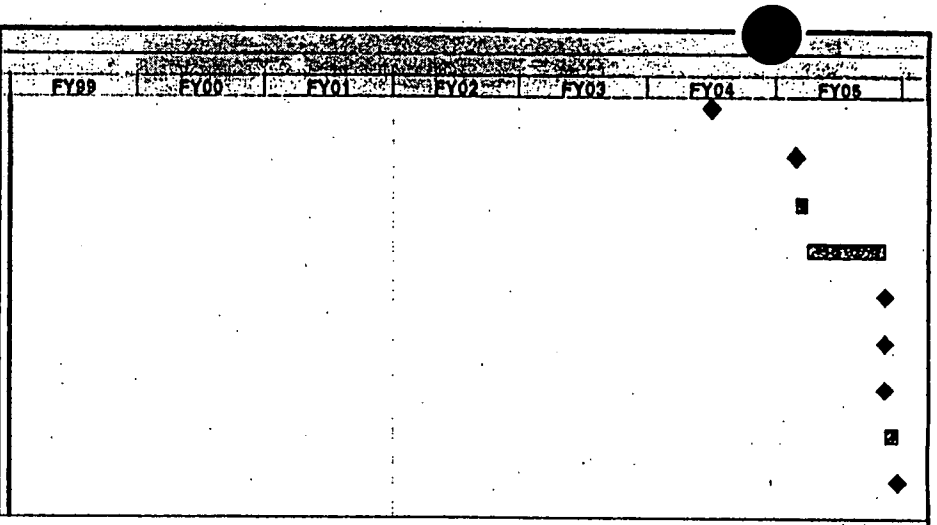
Sheet 32 of 33

KAISER-HILL COMPANY
CLOSURE PROJECT BASELINE SCHEDULE
BUILDING 776/777 CLOSURE PROJECT

CLOSURE 2006 KAISER-HILL
ROCKY FLATS CLOSURE PROJECT

L22

Activity ID	Activity Description	Orig Dur	Early Start	Early Finish	Float
D5RFPS776Q	VUL RFPSW776Q Emp exposure due Crit/un-ID source	0		31MAR04	1,003
D5ER673220	Contract Award Action - IHSS Group 700-3	0		22NOV04	0
D5ER673240	Readiness Assessment - IHSS Group 700-3	22	23NOV04	27DEC04	0
D5ER673250	Remedial Action - IHSS Grouping 700-3	160	28DEC04	11AUG05	0
D5LMILE435	B776/777 Cluster Complete IHSS/UBC Remediation	0		11AUG05	0
D5ENDPBD19	Complete PBD 019 - B776/777 Cluster Closure Proj	0		11AUG05	350
D5ENDWAD35	Complete WAD35 - B776/777 Cluster Closure Proj	0		11AUG05	350
D5ER673270	Prepare Closeout Report - IHSS Group 700-3	30	12AUG05	23SEP05	280
D5ER673280	Closeout Rpt Submitted - IHSS Group 700-3	0		23SEP05	280



Project Start 01OCT97
Project Finish 23SEP05
Data Date 01OCT98
Run Date 11OCT99

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Early Bar
Progress Bar
Critical Activity

DL05:W036

Sheet 33 of 33

KAISER-HILL COMPANY
CLOSURE PROJECT BASELINE SCHEDULE
BUILDING 776/777 CLOSURE PROJECT

CLOSURE 2006 KAISER-HILL
ROCKY FLATS CLOSURE PROJECT

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Appendix E

Weekly Inspection Log for Waste Chemical Exclusion Areas (pages 229-234)

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WASTE CHEMICAL EXCLUSION AREAS
WEEKLY INSPECTION LOG

776/ 777 BUILDINGS WITHIN THE 777 CLUSTER

BLDG	LOCATION	DESCRIPTION	DATE	INSPECTOR	FINDINGS/ CORRECTIVE ACTIONS	SIGNATURE
776	**R134 TA & RDA (West)**	High Contamination Areas [Chemicals present]				
776	R135 FBI Gloveboxes	Inoperable Gloveboxes [Unknown if chemicals are present]				
776	R146	High Contamination Area [Unknown if chemicals are present]				
776	R146 A	High Contamination Area [Unknown if chemicals are present]				
776	R146 C	High Contamination Area [Unknown if chemicals are present]				
777	R125 GB550*160	Inoperable Glovebox [Chemicals present]				
777	**R430 GB207*758**	Inoperable Glovebox [Chemicals present]				
777	R430 GB399	Inoperable Glovebox [Chemicals present]				
777	**R430 GB451**	Inoperable Glovebox [Chemicals present]				
777	**R432 B**	High Contamination Area [Unknown if chemicals are present]				
777	**R452 GB034**	Inoperable Glovebox [Chemicals present]				

APPROVED: _____

J.S. VanMeighem
November 3, 1999

Definition:

Inoperable Glovebox = Glovebox or B-box where removal of chemicals will be deferred to decommissioning in cases where, to access the chemical(s), upgrades to the box are required (e.g., glove changes, magnahelic calibration, authorization basis changes, or airflow adjusts) to bring the box into operational

232

WASTE CHEMICAL EXCLUSION AREAS
WEEKLY INSPECTION LOG

776/ 777 BUILDINGS WITHIN THE 777 CLUSTER

BLDG	LOCATION	DESCRIPTION	DATE	INSPECTOR	FINDINGS/ CORRECTIVE ACTIONS	SIGNATURE
777	**R452 GB541**	Inoperable Glovebox [Chemicals present]				
777	**R452 Downdraft 14/24 (GB206*532)**	Out of Service (Red Tag) [Unknown if chemicals are present]				
777	R445 Hood #28	High Contamination Area Out of Service (Red Tag) [Chemicals present]				
777	R445 Hood #29	High Contamination Area Out of Service (Red Tag) [Chemicals present]				
776	R161 150 Press	High Contamination Area [Unknown if chemicals are present]	DELETED 12/04/98			
777	R134E GB207*140	Inoperable Glovebox [Chemicals present]	DELETED 01/07/99			
777	R134E GB624	Inoperable Glovebox [Chemicals present]	DELETED 05/17/99			
777	R131 GB207*110	Inoperable Glovebox [Chemicals present]	DELETED 07/01/99			

ACTIVE EXCLUSION AREA TOTAL: 15

Definition:

Inoperable Glovebox = Glovebox or B-box where removal of chemicals will be deferred to decommissioning in that where, to access the chemical(s), upgrades to the box are required (e.g., glove change, magnehelic calibration, authorization basis changes, or airflow adjusts) to bring the box into operational

233

WASTE CHEMICAL STORAGE AREA
WEEKLY/ MONTHLY INSPECTION LOG
776/ 777 BUILDINGS WITHIN THE 777 CLUSTER

BLDG	LOCATION	DESCRIPTION	DATE	INSPECTION TYPE	INSPECTOR	FINDINGS/ CORRECTIVE	SIGNATURE
Outside	991 Laydown yard	Cargo # 00024195-00 [Chemicals present] Pickup deferred until residual cluster.		☐ Weekly ☐ Monthly			

STORAGE AREA TOTAL: 1

REMINDER: Every third week of the month, notify Mike Jennings.

☐ Monthly

234

INSPECTION CRITERIA

- Identify spills, leaks, swelling, tipped over containers, or other obvious health & safety concerns.
- Observe Exclusion Area for potential signs of entry.
- Verify signs/postings are in place & in good condition.
- Observe chemical(s) through Glovebox windows where possible.
- Once per month open storage cargo as part of the required monthly inspection.

Appendix F - Building 776/777 Closure Project ARARs

REQUIREMENT	CITATION	COMMENT
CHRONIC BERYLLIUM DISEASE PREVENTION PROGRAM • Definitions • Release criteria • Waste disposal • Warning labels	10 CFR 850 .3 .31 .32 .38 (b-c)	The cited sections are followed in relation to determinations of beryllium contamination and release to the public.
RADIATION CONTROL		
Decommissioning Plan Contents – must include a description of methods used to ensure protection of workers and the environment against radiation hazards during decommissioning.	RH 3.16.4.3.3	Planned implementation of Site approved procedures to meet 10 CFR 835, "Occupational Radiation Protection" and the Site's IWCP process will be described for proposed actions.
Decommissioning Plan Contents – must include a description of the planned final radiation survey.	RH 3.16.4.3.4	Planned implementation of the Decommissioning Characterization Protocols or any final sampling and analysis plan for environmental media will be described.
Decommissioning Plan will be approved by CDPHE if information therein meets RH 3.16, and RH 4.61, decommissioning is completed as soon as practicable, and health and safety of the public is adequately protected.	RH 3.16.4.6	Planned implementation of Site approved procedures to meet 10 CFR 835 and the Site's IWCP process, which includes Lead Regulatory Agency involvement, will be described for proposed actions. The Closure Project Baseline is focused on achieving decommissioning as soon as practicable.
Site radiation survey to establish residual contamination levels and/or confirm absence of contamination. As appropriate, survey building/outdoor areas that contain residual radioactivity.	RH 3.16.6.2	Requirements for radiation surveys are met through the Building-Specific Characterization Plan for facility decommissioning.
Submittal of final survey report, units and other information – specifies, as appropriate, that gamma levels be reported at 1 meter from surface in microrem/hr, removable and fixed contamination in DPM/100 cm^2, and radioactive concentrations in pCi/L or per gram; identify instruments used and certify proper calibration/testing.	RH 3.16.6.3	Same as RH 3.16.6.2 above

Appendix F - Building 776/777 Closure Project ARARs

REQUIREMENT	CITATION	COMMENT
Criteria for license termination based on CDPHE determination that (1) radioactive materials have been properly disposed; (2) licensee has demonstrated that regulatory requirements for termination have been met; (3) the licensee has established a long-term care warranty; if required; and (4) institutional controls have been implemented to limit public doses, if required.	RH 3.16.7	Although license termination is not relevant to Rocky Flats, CDPHE believes the substantive criteria in this regulation are relevant and appropriate to determining the end point for decommissioning at Rocky Flats.
Additional cleanup can be required if, based on new or previously unknown information, CDPHE finds that criteria in RH 4.61 not met and residual radioactivity remaining at site could result in significant threat to public health and safety.	RH 3.16.8	This standard is generally consistent with the "imminent and substantial endangerment" standard under CERCLA. Present risk of future harm (e.g., a risk of cancer due to long-term exposure) can be an "imminent" threat.
Radiation Protection Program – To extent practicable, procedures and controls used shall be based on sound radiation protection principles to achieve public doses that are ALARA.	RH 4.5.2	Planned implementation of Site approved procedures to meet 10 CFR 835, "Occupational Radiation Protection" and the Site's IWCP process, which includes Lead Regulatory Agency involvement, will be described for proposed actions.
Radiation Protection Program – Imposes constraint on air emissions of radioactive material to the environment. "Individual member of the public likely to receive the highest dose" will not be expected to receive a TEDE greater than 10 mrem/yr from air emissions. Requires exceedance reporting and corrective action to ensure against recurrence.	RH 4.5.4	Listed only for completeness of this table. NESHAPS already identified as ARAR. Radionuclide NESHAPS required monitoring established at site perimeter is used to determine potential for exposure to individual member of the public.
Surveys shall be made as necessary to evaluate radiation levels, concentrations of radioactive material and potential radiological hazards that could be present.	RH 4.17.1	Planned implementation of Site approved procedures to meet 10 CFR 835, "Occupational Radiation Protection" and the Site's IWCP process, which includes Lead Regulatory Agency involvement, will be described for proposed actions. Requirements for radiation surveys are met through the Building-Specific Characterization Plan for facility decommissioning.
Instruments and equipment used for qualitative radiation measurements must be calibrated at intervals NTE 12 months, unless otherwise noted by regulation.	RH 4.17.2	

Appendix F - Building 776/777 Closure Project ARARs

REQUIREMENT	CITATION	COMMENT
AIR QUALITY		
Emission Controls for Particulates, Smokes, Carbon Monoxide, and Sulfur	5 CCR 1001-3 Reg. 1	Control of emissions for smoke, particulate, and volatiles of concern. Implemented for construction activities, haul roads, haul trucks, demolition activities.
Emissions of Volatile Organic Compounds	5 CCR 1001-9 Reg.7	
Air Pollution Emission Notice (compliance with National Ambient Air Quality Standards [NAAQS])	5 CCR 1001-3 Reg. 3	Air Pollution Emission Notices are used by the State to help determine State compliance with the NAAQS.
National Emission Standards for Emissions of Radionuclides Other than Radon from DOE Facilities (compliance with NESHAP)	40 CFR 61 Subpart H	Regulated radionuclide emissions from DOE facilities with a limit of ten millirem (mrem) per year. Site Standard.
Ambient Air Quality Standards (compliance with NAAQS)	5 CCR 1001-14	Maintain quality of ambient air for criteria pollutants
Control of Hazardous Air Pollutants (asbestos)	5 CCR 1001-10 Reg. 8	Standards for demolition, storage, and handling of asbestos containing material; emission standards and work place practice requirements; implemented through specific operational directions in IWCPs.
Control of Hazardous Air Pollutants	5 CCR 1001-10 Reg. 8	Implemented if the remedial action involves a specific regulated pollutant (e.g., lead).
Control of Emission Ozone Depleting Compounds	5 CCR 1001-19 Reg. 15	Ensure refrigerants are disposed of properly. Approved vessel recovery method must be used.
WATER QUALITY		
EPA Administered Permit Programs: The National Pollutant Discharge Elimination System (NPDES)	40 CFR Part 122 40 CFR Part 125 5 CCR 1002-8	Requirements for discharge of storm water or treated wastewater into surface water bodies. Criteria and standards for the NPDES. Identify and protect all connections to the sanitary collection system.

Appendix F - Building 776/777 Closure Project ARARs

REQUIREMENT	CITATION	COMMENT
SOLID (SANITARY) WASTE		
Solid Waste Disposal Sites and Facilities	6 CCR 1007-2	
Definitions	Section 1.2	"Recyclable materials" means any type of discarded or waste material that is not regulated under Section 25-8-205(1)(e), C.R.S., and can be reused, remanufactured, reclaimed, or recycled.
Exemptions	Section 1.4.3	This is the exemption for recyclable material.
RESOURCE CONSERVATION AND RECOVERY ACT (RCRA)		
Identification and listing of hazardous wastes	6 CCR 1007-3, Part 261 (40 CFR Part 261)	
Generator Standards	6 CCR 1007-3 Part 262 (40 CFR Part 262)	
Hazardous waste determinations	.11	Persons who generate solid wastes are required to determine if the wastes are hazardous according to 6 CCR 1007-3 Parts 261, 267, 279 [40 CFR Parts 261, 266, and 279]
Hazardous waste accumulation areas	34 (a)(1)(i),(ii),(iv, excluding A & B); (a)(3); (a)(4); (c)(1)	Persons who accumulate hazardous waste in containers or tanks must manage the waste in a manner that protects human health and the environment.
General Facility Standards	6 CCR 1007-3 Part 264, Subpart B [40 CFR Part 264, Subpart B]	
Waste Analysis	.13 (a)	The owner/operator of a facility that stores, treats, or disposes of waste must verify the waste has been characterized adequately.
Security	.14	The owner/operator of a facility must prevent unauthorized access.
General Inspection Requirements	.15 (a), (c)	The owner/operator of a facility must inspect for malfunctions, deteriorations, and releases, and must remedy any deficiencies noted.

Appendix F - Building 776/777 Closure Project ARARs

REQUIREMENT	CITATION	COMMENT
Personnel Training Requirements	.16 (a), (b), (c)	Personnel must be trained to maintain the facility in compliance with the regulations.
General Requirements for Ignitable, Reactive or Incompatible Wastes	.17 (a), (b)	Wastes will be managed to prevent accidental ignition or reaction of ignitable or reactive waste, or the mixing of incompatible waste.
Preparedness and Prevention	6 CCR 1007-3 Part 264, Subpart C [40 CFR 264, Subpart C]	
Design and Operation of a Facility	.31	Design facilities to minimize the potential for fire, explosion or release of hazardous waste.
Required Equipment	.32	Facilities must be equipped with specified equipment to mitigate incidents, should they occur.
Testing and Maintenance of Equipment	.33	Equipment must be maintained.
Access to Communications or Alarm System	.34	Employees must have access to emergency communications when managing hazardous waste.
Required Aisle Space	.35	Aisle space must be maintained to allow unobstructed access to emergency personnel and emergency equipment.
Arrangement with Local Authorities	.37	The owner/operator must make arrangements with specified local emergency personnel.
Contingency Plan and Emergency Procedures	6 CCR 1007-3 Part 264, Subpart D [40 CFR Part 264, Subpart D]	
Purpose and Implementation	.51 (b)	Emergencies such as fire, explosion, or release of hazardous waste must be mitigated immediately.
Emergency Coordinator	.55	A designated employee is responsible for coordinating emergency response actions.
Emergency Procedures	.56 (a-i)	The Emergency Coordinator must take action in emergency situations
Ground-Water Monitoring	6 CCR 1007-3 Part 264, Subpart F [40 CFR Part 264, Subpart F]	The substantive portions of the groundwater monitoring ARARs for each CERCLA action will be incorporated into the Integrated Monitoring Plan (IMP)

Appendix F - Building 776/777 Closure Project ARARs

REQUIREMENT	CITATION	COMMENT
Closure and Post-Closure	6 CCR 1007-3 Part 264, Subpart G [40 CFR Part 264, Subpart G]	
Closure Performance Standards	.111	The owner/operator must close the facility in a manner that protects human health and the environment.
Disposal or Decontamination of Equipment, Structures, or Soils	.114	All hazardous wastes and residues of hazardous waste must be disposed or decontaminated.
Use and Management of Containers	6 CCR 1007-3 Part 264, Subpart I [40 CFR Part 264, Subpart I]	
Condition of Containers	.171	Containers must be maintained in good condition.
Compatibility of Waste in Containers	.172	Wastes must be compatible with containers.
Management of Containers	.173	Containers must be closed except when adding or removing waste.
Inspections	.174	Containers must be inspected weekly.
Containment System Design and Operation Ignitable and Reactive Wastes Incompatible Wastes	 .175 .176 .177	Containment must be designed and operated as specified in these sections.
Closure	.178	Hazardous wastes and residues of hazardous waste must be removed or decontaminated from the unit and soils.
Air Emission Standards	.179	Hazardous wastes must be managed in accordance with AA, BB, CC, as appropriate.

Appendix F - Building 776/777 Closure Project ARARs

REQUIREMENT	CITATION	COMMENT
Tank Systems	6 CCR 1007-3 Part 264, Subpart J [40 CFR Part 264, Subpart J]	
Design and Installation of New Tank Systems or Components	.192 (a-f)	Tank systems must be designed to maintain their integrity when storing or treating hazardous waste.
Containment and Detection of Releases	.193 (a)(i)(1,2,3,5)	Secondary containment must be designed to contain and detect any releases from the tank system.
General Operating Requirements	.194 (a-c)	Tank systems must be maintained in good condition to prevent releases to the environment.
Inspections	.195 (b,c)	Inspections are conducted to identify any tank system integrity concern.
Response to Leaks or Spills and Disposition of Leaking or Unfit-for-Use Tank Systems	.196 (a-c),(e)	Actions must be taken as specified in this section.
Closure and Post-Closure Care	.197 (a,b)	During closure all hazardous waste and hazardous waste residues must be removed from the tank system.
Special Requirements for Ignitable and Reactive Wastes	.198	Ignitable or reactive waste must be managed as specified in this section.
Special Requirements for Incompatible Waste	.199	Incompatible waste must not be introduced into a tank system unless 264.17(b) is complied with.
Air Emission Standards	.200	All hazardous waste shall be managed in accordance with AA, BB, CC
Corrective Action for Solid Waste Management Units	6 CCR 1007-3 Part 264, Subpart S [40 CFR Part 264, Subpart S]	
Temporary Units	.553 (a-c)	Temporary units allow flexibility. Alternative compliance options are included in the waste management section of this CERCLA;/RFCA decision document

Appendix F - Building 776/777 Closure Project ARARs

REQUIREMENT	CITATION	COMMENT
Miscellaneous Units	6 CCR 1007-3 Part 264, Subpart X [40 CFR Part 264, Subpart X]	
Environmental Performance Standards	.601	Miscellaneous units must be designed, constructed, operated and maintained in a manner that protects groundwater, surface water, wetlands, soils, and air.
Monitoring, Analysis, Inspection, Response, Reporting, and Corrective Action	.602	Miscellaneous units must be managed to ensure compliance with 264.15 (inspections), 264.33 (testing and monitoring), 264.101 (corrective action for releases).
Land Disposal Restrictions	6 CCR 1007-3 Part 268 [40 CFR Part 268]	
Dilution Prohibited as a Substitute for Treatment	.3	LDR determinations must be completed for all hazardous wastes generated.
LDR Determination (Determination if Hazardous Waste Meets the LDR Treatment Standards)	.7	Land disposal restrictions apply primarily to the off-site disposal actions proposed as part of the remedial activity. All of the applicable substantive and administrative regulatory requirements apply to off-site actions.
Special Rules for Wastes that Exhibit a Characteristic	.9 (a-c)	
Management of Universal Waste	6 CCR 1007-3 Part 273 [40 CFR Part 273]	Addresses the management of specifically identified batteries, pesticides, and thermostats.
Disposal, Dilution, and Treatment Prohibitions	.31	A large quantity handler of universal waste is prohibited from disposing, diluting, or treating universal waste, except during responses to releases.
Waste Management	.33	Management of universal waste must be conducted in accordance with this section.
Labeling and Marking	.34	Universal waste and the associated accumulation areas must be labeled and marked as defined in this section.
Employee Training	.36	Employees who must be trained on waste management requirements and on emergency procedures according to their responsibilities.
Response to Releases	.37	Universal waste handlers must contain releases of universal wastes, and must manage the resulting waste, as appropriate, in accordance with the hazardous waste regulations.

Appendix F - Building 776/777 Closure Project ARARs

REQUIREMENT	CITATION	COMMENT
Standards for the Management of Used Oil	6 CCR 1007-3 Part 279 [40 CFR Part 279]	
Used Oil Specifications	.11	Used oil burned for energy recovery must meet the specifications of this section
Prohibitions	.12	Used oil must not be stored in surface impoundments, be used as a dust suppressant, or be burned in unapproved units according to this section.
Hazardous Waste Mixing	.21	Used oil must be characterized and managed in accordance with 269.10 and this section.
Used Oil Storage	.22	Used oil must be managed in containers or tanks in a manner that protects human health and the environment. Releases must be cleaned up and steps must be taken to prevent re-occurrence.
On-Site Burning in Space Heaters	.23	Used oil may be used as fuel for space heaters if the gases are vented to ambient air, and the maximum capacity of the space heater is not more than 0.5 million Btu per hour.
Performance Standards for Above-Ground Tanks (AST)	7 CCR 1101-14 Part 3	ASTs must be designed, maintained, and operated to prevent releases to the environment.
Normal Venting for Aboveground Tanks	AST.31.5	
Emergency Relief Venting for Fire Exposure for Aboveground Tanks	AST.31.6	
Vent Piping for Aboveground Tanks	AST.31.7	
Tank Openings other than Vents for Aboveground Tanks	AST.31.8	
Standards for Piping, Valves, and Fittings	AST.32	
Operating Requirements for Above-Ground Tanks	7 CCR 1101-14 Part 4	
Collision Protection	AST.40	
Spill and Overfill Control (excluding reporting requirements), Remote Impounding, Secondary Containment	AST.41 (excluding reporting part of AST.41.1(e))	

Appendix F - Building 776/777 Closure Project ARARs

REQUIREMENT	CITATION	COMMENT
Operation and Maintenance of Corrosion Protection Compatibility Requirements for all Tanks Static Protection for all Tanks Repairs Allowed (excluding requirement for approvals and inspections by State Oil Inspector) Out-of-Service, Closure or Change-in-Service	AST.42 AST.43 AST.44 AST.45 (excluding AST.45(b)(4)) AST.46(c)(1-5)	
Release Detection	7 CCR 1101-14 Part 5 AST.5	
Release Response and Corrective Action Initial Response Initial Abatement Measures Repair or Closure Required	7 CCR 1101-14 Part 7 AST.72(b), (c) AST.73 AST.74	Under Site operating procedures, responses to leaks or spills is immediate, resulting in cessation of the release and an evaluation of the remediation that will be conducted immediately. Surface spills will be cleaned up and actions will be taken to prevent a release to surface water. Releases that impact soils or groundwater will be identified as a PAC, will be added to the ER Ranking List, and will be incorporated into the integrated Site remediation program.
Oil Pollution Prevention Oil Pollution Prevention: Oil Pollution Prevention SPCC Plan Requirements	7 CCR 1101-14 Part 11 AST.112.7(c), (d), (e, 1-2, 4-5)	An SPCC plan is not required as an ARAR; however, the substantive requirements that are incorporated into and implemented as part of the SPCC plan are an ARAR. (e.g., Prediction of the direction, rate and flow of a release from an AST system will be known by the facility and will be available to emergency responders at the facility.)
TOXIC SUBSTANCES CONTROL ACT (TSCA) FOR PCBS		
PCB Use Authorizations	40 CFR 761.30	Lists authorized uses and use restrictions for PCBs
Marking Requirements	40 CFR 761.40 and .45	Labeling of PCBs and PCB storage Areas

Appendix F - Building 776/777 Closure Project ARARs

REQUIREMENT	CITATION	COMMENT
Disposal Requirements Applicability Disposal Requirements PCB Remediation Waste PCB Bulk Product Waste Disposal of R&D and Chemical Analyses wastes	40 CFR 761.50 40 CFR 761.60 40 CFR 761.61 40 CFR 761.62 40 CFR 761.64	
Storage Requirements Facility Criteria Temporary Storage Inspections Container Specifications PCB radioactive waste Marking Laboratory Sample Exemption from Manifesting	40 CFR 761.65	
TSCA Coordinated Approval	40 CFR 761.77	Institutionalizes EPA approval of PCB activities under TSCA when activities are being conducted under another waste management permit, or other decision document issued by EPA or pursuant to a State PCB waste management program
Decontamination Standards and Procedures Self-Implementing Decontamination Measurement-Based Decontamination	40 CFR 761.79	
PCB Spill Cleanup Requirements for PCB Spill Cleanup	40 CFR Subpart G	40 CFR 761 Subpart G is entitled PCB Spill Cleanup Policy and thus many of the sections, specifically for spills after May 4, 1987 are "To Be Considered"
Cleanup Site Characterization Sampling for PCB Remediation Waste	40 CFR Subpart N	Characterization requirements for cleanup of PCB remediation waste
Sampling Non-Porous Surfaces for Measurement-Based Use, Reuse, and On-Site Or Off-Site Disposal Under 761361(a)(6) and Determination Under 761.79(b(3)	40 CFR Subpart P	
Self-Implementing Alternative Extraction and Chemical Analysis Procedures for Non-Liquid PCB Remediation Waste Samples	40 CFR Subpart Q	Applicable procedures when using alternatives to required analytical methodology
Sampling Non-Liquid, Non-Metal PCB Bulk Product Waste for Purposes of Characterization for PCB Disposal in Accordance with 761.62, and Sampling PCB Remediation Waste Destined for Off-Site Disposal, in Accordance with 761.61	40 CFR Subpart R	Characterization requirements for PCB bulk product waste and PCB remediation waste when characterization for disposal is required

Appendix F - Building 776/777 Closure Project ARARs

REQUIREMENT	CITATION	COMMENT
Double Wash/Rinse Method for Decontaminating Non-Porous Surfaces	40 CFR Subpart S	Referenced procedure from 761.79
MIGRATORY BIRDS		
Protection of migratory birds through compliance with the Migratory Bird Treaty Act and Wildlife & Fisheries Act	50 CFR 10	Pincipally focuses on the taking and possession of birds and bird nests protected under this regulation. Enforcement is predicated on location of the project and time of year. Current list of protected birds is maintained by the Ecology Group.

Reviewer	Comment No.	Sec./Page/ Para.	Comment Description	Comment Resolution
CDPHE	1	p. 12	As written, the DOP does not provide for any form of demolition and that includes interior walls, which may be appropriate for removal during room SET D&D activities. We would have no objection to addition of provisions describing this selective removal of interior walls as determined by the collaborative IWCP process.	No change. Section 4.1 explains that room and room/equipment SETs include all equipment and instrumentation, tools, miscellaneous items, utilities below 8 feet, and interior walls. In addition, Section 4.11.2 states that room decommissioning activities may include removal of interior walls.
CDPHE	1	p. 12, para. 2	Delete "which may (emphasis added) include a modification to this DOP." Replace with "which will constitute a major modification to this DOP. In addition to the routine requirements for major modifications, this information on Building 776/777 demolition will be submitted for a public comment period equivalent to that for the initial Building 776/777 DOP." Demolition details are part of the total scope of the originally reviewed and approved DOP and, therefore, subject to the routine public comment process. It is essential to CDPHE that the understandable delay in planning the demolition phase of this regulated project not allow the required public comment on demolition to be omitted. Since even a major modification, per RFCA, does not require public comment, it is essential that the commitment to this be included in this original DOP.	The last sentence of this paragraph has been re-worded as follows: "This information will be provided in a subsequent decision document(s), which will constitute a major modification to this DOP. In addition to the routine requirements for major modifications, this information on Building 776/777 demolition will be submitted for a public comment period equivalent to that for the initial Building 776/777 DOP."

Reviewer	Comment No.	Sec./Page/ Para.	Comment Description	Comment Resolution
CDPHE	7a-b	p. 26	In previous discussions, DOE has stated that future and additional sampling and analysis of the buried equipment in and under Building 776/777 does not fall under the CERCLA requirement for regulatory approval of sampling and analysis plans. The state disagrees. To allow for timely progress on this decommissioning project the addition of the following language to the DOP will be acceptable: "Additional sampling and analysis plans for characterization of buried equipment within the Building 776/777 structure will be provided to the LRA for review and approval prior to such sampling. Work packages, currently undeveloped, for removal of equipment buried or cemented within the building structure will be shared with the regulators per the collaborative process."	The following language has been added to the first paragraph of Section 4.3.2.1: "Due to the sensitivity of this work, in-process characterization of buried equipment within the Building 776/777 structure will be provided to the LRA for review. Work packages, currently undeveloped, for removal of equipment buried or cemented within the building structure will be shared with the regulators per the consultative process."
CDPHE	8	p. 33	The term "and" is necessary between the two criteria for categorization of a material as sanitary waste in Section 4.4.1. If either criteria (a. surface contamination or b. volumetric contamination) is exceeded, the material cannot be disposed of in a sanitary landfill or free-released. As written, the section results in two statements, neither of which by itself is correct. The LRA would be amenable to other possible language changes which would clarify the invalid logic of the current wording.	The last two sentences of Section 4.4.1 have been combined to clarify that both the surface contamination and volumetric contamination limits must be met for the material to be free-released.

Reviewer	Comment No.	Sec./Page/ Para.	Comment Description	Comment Resolution
CDPHE	15 a	p. 51	The LRA , in prior comments, objected to the statement that information and commitments in this chapter originally on "Health, Safety, and the Environment" is non-enforceable. RFETS has responded by eliminating the term "environment" from this section, while maintaining the assertion that the information is non-enforceable. This is not the solution we envisioned when making the original comment. We do not believe that the DOP is the appropriate vehicle to discuss or make legal pronouncements on enforceability issues. If issues in this regard arise later (and hopefully they will not) they can be discussed, negotiated and resolved by legal staff separately. As a solution to this issue, we recommend that the phrase "Although not enforceable . . ." be deleted and replaced with a separate sentence acknowledging that "DOE is the lead agency responsible for enforcement of health and safety provisions."	The phrase "Although not enforceable . . ." has been deleted from the second sentence of the first paragraph of Sec. 5.0 and the following sentence has been added to the end of the paragraph: "DOE is the lead agency responsible for enforcement of H&S provisions." This responsibility is also included in Section 11.1.1.
CDPHE	16	p. 61	Add to Section 5.1.4.1: "Prior to various phases of decommissioning, readiness reviews of infrastructure, procedures, and personnel will be completed by integrating contractor management. Upon satisfactory completion of these reviews, closure project personnel will be given permission to proceed with phases of the project. The LRA will be advised of the dates and times of these reviews and be provided full opportunity to oversee and collaborate with reviewers." Language of this nature was present in Draft E and needs to be reinserted.	The following language has been added to the end of Section 5.1.4.1: "The LRA will be advised of the dates and times of readiness determination activities and may participate in the readiness determination process per Section 11.1.3 of this DOP." The first part of the requested language is not necessary because the DOP already describes the readiness determination process. The second part of the requested language has been modified to be consistent with language agreed to by the parties prior to the public comment period (Section 5.1.3.1).

Reviewer	Comment No.	Sec./Page/ Para.	Comment Description	Comment Resolution
CDPHE	20	Sec. 7	I am told that legal staff of both parties agree that the ARARs section is incomplete and needs further legal review. 776 DOP approval will be conditional, based on further ARARs evaluations. As the only regulation applying to decommissioning of nuclear facilities, the NRC regulation on decommissioning appears to be relevant and appropriate. Add this to the ARARs chart. Additionally, CDPHE has included equivalent provisions within its own Rules and Regulations Pertaining to Radiation Control, 6 CCR 1007-1.1 et seq. reference to this should also be included as relevant and appropriate.	DOE Legal staff does not believe that the ARARs section is incomplete. In addition, DOE maintains its position that the NRC regulation quoted in the comment is not applicable or relevant and appropriate.
CDPHE	23, 24	pp. 113, 115	Why does RFETS resist the LRA request to notify us in the event of schedule and management changes. Isn't this notification consistent with the collaborative process?	The language in these sections is contained in the DPP; therefore, it has not been changed. However, new language has been added to state that schedule and organization changes will be shared with the LRA according to the "Timely Sharing of Information" section of the DPP (Section 1.1.1, paragraph [1]).

Reviewer	Comment No.	Sec./Page/ Para.	Comment Description	Comment Resolution
CDPHE	25 a	p. 116	Language on regulatory authority emphasizes RCRA authority and is light on decommissioning authority. We suggest the two be separated. Discuss RCRA authority in one paragraph and in a separate paragraph note that "CDPHE regulates decontamination and decommissioning."	This section has been re-worded to include the language from the Memorandum of Understanding that was entered into by DOE, EPA, CDPHE, and the DNFSB on February 15, 1996: CDPHE is the LRA for (1) regulation, oversight, and enforcement of RCRA/CHWA legal requirements for mixed waste; (2) regulation or oversight of D&D of fixed structures and equipment, dismantlement, demolition, and closure of RCRA TSD units; (3) oversight of LLW and regulation of LLM waste disposal on site or elsewhere in the State of Colorado; (4) regulation of RCRA corrective actions and lead oversight of CERCLA response actions. Each point is included in a separate paragraph.
CDPHE	28	pp. 135-187	Endpoints are often generically described in the "major endpoints" charts and this may lead to misunderstandings regarding acceptable completion of work SETs. For example, work sets generically include "control contamination" as an end point. CDPHE finds this end point unclear and, actually, not an end point but rather an activity that occurs throughout the D&D process. The DOP end point chart needs to better define the end point for this activity. CDPHE suggests that the end point be redefined as "remove all contamination and contaminated materials." This change in endpoint language will be needed selectively within most workset descriptions.	No change. The major endpoint for the initial version of the DOP is to have all equipment stripped out and all contamination either removed, fixed in place, or otherwise controlled in preparation for building demolition. Specific methods for achieving this major endpoint will be identified in individual IWCP work packages. The demolition phase of decommissioning will be addressed in a major modification to the DOP, which will be submitted for a public review period equivalent to that for the initial version of the DOP.

Reviewer	Comment No.	Sec./Page/ Para.	Comment Description	Comment Resolution
CDPHE	29	Sec. 4	"The overall goal of the Building 776/777 Closure Project is to have all buildings within the Cluster emptied and demolished to slab on grade, with subsurface penetrations capped." Is this truly the end-state for Building 776/777 and the Cluster facilities? Per recent discussions with Site representatives, isn't the Site's proposed plan to remove the slab and foundations to at least three feet below grade? Slab removal should be considered part of D&D vs environmental restoration (ER), especially in light of the buried equipment identified in Section 4.3.2.1 of this DOP. Note that CDPHE will soon transmit a proposed slab policy which will better define our expectations.	Management of the building slab(s) will be part of demolition; therefore, the first two sentences of Sec. 4.0 have been deleted and language has been added to clarify that the major modification to the DOP, which will cover demolition, will also cover management of the building slab(s).
CDPHE	30	Table 6	Several rooms (e.g., 134, 127, 430 et. al) have their proposed closure deferred until IHSS remediation. As written, IHSS remediation is to be performed following demolition. If this is true, how can closure of these rooms be deferred to IHSS remediation? Define when and how closure of these rooms will occur.	All RCRA units will be closed during decommissioning. Table 6 has been revised to show that these units will be closed by removal.
CDPHE	31	Sec. 4.5.1.2	The "debris rule" is applicable provided the equipment meets the definition of debris.	No change. As explained in the second sentence of this section, the "debris rule" applies to "unit equipment or structures that have no intended use or reuse and are slated for removal and discard." This is the definition of "debris."

Reviewer	Comment No.	Sec./Page/ Para.	Comment Description	Comment Resolution
CDPHE	32	4.5.2	The revised DOP no longer requires submittal of a waste management plan. DOE's response to our previous comment stated that "elements of the waste management plan are now contained in Section 6 (of the DOP)." Section 6 fails to identify how waste will be managed (process v. remediation waste). Simply stating that process waste will be managed in accordance with CHWA/RCRA and remediation waste will be managed in accordance with CERCLA is unacceptable. To date, the Site has been unable to clearly define CERCLA remediation waste management requirements an operations level. The Site must develop an implementing procedure(s) clearly defining appropriate CERCLA management requirements (e.g., generation, storage, treatment, packaging, etc.). The issue of CERCLA vs RCRA waste management has been an issue the Site has failed to resolve over the past 6 months (specifically B771). I strongly recommend discussing this issue with B771 representatives in hopes of cooperatively generating specific operating procedures for building personnel to utilize (ideally site-wide). Once developed, this operating procedure should act as the major portion of a waste management plan for each building.	The Site is currently working on a site-wide strategy for managing process vs. remediation waste during decommissioning activities. Once that strategy is finalized, we will submit a minor modification to the DOP to include additional information on this issue, consistent with DPP requirements. Until that time, hazardous and mixed waste generated during decommissioning activities under this DOP will be managed as process waste in compliance with RCRA/CHWA, the CHWR, and the RCRA Part B Permit. The DOP has been revised to reflect this. The minor modification regarding the process vs. remediation waste strategy will be submitted by February 2000.
CDPHE	33	Sec. 6.1.1	The DOP has deferred closure of the basement to remediation of the surrounding IHSSs. Elaborate on how the Site intends to deal with the slab/foundation as basement D&D vs the activities that will be deferred to environmental restoration (ER).	All RCRA units will be closed during decommissioning. The Building 776/777 slab(s) will be addressed during demolition. The final approach address the slab(s) is still to be determined. This information will be provided in a major modification to the DOP, which will be submitted for a public comment period equivalent to that for the initial version of the DOP.

Reviewer	Comment No.	Sec./Page/ Para.	Comment Description	Comment Resolution
CDPHE	34	Sec. 6.5	The DOP proposes the use of temporary units (TUs) for staging, storage, and treatment. Specifically, this section includes the following processes: size reduction, filtration of aqueous wastes, amalgamation of radioactive mercury, crushing of fluorescent bulbs, and waste solidification. What is the mechanism to authorize these activities? The Site's plan to utilize TUs must include the substantive requirements of Section 254.553(c) of the CHWR. The information currently included in this DOP is insufficient to authorize treatment in TUs. To utilize a TU, this information must either be included in the DOP or submitted to the Division separately. In addition, what advantage does the Site gain by utilizing a TU?	Section 6.5 has been revised to indicate that the Site will submit a minor modification to the DOP with additional information to authorize the use of TUs once the information is known and the Site has a need for the units. The minor modification will be submitted by February 2000.
CDPHE	e-mail message from CDPHE (E. Kray) to DOE, RFFO (S. MacLeod), 11/3/99	Sec. 6.2.4, p. 78	The language relating to termination of the Mixed Residue Compliance Order needs clarification, per discussions with Dan Miller of our Attorney General's Office. Please revise.	The last sentence of Section 6.2.4 has been modified to read as follows: "The Mixed Residue Compliance Order on Consent (Ref. 42) will terminate as to each of the mixed residue tanks located in Building 776/777 in accordance with paragraph 66(i) of that Order when the LRA approves a minor modification for each tank as provided for in Section 4.5.2 of this DOP."

Reviewer	Comment No.	Sec./Page/ Para.	Comment Description	Comment Resolution
CDPHE	e-mail message from CDPHE (E. Kray) to DOE, RFFO (S. MacLeod), 11/3/99	Sec. 6.2.9, p. 79	The language in the last two lines, relating to termination of the Waste Chemical Compliance Order needs to be similarly clarified. Please revise.	The second bullet has been changed to read as follows: "No inspections that require entry into a High Contamination Area, Airborne Radioactivity Area, or inoperable glovebox or hood will be performed due to worker radiation exposure concerns and implementation of ALARA radiation exposure principles. These are the same reasons thate these chemicals are considered to be "excluded chemicals" under the Consent Order. Weekly visual observations will be made of each area used to store "excluded chemicals" by looking through windows into the room, glovebox, or hood. For areas where no windows are available, the inspection will be limited to the exterior of the area. (This response is continued on the next page.)

Reviewer	Comment No.	Sec./Page/ Para.	Comment Description	Comment Resolution
CDPHE	e-mail message from CDPHE (E. Kray) to DOE, RFFO (S. MacLeod), 11/3/99	Sec. 6.2.9, p. 79	The language in the last two lines, relating to termination of the Waste Chemical Compliance Order needs to be similarly clarified. Please revise. (continued from previous page)	"Observations will be performed by facility personnel during normal routine facility operations. These visual observations are to be non-intrusive in nature. Observations are intended to identify issues such as spills, leaks, swelling, tipped over containers, or other obvious safety or health problems without actual handling of the containers or opening waste chemical storage cabinets. Additionally, the documenteed weekly visual observations for all "excluded chemicals" will include a review of the Consent Order posting, including verification that the point of contact listed on the posting is current, and a review of whether entry has been or is planned to be made to the area(s). These observations will be documented on a weekly inspection log, a copy of which is contained in Appendix E of this DOP. Any issues identified wil be addressed and corrected in accordance with applicable Site procedures (Ref. 44)." In addition, a new bullet has been inserted between the second and third bullets: "Potentially shock sensitive/explosive waste chemicals will be managed in accordance with the Potentially Shock Sensitive/Explosive Chemical Characterization, Management, and Disposal Plan."

Reviewer	Comment No.	Sec./Page/ Para.	Comment Description	Comment Resolution
EPA	GEN'L 1		Assuming the 2006 Plan becomes a reality, how will we modify the DOP? Major or minor modification?	All references to the "2010 Plan" have been changed to the "Closure Project Baseline" so that the DOP will remain current and will not require modifications when the plan changes. Schedules may change without modifying the DOP.
EPA	GEN'L 2		There is a concern that all the buildings within the Cluster are not being addressed in the DOP. However, another concern is that building 712a and B713a are not listed in the Facility Disposition Program Manual. This needs to be addressed.	The Executive Summary explains that the DOP is intended to address Type 2 and Type 3 buildings, only. The other buildings in the Cluster are anticipated to be Type 1 buildings, which do not require a decision document. If the other buildings are determined to be other than Type 1 buildings, the DOP will be modified to include them. In addition, Buildings 712, 712A, 713, and 713A are listed in Section 2 of the DOP.
EPA	GEN'L 3		The DOP has made reference to buried waste and waste that has been cemented over. All these areas must be removed before demolition. This is not referenced to under building contamination.	Sections describing buried equipment/waste have been revised to clarify that all equipment/waste will be removed during decommissioning (i.e., Section 4.3.2.1 and Section 4.11.6).
EPA	GEN'L 4		The table for surface contamination guidelines is missing a unit in footnote 3 and 6.	We could not find the table or error referenced in this comment. Upon further discussion with EPA, it was determined that the comment should have read as follows: "The table showing release criteria for materials contaminated with radionuclides does not include footnotes from the source document (i.e., DOE Order 5400.5)." The referenced footnotes have been added to Table 5.

Reviewer	Comment No.	Sec./Page/ Para.	Comment Description	Comment Resolution
EPA	SPECIFIC 1	Sec. 2.3, p. 19	There are large quantities of waste containers in the building, yet there is no indication of where these containers will go. Could you provide the current plan for removal of these containers. Decisions?	No change. Section 6 describes how the existing waste inventory will be dispositioned. Pending off-site shipment, this waste will be stored in permitted storage areas (e.g., RCRA Units 371. and 707.1).
EPA	SPECIFIC 2	Sec. 4.1, p. 23	It sounds like one team could be mobilized and demobilized in one room 3 or 4 times before it is completely dispositioned. What happened to the "touch things once" that is being used in B771? This method sounds slow and costly.	No change. It is true that D&D teams may be mobilized and demobilized in one room 3 or 4 times. As discussed in Section 4.11.2, the decommissioning sequence begins with the removal of gloveboxes and B-boxes so that the Zone I ventilation can be removed. Process tanks will be removed during the same time frame as the gloveboxes and used as "fill in" work. After the gloveboxes, B-boxes, process tanks, and Zone I ventilation systems have been removed, the remaining room decommissioning activities will take place, to include the removal of interior walls, piping, ventilation, and electrical systems. This sequence is necessary to minimize worker exposures to radiological hazards.

Reviewer	Comment No.	Sec./Page/ Para.	Comment Description	Comment Resolution
EPA	SPECIFIC 3	Sec. 4.3.2.1, p. 26	Regarding the buried waste in and under Building 776/777: First, any contaminant that poses a threat to human health and the environment falls under the CERCLA statute and requires a sampling and analysis plan. Second, all buried waste must be addressed during decommissioning. Finally, the DOP should described how and when these investigation will take place. These investigation should be outlined in the schedule as well as the actual D&D work and removal of these wastes. How will these investigation be done? When in the process will this waste be addressed.	Section 4.3.2.1 has been re-worded to clarify that buried equipment (i.e., SET 84) will be removed before the building is demolished. Due to the sensitivity of this work, in-process characterization of buried equipment within the Building 776/777 structure will be provided to the LRA for review. IWCP work packages, currently undeveloped, for removal of equipment buried or cemented within the building structure will be shared with the regulators per the consultative process. The project schedule (Appendix D) shows when these activities are scheduled to take place.
EPA	SPECIFIC 4	Sec. 4.3.3.1, p. 29	It states that in-process characterization is based on process knowledge. This is an incorrect statement. In-process characterization is based on field samples and radiation survey measurements that are taken during the decommissioning process. Please rewrite.	This section has been re-worded to clarify that in-process characterization is based on process knowledge and field samples and/or radiation survey measurements.
EPA	SPECIFIC 5	Sec. 4.3.3.5, p. 32	Sampling should be done to confirm that radiation is not mixed with any asbestos containing material. What about the insulation in the walls?	No change. The entire Section 4.3.3 is intended to explain the in-process characterization activities. Each subsection addresses characterization for only the specific contaminant listed. All subsections must be used together for a complete characterization. The subsections are not meant to be mutually exclusive. Therefore, radiological contamination is addressed in its own subsection, not in the asbestos subsection. It is the Site's intent, however, to characterize for both, as necessary.

Reviewer	Comment No.	Sec./Page/ Para.	Comment Description	Comment Resolution
EPA	SPECIFIC 6	Sec. 4.11.6, p. 47	How are you addressing the H&S concerns for airborne Pu?	Neutron detectors (i.e., criticality detectors) and alpha monitors (i.e., Selective Alpha Air Monitoring System [SAAMS] and Continuous Alpha Monitoring System [CAMS]) provide continuous monitoring in Pu areas. In addition, D&D workers wear thermoluminescent dosimeters (TLD), which detect personnel exposure to neutrons, beta particles, and gamma rays. Additional requirements (e.g., the need for additional dosimetry) will be addressed by Radiological Engineering in individual IWCP work packages.
EPA	SPECIFIC 7	Sec. 4.12, p. 47	In this section it discussed 4 Zone II plenum deluge tanks. Why aren't we removing all four of them? What are the contaminants and what are the concentration?	Section 4.1.2 has been clarified to indicate that all four tanks will be removed. Appendix A of the DOP and the Building 776/777 Reconnaissance Level Characterization Report (RLCR) contain information concerning associated contaminants.
EPA	SPECIFIC 8	Sec. 5.2, p. 65	Will there be neutron detectors used during D&D (i.e., neutron badges)?	As explained in the response to EPA Specific Comment #6 (above), the use of additional personnel dosimetry will be addressed by Radiological Engineering during the development of individual IWCP work packages.
EPA	SPECIFIC 9	Sec. 5.3, p. 65	How are you addressing the H&S concerns for airborne Pu?	DUPLICATE COMMENT - Please refer to the response to EPA Specific Comment #6 (above).

Reviewer	Comment No.	Sec./Page/ Para.	Comment Description	Comment Resolution
EPA	SPECIFIC 10	Sec. 6.2.5, p. 75	Leaking ballasts are considered PCB remediation waste. Interesting concept beryllium (Be) not considered hazardous waste. I did know that a known carcinogen is not considered hazardous. This state should be rewritten. In addition, all Be housekeeping standards need to be explained and used.	Section 6.2.5 has been clarified to distinguish between leaking ballasts (managed as PCB remediation waste) and non-leaking ballasts (managed as PCB bulk product waste). Be that is not in a powder form is not hazardous waste. As indicated in Section 4.3.3.7, areas where Be operations were performed have been documented in the RLCR. In-process characterization will be conducted in accordance with the RFETS Chronic Beryllium Disease Prevention Program, which includes Be housekeeping requirements.
EPA	SPECIFIC 11	Sec. 6.2.7, p. 76	Again, Be not considered hazardous waste. To my knowledge, we have not agreed to allow Be to be disposed of in a sanitary landfill. This needs further discussion.	Be that is not in a powder form is not hazardous waste. The last sentence of this section has been revised to state that "This waste category may include Be waste that is not considered hazardous waste."
EPA	SPECIFIC 12	Table 14, p. 77	How are you addressing pyrophoric concerns surrounding Pu and Uranium?	Pyrophoric materials are managed in accordance with Section 31.11 of the RFETS Health and Safety Practices (HSP) Manual. When appropriate, the applicable requirements will be included in individual IWCP work packages.
EPA	SPECIFIC 13	Sec. 7, p. 85	The ARARs section needs further discussion regarding authority.	DOE believes the ARARs section is complete.

Reviewer	Comment No.	Sec./Page/ Para.	Comment Description	Comment Resolution
CITY OF BRMFLD	N/A	Sec. 4.3.3	IN-PROCESS KNOWLEDGE - Sec. 4.3.3 implies that in-process knowledge may be the only means of classifying some materials as non-contaminated. In-process knowledge is helpful, but should not be the only means of verifying that radiological contamination does not exist on materials and equipment removed from Building 776/777. Verification monitoring which includes some means of quantifying radiation levels must be employed.	This section has been re-worded to clarify that in-process characterization is based on process knowledge AND field samples and/or radiation survey measurements. As shown in Table 4 of the DOP, and described in Sections 4.3.3.1 through 4.3.3.7, in-process radiological surveys will be performed to verify contamination levels and to identify appropriate disposal paths; in-process Be surveys will be performed to verify Be contamination levels in Be storage, handling and production areas; and, where appropriate, in-process sampling will be performed to identify asbestos containing material, PCBs, and lead and other heavy metals.

Reviewer	Comment No.	Sec./Page/ Para.	Comment Description	Comment Resolution
CITY OF BRMFLD	N/A	4.4.1	FREE-RELEASE CRITERIA - Please provide the excerpt from DOE Order 5400.5 that specifically provides the volume contamination threshold.	DOE Order 5400.5 defines the Allowable Total Residual Surface Contamination (ATRSC) release limits for material surfaces but it does not provide specific release limits for material volumes. However, during the course of the Building 779 Closure Project, the ATRSC limits are being applied to contaminated bulk or volume material, as follows: (1) for a given surface type, a sample is taken from a defined area, to the depth of the radioactive material present; (2) the sample is then analyzed for radioactive material indicative of RFETS (e.g., plutonium, americium, uranium); (3) the amount of radioactive material in the sample is distributed uniformly over the sample area so the amount of radioactive material present in the sample is in the units of dpm/100 cm2; and (4) the quantity of radioactive material is then compared with the ATRSC limits to determine whether it may be free-released. This method is conservative in that actual (This response is continued on the next page.)

Reviewer	Comment No.	Sec./Page/ Para.	Comment Description	Comment Resolution
CITY OF BRMFLD	N/A	4.4.1	FREE-RELEASE CRITERIA - (continued from previous page)	surface contamination values will be no greater than, and in almost all cases, much less than the calculated number. The method or methods to be applied to contaminated bulk or volume materials generated during the Building 776/777 Closure Project will be described in an upcoming revision to the Decontamination & Decommissioning Characterization Protocol (DDCP) and associated Pre-Demolition Survey Plan. The DDCP is being revised in consultation with EPA and CDPHE, per Section 2.3 of the Decommissioning Program Plan (DPP). When completed, the associated Pre-Demolition Survey Plan will be submitted to the LRA for review and approval, per Section 4.6 of the DOP.
CITY OF BRMFLD	N/A	4.3.2.1	Prior to removal of air filtration equipment, building walls, ceilings, and other safeguards, the materials that have been buried under the floor should be removed. We are concerned that the removal of contaminated materials from under the floor may be problematic.	Section 4.3.2.1 has been re-worded to clarify that buried equipment (i.e., SET 84) will be removed before the building is demolished. Due to the sensitivity of this work, in-process characterization of buried equipment within the Building 776/777 structure will be provided to the LRA for review. IWCP work packages, currently undeveloped, for removal of equipment buried or cemented within the building structure will be shared with the regulators per the consultative process.

Reviewer	Comment No.	Sec./Page/ Para.	Comment Description	Comment Resolution
CITY OF BRMFLD	N/A	Table 5	FREE-RELEASE CRITERIA - The PCB free-release value of 50 ppm in Table 5 is not specifically provided in 40 CFR 761.62 as written in the table. Please provide justification for the statement "95% Upper Confidence Limit (UCL) of the mean value of a representative sample does not exceed 50 ppm."	As noted by the City of Broomfield, the PCB free-release value of 50 ppm is not specifically provided in 40 CFR 761.62, nor is there a reference to an "95% Upper Confidence Limit (UCL)." Upon further review of the PCB regulations, it has been determined that the release threshold of <1 ppm PCBs is the appropriate (i.e., most conservative) threshold and should be listed in Table 5. As indicated in 40 CFR 761.61(a)(4)(1), <1 ppm PCBs is the threshold for bulk PCB remediation waste in high occupancy areas. This is also consistent with the free-release concentration provided in Section 4.4.4 of the DOP.

Reviewer	Comment No.	Sec./Page/ Para.	Comment Description	Comment Resolution
CITY OF BRMFLD	N/A	Sec. 8.4	AIR EMISSIONS CONTROLS AND MONITORING - The DOP states that "air emissions will be controlled and monitored in accordance with the Site H&S Program and applicable environmental regulatory requirements." We are particularly concerned with how emissions which are generated during demolition activities will be controlled and monitored. The City of Broomfield requests a copy of the documents that describe how air emissions will be controlled and monitored.	Air emissions controls and monitoring to be employed during demolition activities will be described in the demolition modification to this DOP, which will be submitted for a public comment period equivalent to that for the initial Building 776/777 DOP. Prior to building demolition (i.e., during building component removal and decontamination activities), the heating, ventilation, and air conditioning (HVAC) systems in Building 776/777 will be configured and controlled to ensure that air flows from areas of least contamination (e.g., corridors, rooms) to areas of higher potential for contamination (e.g., gloveboxes). Air streams will be filtered through various stages of high efficiency particulate air (HEPA) filters, which remove particulate contamination. System interlocks will be used to shut down air supply systems to prevent air reversals in the event of a loss of exhaust air flow. The Building 776/777 Basis for Interim Operations (BIO) describes the HVAC controls in further detail. A copy of the BIO will be provided to the City of Broomfield.

Reviewer	Comment No.	Sec./Page/ Para.	Comment Description	Comment Resolution
CITY OF BRMFLD	N/A	Sec. 8.4	AIR EMISSIONS CONTROLS AND MONITORING - (continued from previous page)	The Air Quality Management (AQM) group within Kaiser-Hill Environmental Systems and Stewardship (ESS) operates effluent, ambient, and meteorological monitoring systems to characterize and quantify the air pathway impacts of Site activities on public receptors. The RFETS air monitoring programs are described in Section 4 of the "RFETS Integrated Monitoring Plan," (May 1998), and in the "Proposal to Use Environmental Sampling for Demonstrating Compliance with 40 CFR Part 61, Subpart H" (July 1997) and associated addendum (December 1998). As requested, copies of these documents will be provided to the City of Broomfield.
CITY OF BRMFLD	N/A	Sec. 4.7	INDEPENDENT VERIFICATION - Independent sampling and testing is an important element in verifying that all areas have been completely decontaminated. Sec. 4.7 of the DOP states that independent sampling and testing may be included as part of the independent verification. We request that the word "may" be replaced by the word "will."	Independent verification will be performed by an independent reviewer(s) selected by DOE, RFFO. Additional sampling and/or testing may be ordered on a case-by-case basis, at the discretion of the independent reviewer(s).
CITY OF BRMFLD	N/A	Sec. 8.5	POTENTIAL IMPACTS TO AIR AND WATER DRAINAGES - The DOP states that following the removal of buildings and other containers within the Cluster, bare ground will pose the potential for erosion of those soils by wind and water processes. The DOP states that "silt fencing or a similar protective device will be installed to prevent or minimize the possibility of water-borne soil leaving the immediate area and entering the drainage ways." This concept may not be protective of human health and environment.	The analysis of potential impacts to air and water drainages will be revised, as necessary, in the demolition modification to this DOP, which will be submitted for a public comment period equivalent to that for the initial Building 776/777 DOP.

Appendix G
Comment Response Summary for the Final Draft (7/7/99) of the Building 776/777 Decommissioning Operations Plan

Reviewer	Comment No.	Sec./Page/ Para.	Comment Description	Comment Resolution
CITY OF BRMFLD	N/A	Sec. 8.5	POTENTIAL IMPACTS TO AIR AND WATER DRAINAGES - In traffic areas, rock aggregate should be placed over bare ground in addition to silt fencing to control wind and water erosion. Alternatively, revegetation and/or application of soil stabilizers should be used for non-traffic areas as these techniques are likely to be more effective at controlling soil erosion from wind and water.	The analysis of potential impacts to air and water drainages will be revised, as necessary, in the demolition modification to this DOP, which will be submitted for a public comment period equivalent to that for the initial Building 776/777 DOP.
CITY OF BRMFLD	N/A	Sec. 6.2.8	POTENTIAL IMPACTS TO AIR AND WATER DRAINAGES - Section 6.2.8 states that waste water generated from decommissioning activities may be treated or directly discharged in compliance with the requirements of the NPDES permit. What are all the types of water that could be directly discharged? Where would these discharges be routed?	No wastewater that is generated during decommissioning will be discharged directly to the environment. The only water that is directly discharged is effluent from the Site's sewage treatment plant in accordance with the terms and conditions of the NPDES permit. The sewage treatment plant accepts (1) domestic wastewater; (2) non-domestic, non-hazardous, non-radioactive wastewater (i.e., cooling tower water, boiler blowdown); and (3) wastewater that meets the definition of an "internal waste stream" (i.e., non-hazardous, non-radioactive wastewater generated during building operations and/or decommissioning activities). Wastewater entering the sewage treatment plant must meet the applicable acceptance criteria. Effluent from the sewage treatment plant is monitored at three outfalls (the sewage treatment plant, Pond B-3, and Pond B-5 [under the NPDES permit]) and two points of compliance (Pond B-5 and Walnut Creek at Indiana Avenue [under RFCA]). Section 6.2.8 has been revised accordingly.

Appendix G
Comment Response Summary for the Final Draft (7/7/99) of the Building 776/777 Decommissioning Operations Plan

Reviewer	Comment No.	Sec./Page/ Para.	Comment Description	Comment Resolution
CITY OF BRMFLD	N/A	Sec. 8.10	POTENTIAL IMPACTS TO AIR AND WATER DRAINAGES - Section 8.10 states that dust and sediment generation from the project may reach Walnut Creek; therefore, potential impacts to the Preble's meadow jumping mouse habitat are a concern. The DOP fails to state that water quality standards for Walnut Creek are very stringent and that if actinide-laden dust or sediment generated from this area reaches Walnut creek, that a violation of the water quality standard could easily occur.	The analysis of potential impacts to air and water drainages will be revised, as necessary, in the demolition modification to this DOP, which will be submitted for a public comment period equivalent to that for the initial Building 776/777 DOP.
CITY OF BRMFLD	N/A	Sec. 10	IMPLEMENTATION SCHEDULE - Although some schedule information is provided in Appendix E, it is not clear when major activities related to the Building 776/777 Cluster deactivation and decommissioning will be occurring. From the text provided in Sec. 10, the first major schedule date is FY04; however, the schedule in Appendix E shows that activities are already occurring. The DOP also states that the information is based on the 2010 closure schedule. Please provide a schedule that includes just the major activities covered by the Building 776/777 DOP according to the 2006 Plan.	The new version of Figure 4, Set Prioritization, shows the year in which each SET is scheduled to be decommissioned. The new project schedule (included in Appendix D of the DOP) provides additional detail. Finally, all references to the "2010 Plan" have been changed to the "Closure Project Baseline" so that the DOP will remain current and will not require modifications when the plan changes.

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Appendix H
RCRA Unit-Specific Closure Information Sheets

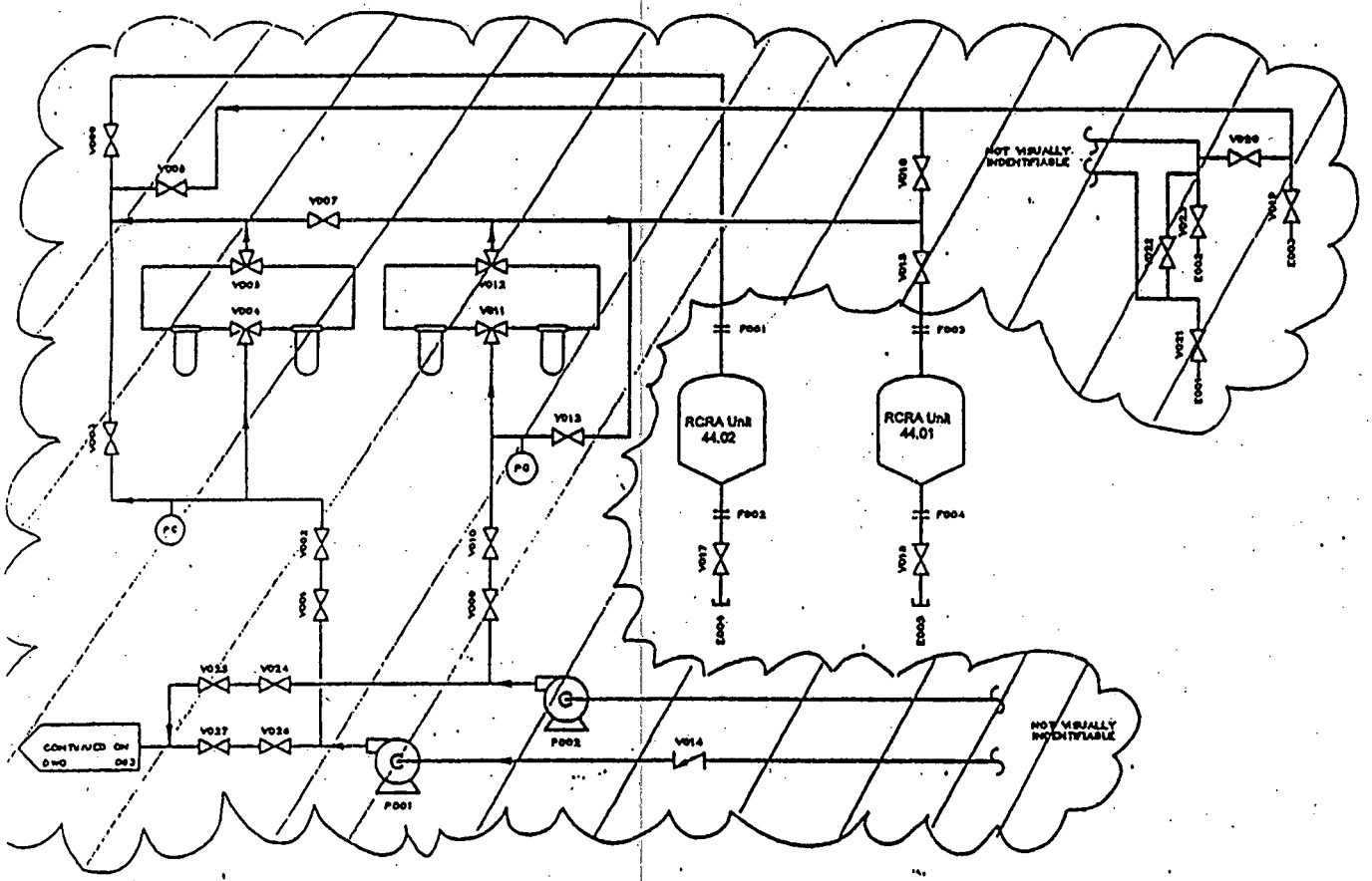
SEI #	RCRA Unit (s)	Description	DOP Mod #	Effective Date	Page #s
62	44.01, 44.02	FBI Oil Storage Tanks T-2 (FBI2) T-1 (FBI1)	1	12/15/99	273-276
7	95.006, 95.007, 95.008	Mixed Residue Tanks 1103, 1104, 1106	3	03/03/00	277-278
11	95.014	Mixed Residue Pencil Tank T-7	3	03/03/00	279-280
26	95.015, 95.016	Mixed Residue Holding Tanks T-1 and T-2	3	03/03/00	281-284
61	49.02	Pencil Tanks T-1 and T-2	3	03/03/00	285-287
55	94.001, 94.002, 94.003	Mixed Residue Tanks SRV-3, SRV-4, and SRV-5	5	09/13/00	288-290
4	95.019, NA	Tanks V-605, DL-776, Glovebox 612	6 (Rev in Mod 8)	02/22/01	291-295
5	NA	Tanks V-614, V-616, V-618, V-620	6	02/22/01	296-301
6	NA	Tanks V-626, V-627, Glovebox 642	6 (Rev in Mod 8)	02/22/01	302-306
10	NA	Tank V-752, ancillary piping	6	02/22/01	307-310
11	NA	Tanks V-746, V-747, V-747A, V-748, V-749	6	02/22/01	311-318
18	95.015	Gloveboxes 368, 465 ancillary	6	02/22/01	319-320
21	95.015	Glovebox 426 ancillary	6	02/22/01	321-322
22	95.015	Glovebox 446 ancillary	6	02/22/01	323-324
27	777.1	Room 432C Container Storage	6	02/22/01	325
29	95.015	Ancillary equipment	6 (Rev in Mod 8)	02/22/01	326-327
34	NA	Tank V-022	6	02/22/01	328-329
35	95.015	Glovebox 524 ancillary	6 (Rev in Mod 8)	02/22/01	330-331
36	NA	Tank V-543	6 (Rev in Mod 8)	02/22/01	332-334
52	94.007, 94.008	Tanks T-360, T-370	6	02/22/01	335-337

SP#'s	RCRA Unit #(s)	Description	DOP Mod #	Effective Date	Page #'s
60	61, 94.009, 94.010, 94.011	Size Reduction Vault, Ball Mill Washer, Collection Pan, Annular Tank	8	05/01/02	338-339
61	49.02	Pilot Fluidized Bed Incinerator	8	05/01/02	340-342
63	49.01	Production Fluidized Bed Incinerator	8	05/01/02	343-344
64	74	Supercompactor and Repackaging Facility	8	05/01/02	345-347
66	776.1, 776.3, 94.005, 94.006	Advanced Size Reduction Facility, Tanks T-344, T-345	8	05/01/02	348-351
69	776.2 A, B, C, D	Tanks T-1A, T-1B, T-2A, T-2B	8	05/01/02	352-354
78	various	Overhead RCRA piping above 8 feet	8	05/01/02	355-357
82	Various	Concrete secondary containment for tank systems, container storage, and treatment units	9	10/01/02	358-360

B776/777 Closure Project
RCRA Unit-Specific Closure Information Sheet

SET #	RCRA Unit #(s)	Description	Regulatory Status	Closure Status
62	44.01	FBI Oil Storage Tank T-2 (FBI-2)	Interim Status	RCRA Stable
	44.02	FBI Oil Storage Tank T-1 (FBI-1)	Interim Status	RCRA Stable

Unit Description:	RCRA Units 44.01/44.02 are located in Room 134 of Building 776. The tanks were used for storage of liquid wastes intended for processing in the Fluidized Bed Incinerator (FBI) Production Unit in Room 118. Tank T-1 has a capacity of 400 gallons, and T-2 has a capacity of 350 gallons. The tanks were filled with raschig rings when in use and had working volumes of 260 gallons and 230 gallons, respectively. Constituents within the liquid were identified as water, methanol, pyridine, methylene chloride, diesel fuel, paint thinners, iodine, sulfur dioxide, and 1,1,1-trichloroethane. The initial draining of the two tanks occurred in 1992. Residual liquids and raschig rings were removed in March and April of 1998. As part of this effort the pumping system, metering system, and associated piping in Room 134 were also removed.
Unit Boundaries and Interfaces:	RCRA Units 44.01/44.02 were connected to Unit 49.01, the FBI Production Unit. For the purposes of this RCRA closure activity, the ancillary equipment and piping that runs from the tanks to the east wall of Room 134 is considered to be part of Units 44.01/44.02. As described above, ancillary equipment and piping in Room 134 was removed in 1998. The ancillary equipment and piping that runs from the east wall of Room 134, through the Room 118 Series rooms, to the FBI Production Unit, is considered to be part of Unit 49.01 This equipment and piping will be removed with Unit 49.01 during the decommissioning of SET 63. The attached engineering drawings (D-062 and D-063) and FBI system flow diagram show these boundaries and interfaces.
EPA Waste Codes:	D001, D006, D007, D008, D018, D019, D028, D029, D035, D038, D040, D043, F001-F003, F005
Selected Closure Option	Unit removal without onsite treatment
Closure Requirements:	Since all the ancillary equipment and piping located in Room 134 has already been removed, the scope of this work package is limited to physical removal of the tanks, either by cutting or unbolting the legs of the tanks from floor.
Waste Disposal:	If residual liquids are present, they will be drained or absorbed. Upon final radiological characterization, the tanks will be packaged to meet the waste acceptance criteria (WAC) of the approved disposal facility. Hoisting and rigging equipment will be used to facilitate transport to a size reduction facility, if necessary. In the event this waste cannot be shipped directly to the approved disposal facility, it will be stored in an approved on-site storage area until shipment can be scheduled.



NOTES:

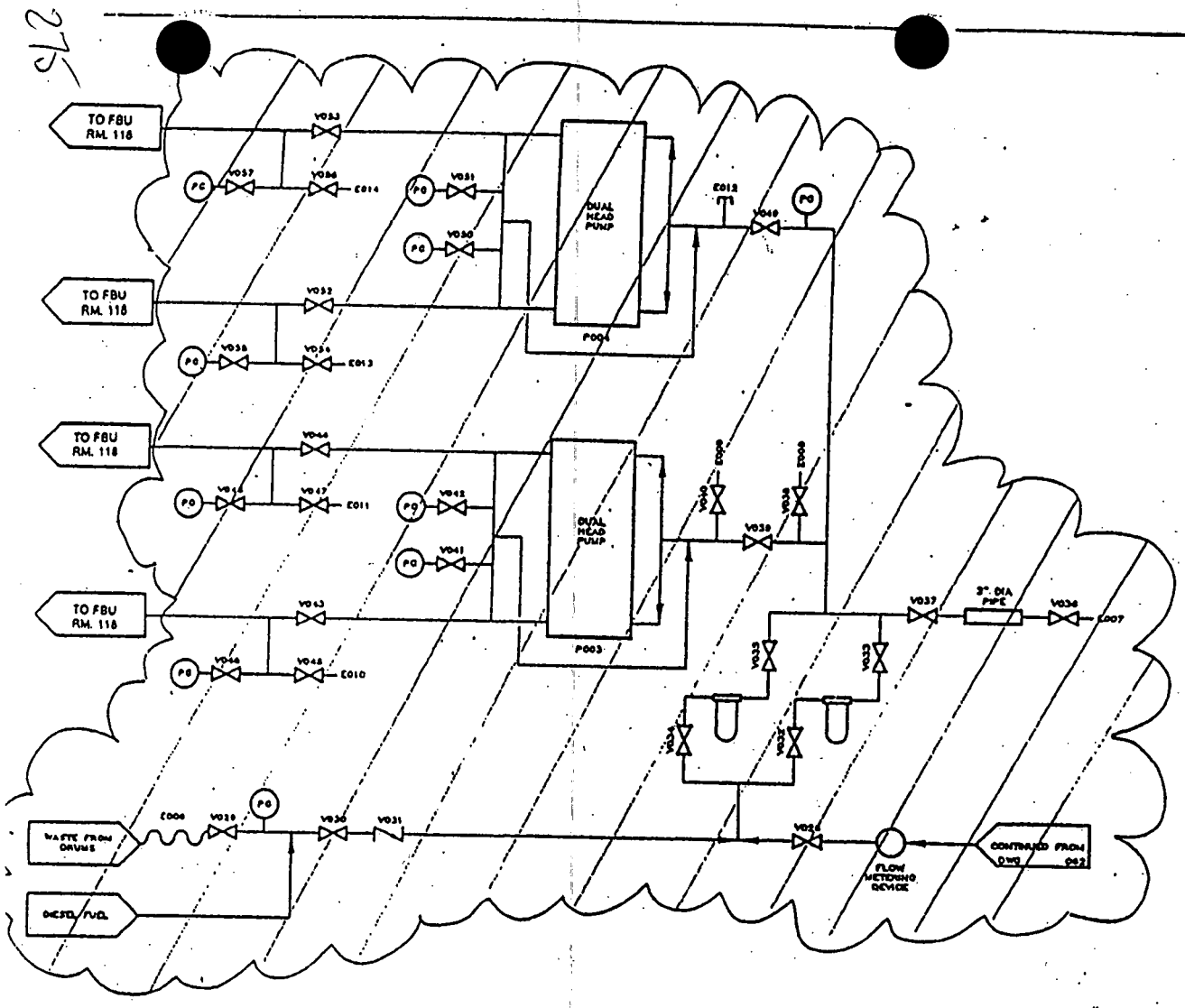
1) Shaded area shows ancillary equipment and piping that was removed in 1998 under IWCP Work Package #T0094282.

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RCRA UNIT #44
BLDG 776, ROOM 134

08/30/91

KEYWORDS: RCRA, CLOSURE, 776, 134, F6	A ORIGINAL ISSUE	U.S. DEPARTMENT OF ENERGY — Rocky Flats Plant — RCRA CLOSURE AA DRAWING	FBI FILTER AND FEED TANKS (1 OF 2)
		SCALE: NONE	D ##### 0852 A Page 277



NOTES:

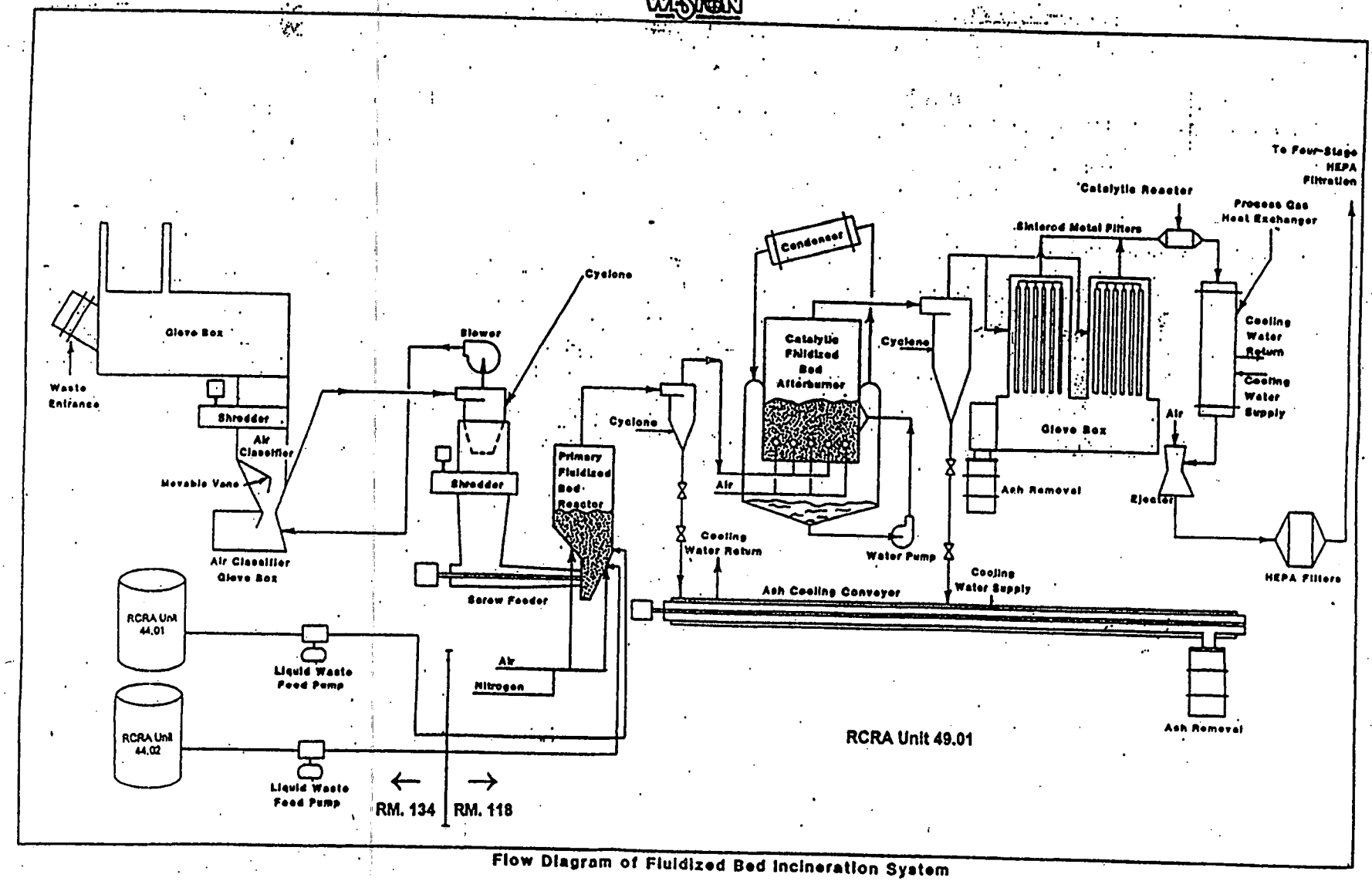
1) Shaded area shows ancillary equipment and piping that was removed in 1998 under IWCP Work Package #T0094282.

Best Available Copy

RCRA UNIT #44
BLDG 776, ROOM 134

08/30/91

U.S. DEPARTMENT OF ENERGY
Rocky Flats Plant
FBI FILTER AND FEED TANKS (2 OF 2)
#####-063 A



Flow Diagram of Fluidized Bed Incineration System

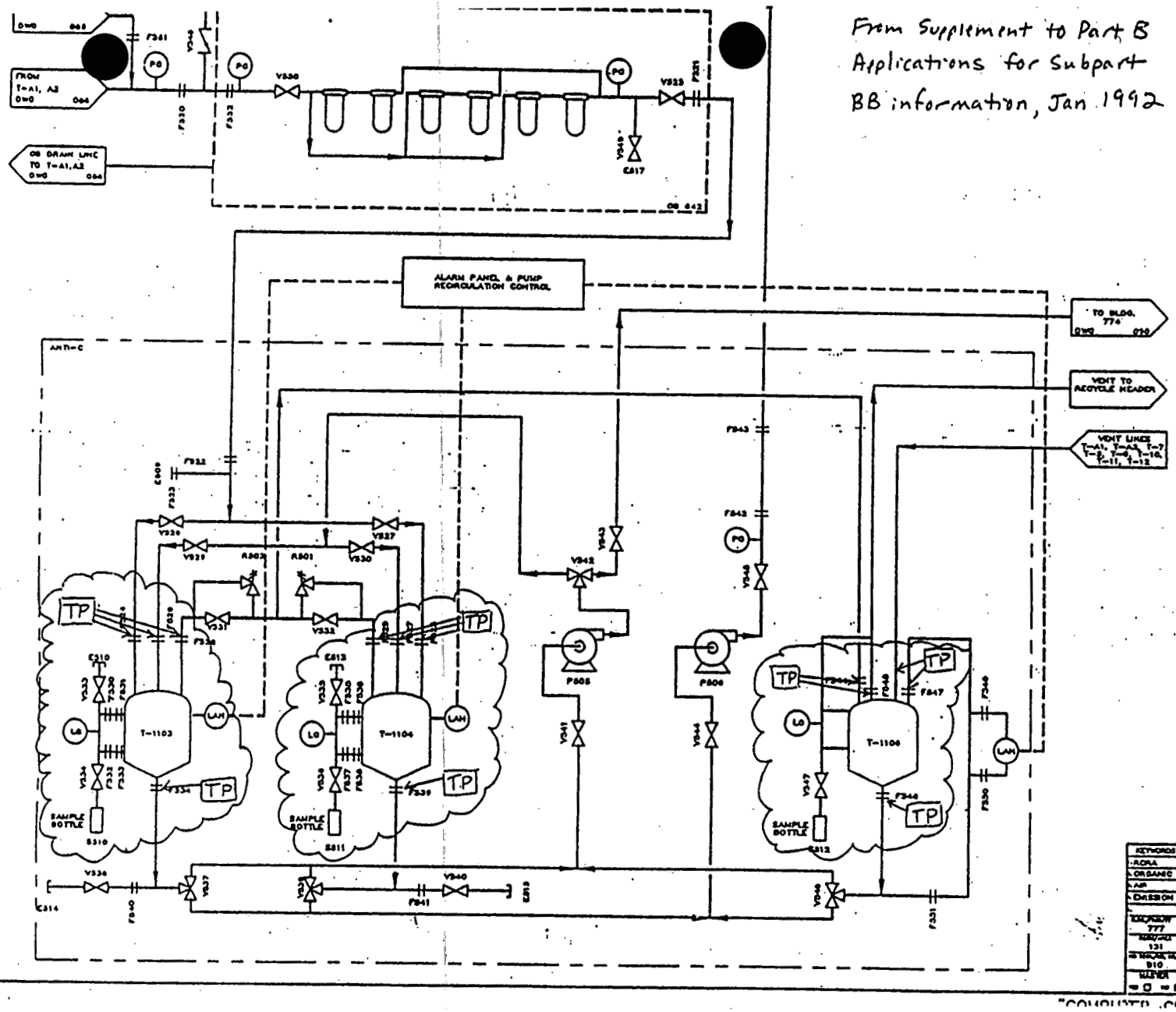
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B776/777 Closure Project
RCRA Unit-Specific Closure Information Sheet

SET #	RCRA Unit #(s)	Description	Regulatory Status	Closure Status
7	95.006	Mixed Residue Tank 1103	Mixed Residue	RCRA Stable/Physically Empty
	95.007	Mixed Residue Tank 1104	Mixed Residue	RCRA Stable/Physically Empty
	95.008	Mixed Residue Tank 1106	Mixed Residue	RCRA Stable/Physically Empty

Unit Description:	Tanks 1103, 1104, and 1106 were installed in Room 131 of Building 777 in 1972. These raschig-ring tanks were used to store contaminated organic waste, which was transferred via pipeline to Building 774 for treatment. The waste was primarily used machining coolant (predominately 643 light hydraulic oil) with spent carbon tetrachloride solvent, along with smaller amounts of Freon TF (1,1,2-trichloro-1,2,2-trifluoroethane), vacuum pump oil, and sight gauge oil. Other liquids included 645 heavy grade hydraulic oil, 10W-30 &10W-40 motor oil, perchloroethylene, spray mist oil, vacuum pump exhaust condensate, and 689 criticality drain fluid. In addition, liquids originating from a series of five pencil tanks (T-5, T-6, T-10, T-11, and T-12) in Room 134 were filtered in Glovebox 642, then transferred to Tank 1104. After sampling and additional filtering (as necessary), the waste liquid was pumped into Tank 1103 for confirmatory sampling in preparation for pipeline transfer to Building 774. Tank 1106 was an overflow tank that connected to Tanks 1103 and 1104. All three tanks were drained, raschig rings removed, process waste lines disconnected, and blank flanges installed in August and September of 1998.
Unit Boundaries and Interfaces:	RCRA Units 95.006, 95.007, and 95.008 are connected to ancillary equipment that will be removed during the decommissioning of SET 8 (piping in Room 131), SET 6 (Glovebox 642), and SET 78 (miscellaneous piping over eight feet). This closure activity is limited to removal of the tanks themselves. The ancillary piping and glovebox will be removed at a later date. The attached drawing shows a schematic of the tanks and ancillary equipment, with the approximate termination points (TPs).
EPA Waste Codes:	D006, D007, D008, D019, F001, F002
Selected Closure Option:	Unit removal without onsite treatment.
Closure Requirements:	This closure activity will include disconnecting the tanks from the Zone I exhaust system, disconnecting the legs of the tanks, size-reducing the tanks in place or in a central size reduction facility (as necessary), and packaging the tanks for offsite disposal.
Waste Disposal:	If residual liquids are present, they will be absorbed. The tanks will be disposed of as mixed waste. Upon final radiological characterization, the tanks will be packaged to meet the waste acceptance criteria (WAC) of the approved disposal facility. Hoisting and rigging equipment will be used to facilitate transport to a size reduction facility, if necessary. In the event this waste cannot be shipped directly to the approved disposal facility, it will be stored in an approved onsite storage unit until shipment can be scheduled.

From Supplement to Part B Applications for Subpart BB information, Jan 1992



NOTES:

1) THE TOTAL ORGANIC CONCENTRATION OF THE HAZARDOUS WASTE STREAM AT ALL PIECES OF REGULATED EQUIPMENT ON THIS DRAWING IS 100%, UNLESS OTHERWISE NOTED.

2) THESE DRAWINGS ARE CONSIDERED DRAFT UNTIL OFFICIAL DRAWING NUMBERS HAVE BEEN ASSIGNED BY THE ENGINEERING DEPARTMENT AT THE ROCKY FLATS PLANT.

BLDG 777, ROOM 131

08/30/91

RCRA ORGANIC AIR EMISSIONS
CCL4 SYSTEM
(1 OF 6)

D #####-084 A 29

"COMPUTER GENERATED" NO MANUAL CHANGES ALLOWED

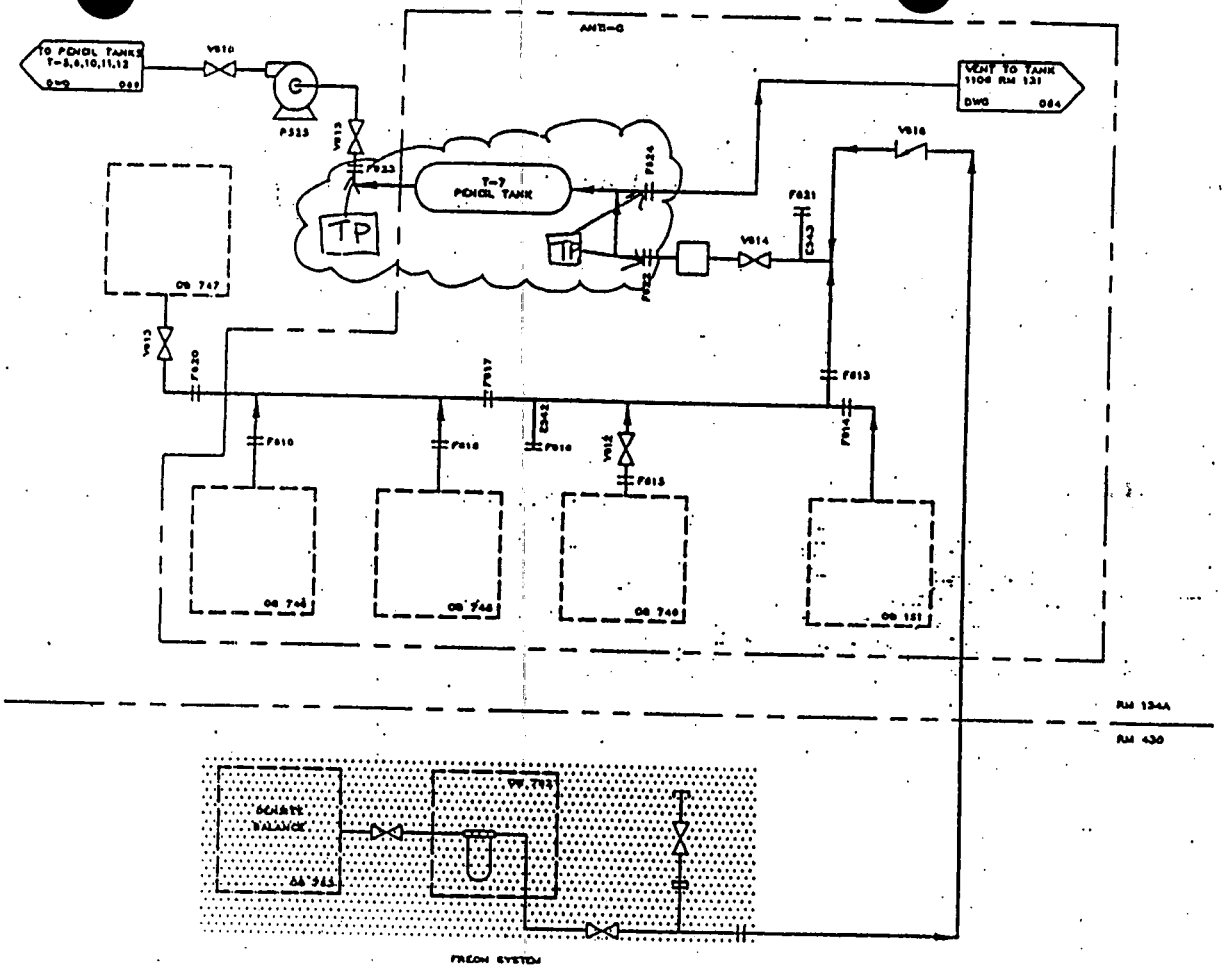
Building 776/777, SET 7
Tanks 1103, 1104, 1106
(RCRA Units 95.006, 95.007, 95.008)

B776/777 Closure Project
RCRA Unit-Specific Closure Information Sheet

SET #	RCRA Unit #(s)	Description	Regulatory Status	Closure Status
11	95.014	Pencil Tank T-7	Mixed Residue	RCRA Stable/Physically Empty

Unit Description:	Pencil Tank T-7 is located in Room 134E in Building 777. T-7 was used as a surge tank, which collected waste oils, coolants, and carbon tetrachloride from machining processes located in the gloveboxes in Room 134E, and freon from the density balance located in Glovebox 763 in Room 430. From T-7, the waste was transferred to a series of five pencil tanks (T-5, T-6, T-10, T-11, and T-12) in Room 134. The waste from the five pencil tanks was then transferred to Tank 1104 in Room 131 (SET 7). Tank T-7 is vented to Tank 1106 in Room 131. T-7 was drained and isolated in 1997, when the five pencil tanks were closed as part of Mixed Residue Pencil Tank Closure Project #2.
Unit Boundaries and Interfaces:	RCRA Unit 95.014 includes Tank T-7 and associated ancillary equipment in Room 134E. The attached drawing shows a schematic of the tank and ancillary equipment. This closure activity is limited to the removal of T-7, only. The associated ancillary piping will be removed with Gloveboxes 746, 747, 748, 749 and associated M-lines, and mixed residue vacuum accumulators V-746, V-747, V-748, and V-749, at a later time.
EPA Waste Codes:	D006, D007, D008, D019, F001, F002
Selected Closure Option:	Unit removal without onsite treatment.
Closure Requirements:	The work effort will include disconnecting the tank from the vent line and the inlet and outlet piping, installing blank flanges on the lines remaining, size-reducing the tank (if necessary), and packaging the tank for offsite disposal.
Waste Disposal:	If residual liquids are present, they will be absorbed. The tank will be disposed of as mixed waste. Upon final radiological characterization, the tank will be packaged to meet the waste acceptance criteria (WAC) of the approved disposal facility. In the event this waste cannot be shipped directly to the approved disposal facility, it will be stored in an approved onsite storage area until shipment can be scheduled.

280



NOTES:

1) THE TOTAL ORGANICS CONCENTRATION IN THE HAZARDOUS WASTE STREAM AT ALL PIECES OF REGULATED EQUIPMENT ON THIS DRAWING IS 100%, UNLESS OTHERWISE NOTED.

2) THESE DRAWINGS ARE CONSIDERED DRAFT UNTIL OFFICIAL DRAWING NUMBERS HAVE BEEN ASSIGNED BY THE ENGINEERING DEPARTMENT AT THE ROCKY FLATS PLANT.

08/30/91

From Supplement to Part B Permit Applications for Subpart BB information, January 1992

KEYWORDS: RCRA, ORGANIC, AIR, DIVISION, 777, 776, 776A, 430, M10, WASTE	A ORIGINAL ISSUE	U.S. DEPARTMENT OF ENERGY, Rocky Flats Plant, RCRA ORGANIC AIR EMISSIONS, CCL4 SYSTEM (5 OF 6)	
	NONE	D ######-088	A 33

"COMPUTER GENERATED: NO MANUAL CHANGES ALLOWED"

280

Building 776/777 DOP

Building 776/777, SET 11
Pencil Tank T-7
RCRA Unit 95.014

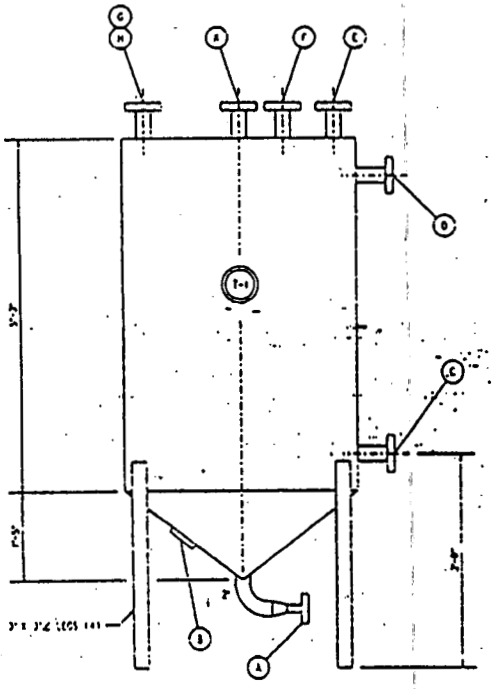
Revision 1
July 1, 2003

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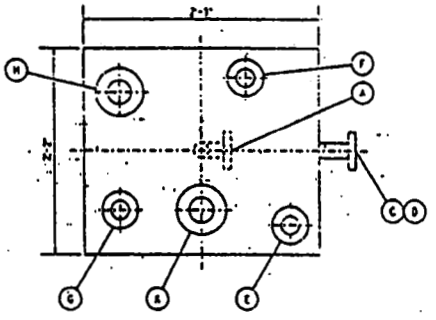
B776/777 Closure Project
RCRA Unit-Specific Closure Information Sheet

SET #	RCRA Unit #(s)	Description	Regulatory Status	Closure Status
26	95.015	Holding Tank T-1	Mixed Residue	Physically Empty
	95.016	Holding Tank T-2	Mixed Residue	Physically Empty

Unit Description:	Holding Tanks T-1 and T-2 are located in Room 430 in Building 777. These stainless steel, raschig-ring tanks were built in 1969, and had approximate working capacities of 150 gallons and 170 gallons respectively (subtracting the raschig ring volume). The tanks were used to collect waste 1,1,1-trichloroethane (TCA) from vapor degreasers and gloveboxes in Building 777 (Rooms 430, 437, 440, and 452), and from Tank V-100 in Building 707. The waste TCA from both buildings was collected in Tank T-1, filtered in Glovebox FL-1, and transferred to Tank T-2. From Tank T-2, the waste TCA was pumped to an overhead line, where it joined a double-contained line, which was used to transfer oil and carbon tetrachloride wastes to Building 774 for treatment. The raschig rings were removed from both tanks in January 2000. No residual liquid or sludge was present. The ancillary pumps, filters in Glovebox FL-1, and the inlet piping back to the first valves above the tanks were also drained and removed at that time. The outlet piping from Tank T-2 to the tie-in with the waste oil/coolant piping was drained and removed in July 1998. The remaining ancillary inlet piping that connected Tanks T-1 and T-2 to waste sources in Building 777 (Rooms 430, 437, 440, and 452), and to Tank V-100 in Building 707, has not been drained.
Unit Boundaries and Interfaces:	RCRA Units 95.015 and 95.016 consist of Holding Tanks T-1 and T-2 and associated ancillary equipment, including Glovebox FL-1, piping located inside Glovebox FL-1, and the remaining inlet piping that connected Tanks T-1 and T-2 to waste sources in Buildings 777 and 707. The attached drawings show Tanks T-1 and T-2, and a schematic of the tanks and ancillary equipment.
EPA Waste Codes:	F001, F002
Selected Closure Option:	Tanks and ancillary piping: Unit removal without onsite treatment. Glovebox FL-1: Unit removal in conjunction with "debris rule" treatment (i.e., either water washing/spraying or liquid phase solvent).
Closure Requirements:	This closure activity includes (1) removal, size reduction (if necessary), and packaging of Tanks T-1 and T-2, the vent line connecting each tank to Glovebox FL-1, and the ancillary piping inside Glovebox FL-1; and (2) "debris rule" treatment, removal, size reduction (if necessary), and packaging of Glovebox FL-1. The remainder of the ancillary inlet piping that connected Tanks T-1 and T-2 to waste sources in Building 777 and 707 will be removed during the decommissioning of SET 29 (piping in Room 437), SET 27 (piping in Room 440), SET 35 (piping in Room 452), and SET 78 (miscellaneous piping over eight feet).
Waste Disposal:	The tanks will be disposed of as mixed waste. If, after "debris rule" treatment, Glovebox FL-1 meets the standard for a "clean debris surface," and it does not exhibit a hazardous waste characteristic, it will be disposed of as solid waste. If not, it will be disposed of as mixed waste. Upon final radiological characterization, the tanks will be packaged to meet the waste acceptance criteria (WAC) of the approved disposal facility. In the event this waste cannot be shipped directly to the approved disposal facility, it will be stored in an approved onsite storage area until shipment can be scheduled.



ELEV.



PLAN

NOZZLE SCHEDULE						
SERVICE	MARK	NUMBER	SIZE	RATING	FACE	TYPE
DRAIN	A	1	1"	150#	RF	FLG
S.G.	B	1	3"	150#		
S.G.	C	1	3"	150#	RF	FLG
S.G.	D	1	3"	150#	RF	FLG
TANK RETURN	E	1	1"	150#	RF	FLG
VENT	F	1	1"	150#	RF	FLG
L.S.	G	1	3"	150#	RF	FLG
L.S.	H	1	4"	150#	RF	FLG
SIGHT GLASS	K	1	4"	150#	FF	FLG

TANK INFORMATION TABLE	
MATERIAL OF CONSTRUCTION:	304 SS
WASTE CONTAINED:	TRICHLOROETHANE
OVERALL DIMENSIONS:	2'-5" x 2'-2" x 8'-3"
CAPACITY (GAL):	190
SHELL THICKNESS:	.375" (EST)
MAXIMUM LIQUID LEVEL:	.80%
SPECIFIC GRAVITY:	1.0
STRUCTURAL SUPPORTS:	1/4 3" ANGLE
YEAR OF CONSTRUCTION:	1969
SEAM TYPE:	WELDED
OPERATING PRESSURE:	ATMOSPHERIC
OPERATING TEMPERATURE:	AMBIENT
DESIGN PRESSURE:	
DESIGN TEMPERATURE	

From Part B Permit Application for TRU mixed wastes, July 1988

CONTROLLED DRAWING

RMP The Rust M. Parsons Company

U.S. DEPARTMENT OF ENERGY

HOLDING TANK T-1

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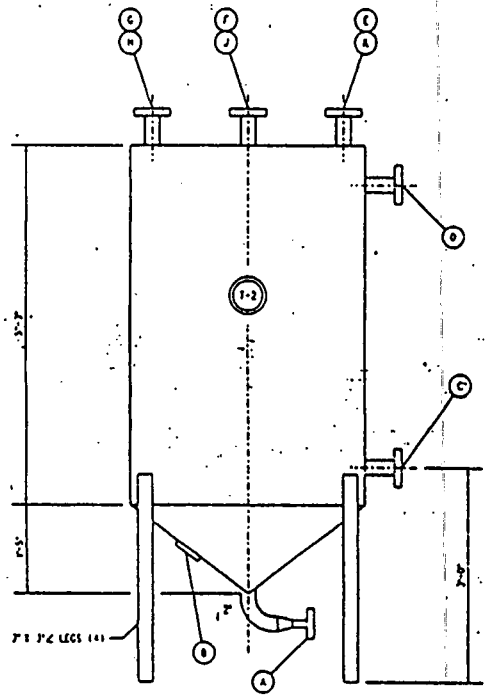
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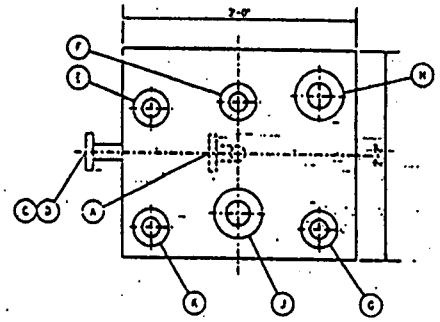
Buildin /777 DOP

Building 776/777, SET 26
Holding Tank T-1
RCRA Units 95.015

Revision 1
July 1, 2003



ELEV.



PLAN

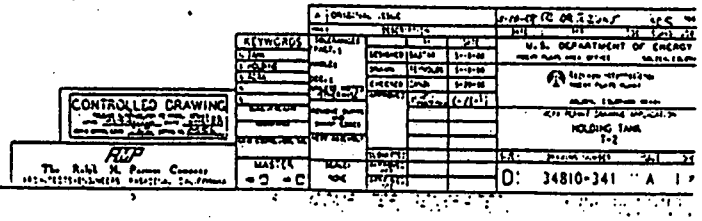
NOZZLE SCHEDULE

SERVICE	MARK	NUMBER	SIZE	RATING	FACE	TYPE
DRAIN	A	1	1"	150#	RF	FLG
S.G.	B	1	3"	150#		
S.G.	C	1	3"	150#	RF	FLG
S.G.	D	1	3"	150#	RF	FLG
TRUCK RETURN	E	1	1"	150#	RF	FLG
VENT	F	1	1"	150#	RF	FLG
L.S.	G	1	3"	150#	RF	FLG
L.S.	H	1	4"	150#	RF	FLG
SIGHT GLASS	J	1	4"	150#	FF	FLG
INLET	K	1	1"	150#	RF	FLG

TANK INFORMATION TABLE

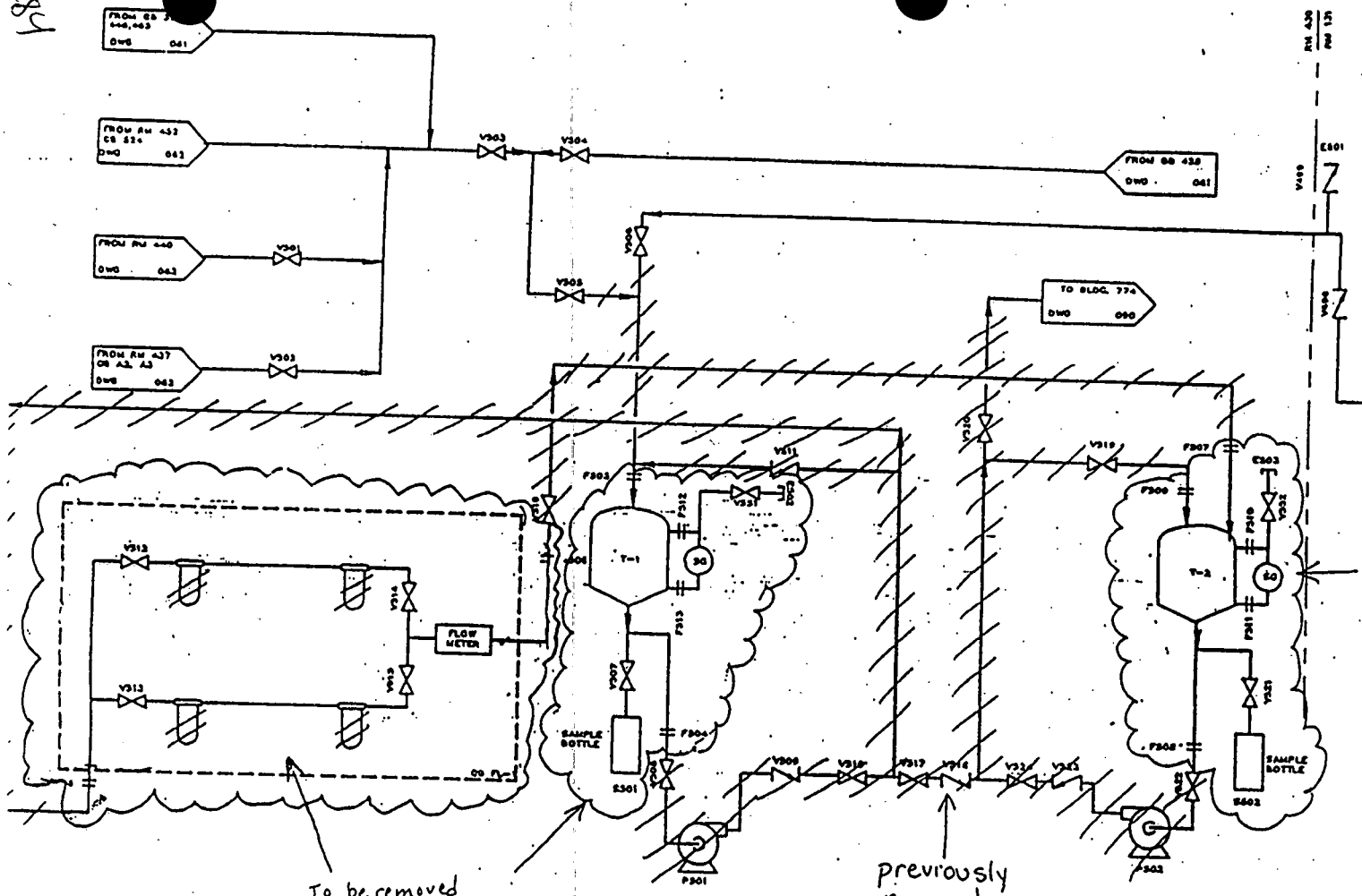
MATERIAL OF CONSTRUCTION:	304 SS
WASTE CONTAINED:	TRICHLOROETHANE
OVERALL DIMENSIONS:	2'-3" x 2'-3" x 8'-8"
CAPACITY (GAL):	170
SHELL THICKNESS:	.375"
MAXIMUM LIQUID LEVEL:	80%
SPECIFIC GRAVITY:	1.0
STRUCTURAL SUPPORTS:	(4) 3" ANGLE
YEAR OF CONSTRUCTION:	1959
SEAM TYPE:	WELDED
OPERATING PRESSURE:	ATMOSPHERIC
OPERATING TEMPERATURE:	AMBIENT
DESIGN PRESSURE:	
DESIGN TEMPERATURE	

From Part B Permit Application for TRU Mixed Wastes, July 1988



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284



rom Supplement to Part B Permit Applications
r Subpart BB information, January 1992

"COMPUTER-GENERATED. NO MANUAL CHANGES ALLOW

284

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Building 776/777, SET 26
Holding Tanks T-1 and T-2
RCRA Units 95.015 and 95.016

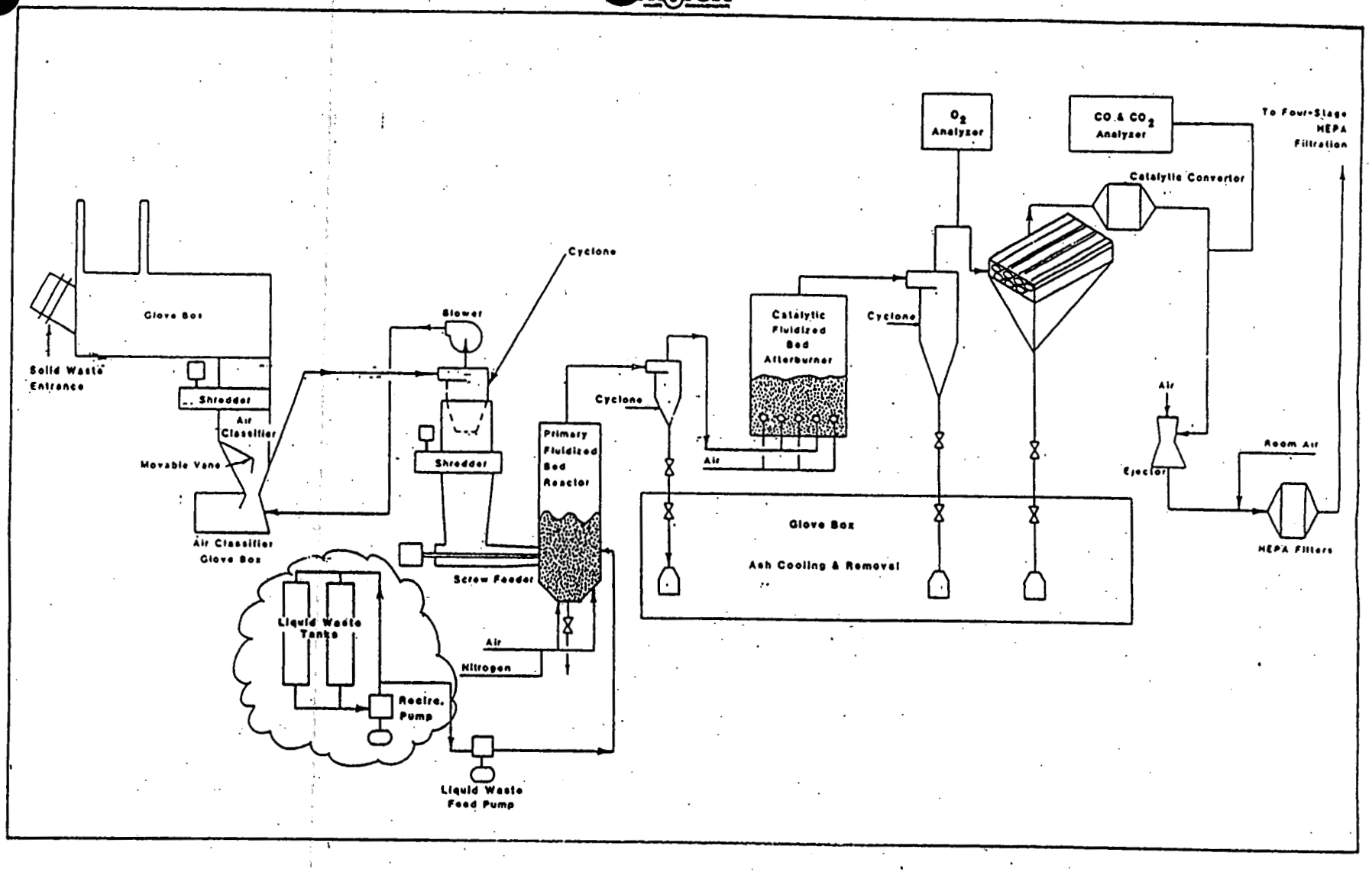
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Revision 1
July 1, 2003

B776/777 Closure Project
RCRA Unit-Specific Closure Information Sheet

SET #	RCRA Unit #(s)	Description	Regulatory Status	Closure Status
61	49.02	Pencil Tank T-1	Interim Status	RCRA Stable
		Pencil Tank T-2	Interim Status	RCRA Stable

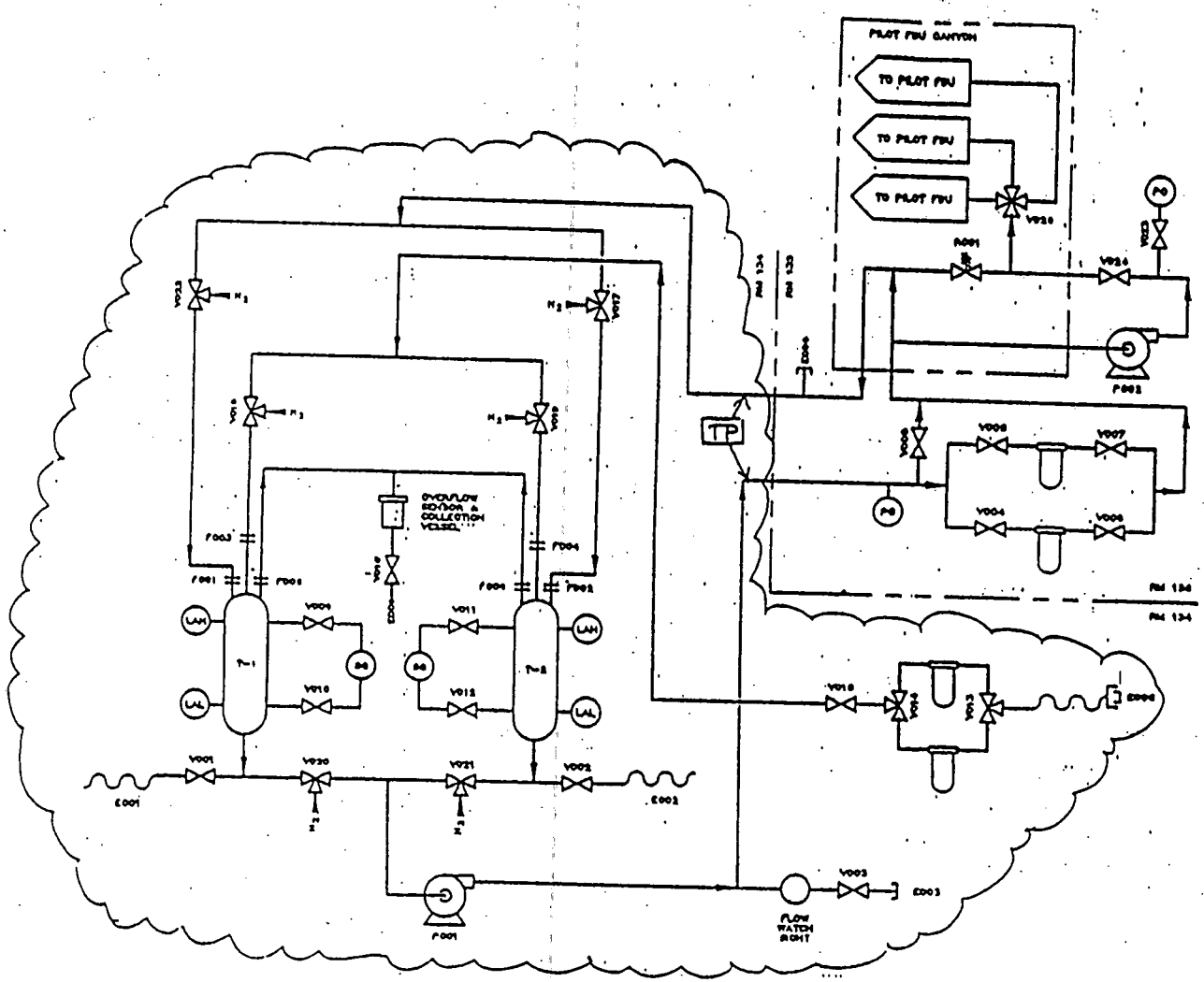
Unit Description:	Pencil Tanks T-1 and T-2 in Room 134 were used as feed tanks for the Pilot Fluidized Bed Incinerator (FBI). They are six-inch diameter stainless steel tanks, with capacities of approximately eight gallons each. Liquid wastes were received in 55-gallon drums and pumped through a filter into the pencil tanks. The liquid was mixed by pumping it through a recirculation loop with a Sandpiper double diaphragm pump. A variable displacement metering pump was used to deliver the liquid waste to the primary reactor in the incinerator chamber. Pencil Tanks T-1 and T-2 have contained various organic solvents, degreasing fluids, lubricating oils, cutting oils, and other oil/solvent wastes from laboratories and production areas at Rocky Flats. Methanol was used during start-up to bring the incinerator up to operating temperature. An EPA-approved trial burn for PCBs was conducted in the pilot FBI in May 1981 using a feed comprised of 25 weight percent pyranol A13B3B3 (PCB transformer fluid) and 75 weight percent kerosene (Conoco LPA solvent). The test burn achieved a 99.9999 percent destruction efficiency. The tanks were drained in May 1996 and the tank piping was locked/tagged out.
Unit Boundaries and Interfaces:	RCRA Unit 49.02 includes the FBI Pilot Unit, Pencil Tanks T-1 and T-2, and associated ancillary equipment. The pencil tanks, Sandpiper pump, two filters, and some ancillary piping are located in Room 134. Additional filters and the metering pump are located in Room 135 outside the incinerator canyon, and the pilot FBI unit and feed lines are located inside the incinerator canyon. The attached drawings show a schematic of the entire system and a schematic of the tanks and ancillary equipment. This closure activity includes removal of the pencil tanks, Sandpiper pump, filters, and ancillary piping in Room 134 only. The piping will be capped at the wall between rooms 134 and 135. The FBI Pilot Unit will be removed at a later date.
EPA Waste Codes:	D001, F001, F003, F005, and U044.
Selected Closure Option:	Unit removal without onsite treatment.
Closure Requirements:	The work effort will include disconnecting electrical, air, and nitrogen lines; tapping low points in the system and draining residual liquids (if necessary); draining and removing the filters; and removing the ancillary piping and pump. The tanks will then be removed, size-reduced in place or moved to a central size reduction facility, and packaged for offsite shipment.
Waste Disposal:	If residual liquids are present, they will be drained or absorbed. The tanks will be disposed as mixed waste. Upon final radiological characterization, the tanks will be packaged to meet the waste acceptance criteria (WAC) of the approved disposal facility. Hoisting and rigging equipment will be used to facilitate transport to a size reduction facility, if necessary. In the event this waste cannot be shipped directly to the approved disposal facility, it will be stored in an approved onsite storage area until shipment can be scheduled.



Building 776/777, SET 61
Pilot Fluidized Bed Incineration System
Pencil Tanks T-1 and T-2
RCRA Unit 49.02

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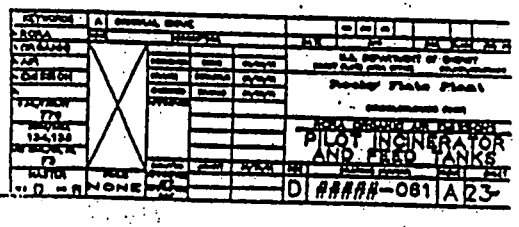
NOTES:

1) THE TOTAL ORGANICS CONCENTRATION IN THE HAZARDOUS WASTE STREAM AT ALL PIECES OF REGULATED EQUIPMENT ON THIS DRAWING IS 10% UNLESS OTHERWISE NOTED.

2) THESE DRAWINGS ARE CONSIDERED DRAFT UNTIL OFFICIAL DRAWING NUMBERS HAVE BEEN ASSIGNED BY THE ENGINEERING DEPARTMENT AT THE ROCKY FLATS PLANT.

From Supplement to Part B Permit Applications for Subpart BB information; January 1992

08/30/91



287

B776/777, SET 61
Pencil Tanks T-1 and T-2
RCRA Unit 49.02

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Appendix H
B776/777 Closure Project
RCRA Unit Closure Information Sheet

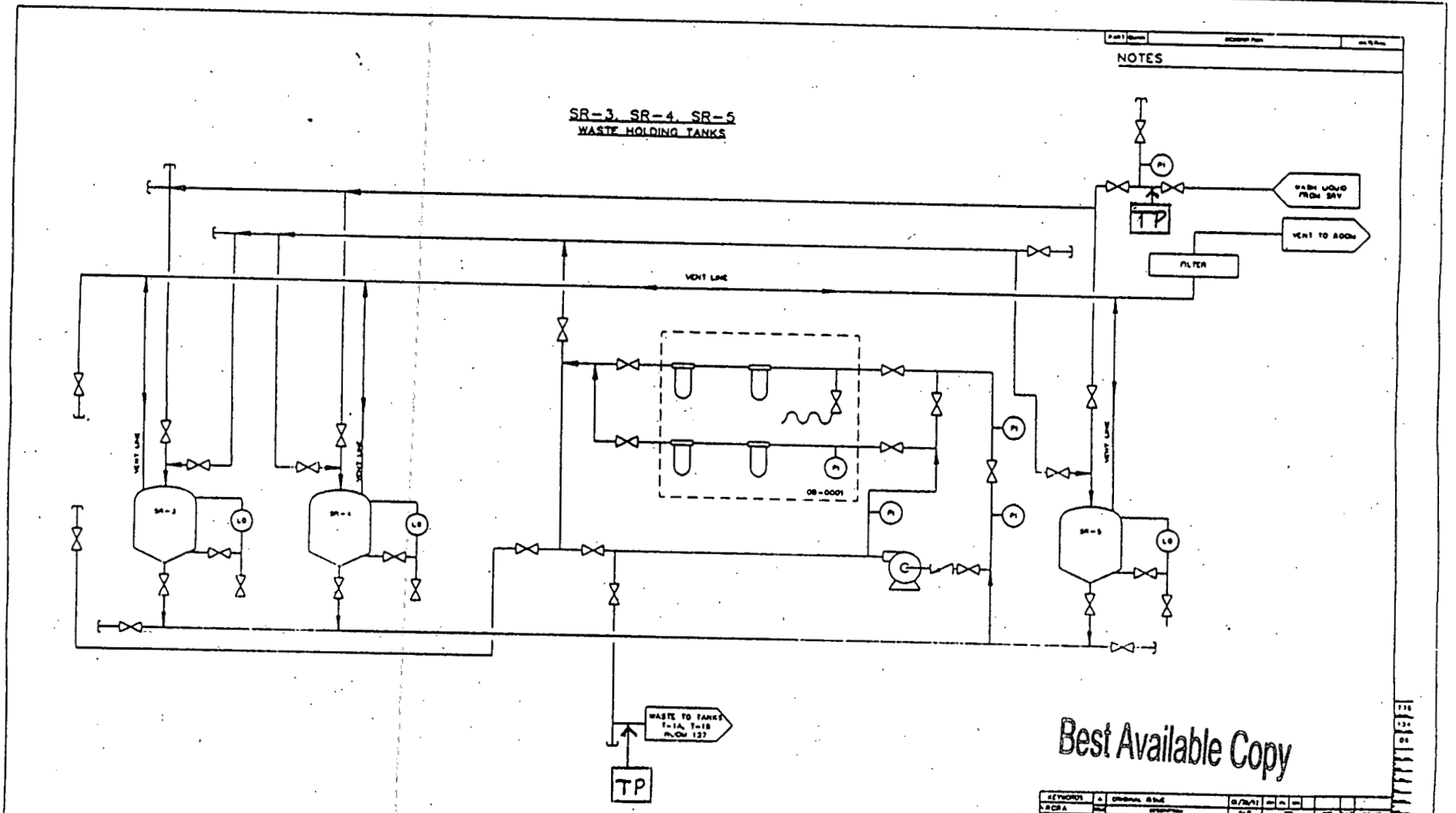
SET #	RCRA Unit #(s)	Description	Regulatory Status	Closure Status
55	94.001	Tank SRV-3	Mixed Residue	Operationally Empty
	94.002	Tank SRV-4	Mixed Residue	Operationally Empty
	94.003	Tank SRV-5	Mixed Residue	Operationally Empty

Unit Description:	Tanks SRV-3, SRV-4, and SRV-5 (RCRA Units 94.001, 94.002, and 94.003) are raschig ring filled tanks located in Room 134 in Building 776. SRV-3 is 53.5" in diameter by 39.5" high, SRV-4 is 41" in diameter and 40.5" high, and SRV-5 is 42" in diameter by 40.5" high. The three tanks were used to collect wash water generated in the Size Reduction Vault (SRV). The wash water was generated from washing leaded acid-contaminated gloves, filters, and metal tooling in the ball mill washer (RCRA Unit 94.009). Wash water from the SRV was pumped through Ful-flo filters in the vault and transferred to Tanks SRV-3, 4, and 5. From these three tanks the waste was filtered in glovebox GB0001 prior to transfer to Tanks T-1A and T-1B in Room 127 (RCRA Unit 776.2). The SRV tanks have been out of service since 1989. The attached drawing shows a schematic of the tank and ancillary equipment with termination points shown for SET 55. The Building 776/777 Reconnaissance Level Characterization Report says the SRV tanks were brought into the building after the 1969 fire for use in the cleanup operations. The tanks were used to collect water from paint removal and other decontamination efforts. Based on the property inventory numbers, these tanks originally came from Building 881, but there is no indication what they were used for there.
Unit Boundaries and Interfaces:	SET 55 includes Tanks SRV-3, 4, and 5 and ancillary equipment in Rooms 134 and 154. Associated ancillary equipment includes inlet piping coming from the SRV(SET 60, Room 146), filters and piping in glovebox GB-0001, recirculation piping and a pump between the tanks and glovebox, and outlet piping leading to Tanks T-1A and T-1B in Room 127 (SET 69, RCRA Unit 776.2). Secondary containment is provided by GB-0001 and the concrete floor.
EPA Waste Codes/ Waste Characterization:	The tank system collected wash water from the ball mill washer in the SRV, which has been characterized based on process knowledge with EPA waste code D008. (Ref. Backlog Waste Recharacterization, Subpopulation 46B, for SRV ball mill sludge, IDC 340.) Any remaining liquid will be drained from the tanks and piping during deactivation, and sample results from the liquid may be used to determine additional waste codes that may be applicable. The piping and tanks will be characterized in accordance with 6 CCR 1007-3 Part 262.11, and managed accordingly.
Selected Closure Option:	Unit removal without onsite treatment.

288

Closure Activities:	The tank inlet and outlet piping will be removed to approximately the eight-foot level under a work package for SET 55 deactivation and decommissioning. Raschig rings will be removed from the tanks during deactivation. The tanks and glovebox will be removed under a later work package for SET 55 decommissioning. The remainder of the piping will be removed as part of SET 78 (miscellaneous piping over eight feet), and the concrete secondary containment area will be addressed with SET 82 (building structure).
Waste Disposal:	The tanks, piping, raschig rings, glovebox, and secondary waste (e.g., PPE and plastic containment material) generated during closure activities will be managed as CERCLA remediation waste. Liquid hazardous wastes will be managed as RCRA-regulated wastes. Absorbent will be added to waste packages with items that could contain residual liquids or sludges. Upon final radiological characterization, the waste will be packaged to meet the waste acceptance criteria (WAC) of the approved disposal facility. In the event this waste cannot be shipped directly to the approved disposal facility, it will be stored in an approved on-site storage area until shipment can be scheduled.

290



TP = Termination Point, Set 55

Appendix H
B776/777 Closure Project
RCRA Unit Closure Information Sheet

SET #	RCRA Unit #(s)	Description	Regulatory Status	Closure Status
4	NA	Tank V-605 (2)	Mixed Residue	Physically Empty/RCRA Stable
	95.019	Tank DL-776	Mixed Residue	Physically Empty/RCRA Stable
	NA	GB 612 ancillary piping	Mixed Residue	Physically Empty

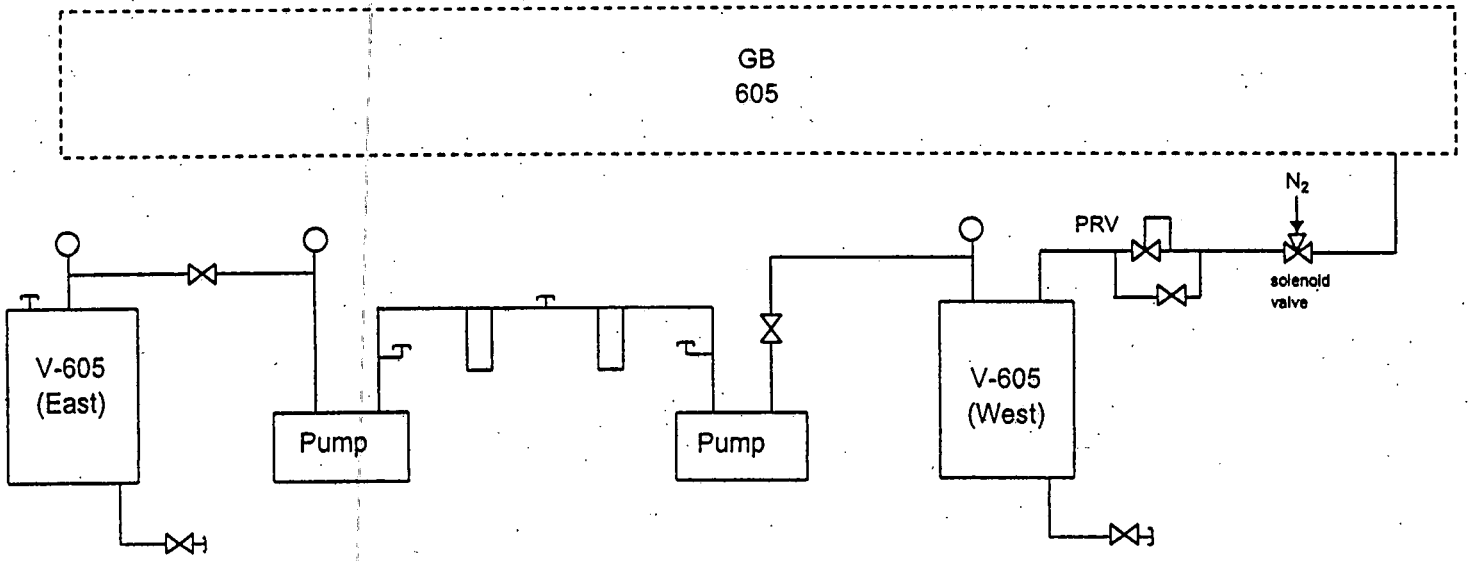
Unit Description:	**Tank V-605** Tank V-605 includes two vacuum accumulator tanks. They are constructed of carbon steel and have approximate dimensions of 12 inches in diameter by 23 inches high. The tanks are located in Building 777 Room 131 below Glovebox 605. Vacuum was used to hold parts to lathes in the gloveboxes as they were being machined. The vacuum accumulators were used in the process line between the lathe and the vacuum pump so that constant vacuum pressure could be maintained on the parts being machined. In the event of an upset condition where the part came loose from the chuck, the cutting oils and solvents used in the machining process would be pulled into the accumulators. Maintenance personnel periodically drained the accumulators of any oil and solvent that accumulated. Both Tank V-605s were drained to a physically empty condition in May 1999 under work package T0100104. The vacuum pumps were drained in January 2000. **Tank DL-776** Tank DL-776 measures approximately two feet by two feet by four feet, and is filled with raschig rings. The tank is located in Building 777 Room 131 beneath Glovebox 606. Tank DL-776 was used to collect waste oil from the hydroform press located in Glovebox 606. Glovebox 606 served as secondary containment for the ancillary equipment within it. The RLCR states that the hydroform press and tank were replaced in the late 1980s and were never used to press plutonium parts. They may have been used to test press aluminum parts. Tank DL-776 was drained to a physically empty condition in May 1999 under work package T0100104. **Glovebox 612 Ancillary Piping** Waste oil collected in slab tank oil carts by maintenance personnel was pumped out of the carts into an enclosed pump-out station on the west side of Glovebox 612, where it was filtered through Ful-Flo cartridge filters in the glovebox and transferred to Tanks T-A1 and T-A2 in Room 131. These tanks were closed by removal in 1996 along with the piping from GB 612 to the tanks. The filters inside the glovebox have also been removed. Remaining equipment includes a small amount of equipment associated with the cart pump-out station attached to the glovebox.
Unit Boundaries and Interfaces:	The vacuum accumulator systems include the vacuum accumulator tanks, vacuum pumps, and associated piping and valves. These were small stand-alone tank systems and the ancillary equipment is minimal. These tank systems will be entirely removed as part of Set

	4 D&D. The attached drawing shows a schematic of the V-605 tank systems. Schematics are also attached showing the extent of the regulated systems associated with Tank DL-776 and GB 612. These systems will be entirely removed as part of Set 4 D&D.
EPA Waste Codes/ Waste Characterization:	The lines and equipment will be drained prior to packaging as waste. The waste generated at closure will be assigned EPA waste codes of F001 and F002. When the vacuum accumulators and Tank DL-776 were drained, the collected liquids from several tanks were commingled prior to analysis, so it is not known whether Tank DL-776 contained hazardous waste. Unless residual liquid can be analyzed to show non-detect for organic constituents of concern (1,1,1-trichloroethane and carbon tetrachloride), this tank system will be conservatively managed as mixed waste at closure, including the raschig rings. Gloveboxes 606 and 612 and the pump box next to GB 612 will be cleaned using debris rule technology and will then be closed by removal and managed as non-hazardous LLW.
Selected Closure Option:	Tanks, ancillary equipment and piping: Unit removal without onsite treatment. Gloveboxes 606 and 612 and the pump box next to GB 612: Unit removal in conjunction with debris rule treatment.
Closure Activities:	Closure activities include draining any residual liquids, removal, size reduction (if necessary) and packaging of the regulated tanks and ancillary equipment. The raschig rings in Tank DL-776 may either be removed during deactivation activities or during closure activities, or may be left in the tank if the WGI and disposal site WAC allows it. Gloveboxes 606 and 612 and the pump box next to GB 612 will be wiped down using trisodium phosphate solution or another approved decon solution, and will be visually inspected to determine if they meet the standard for a clean debris surface. If they meet the standard, the boxes will be closed by removal and managed as non-hazardous waste. Otherwise, they will be closed by removal and managed as mixed waste.
Waste Disposal:	The tanks, piping, pumps, raschig rings, and secondary waste (e.g., PPE and plastic containment material) generated during closure activities will be managed as CERCLA remediation waste. Liquid hazardous wastes, if any, drained from the equipment will be managed as RCRA-regulated wastes. Absorbent will be added to waste packages with items that could contain residual liquids or sludges. Upon final radiological characterization, the waste will be packaged and managed in accordance with waste management requirements in Section 6 of the DOP.

Mod #8

293

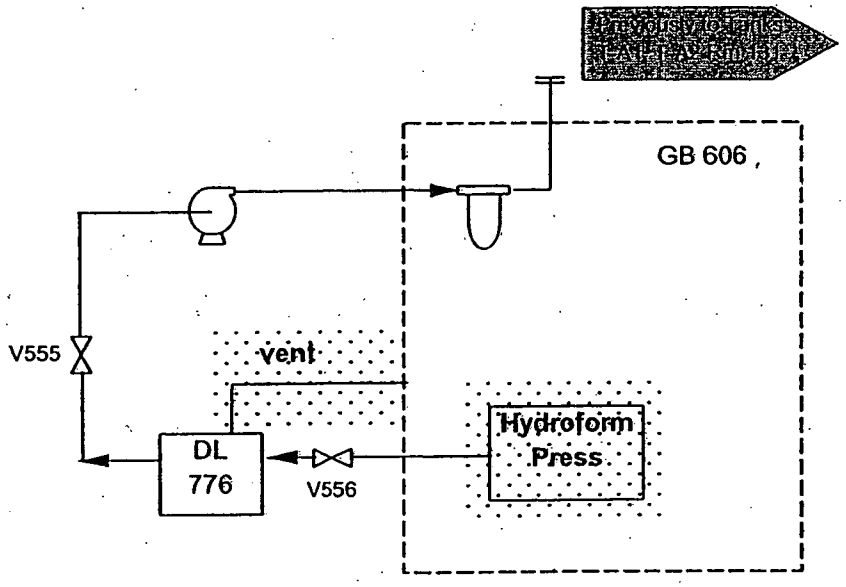
B776/777, SET 4
Building 777 Room 131
Vacuum Accumulators V-605



Revision 1
July 1, 2003

293

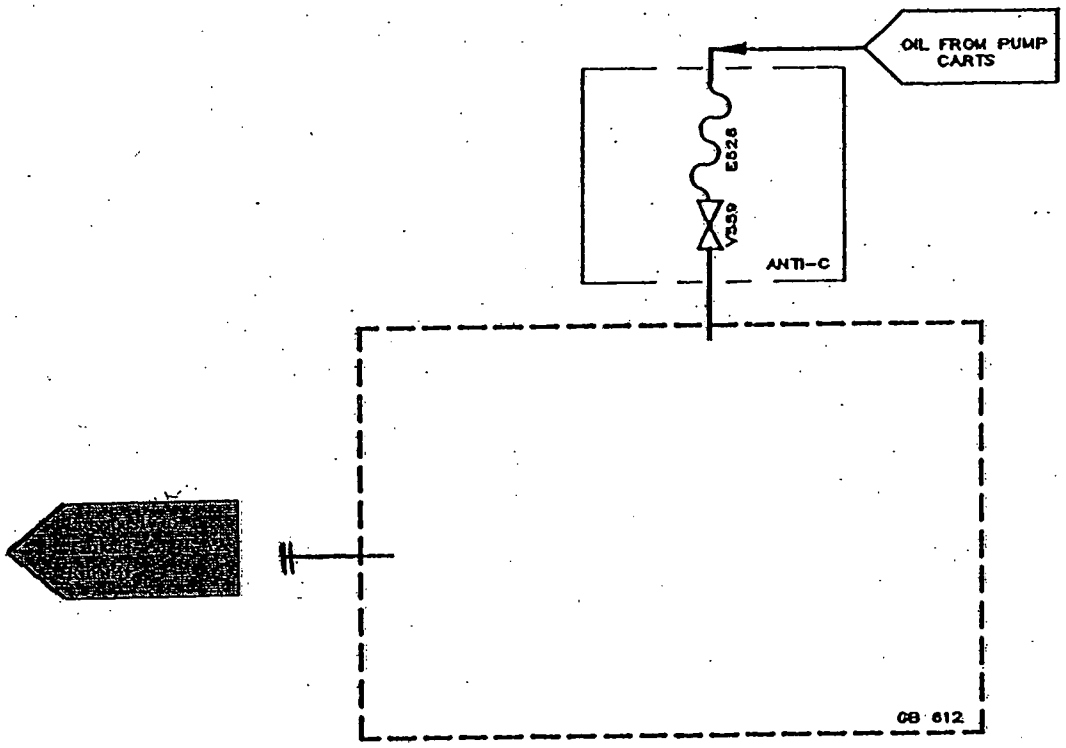
B776/777, SET 4
Building 777 Room 131
Tank DL-776
RCRA Unit 95.019



Shading indicates non-regulated equipment

294

B776/777, SET 4
Building 777 Room 131
Glovebox 612 Ancillary Piping



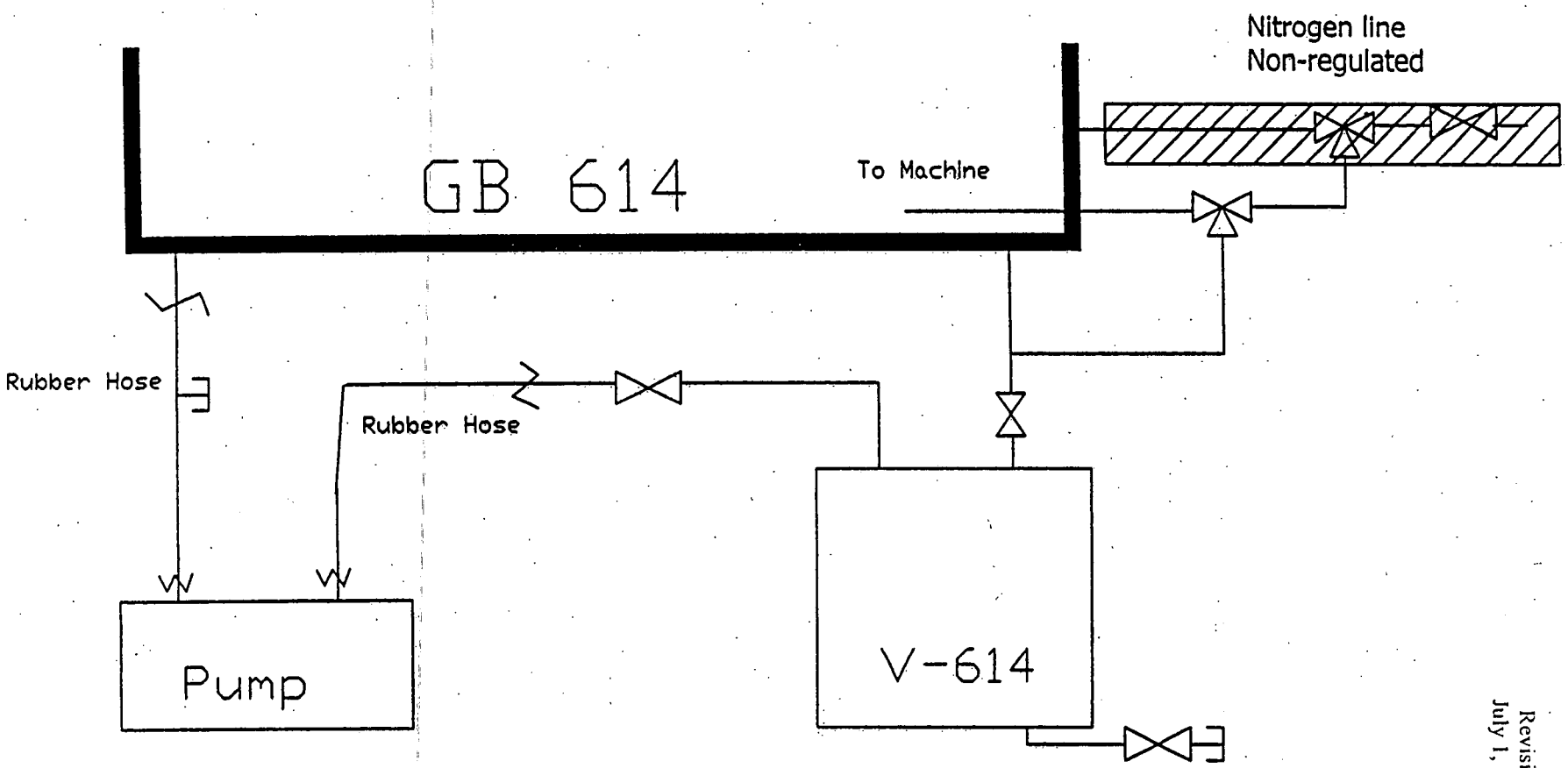
Appendix H
B776/777 Closure Project
RCRA Unit Closure Information Sheet

SET #	RCRA Unit #(s)	Description	Regulatory Status	Closure Status
5	NA	Tank V-614	Mixed Residue	Physically Empty/RCRA Stable
	NA	Tank V-616	Mixed Residue	Physically Empty/RCRA Stable
	NA	Tank V-618	Mixed Residue	Physically Empty/RCRA Stable
	NA	Tank V-620	Mixed Residue	Physically Empty/RCRA Stable

Unit Description:	Tanks V-614, V-616, V-618, and V-620 are vacuum accumulator tanks. They are constructed of carbon steel and have approximate dimensions of 12 inches in diameter by 23 inches high. The tanks are located in Building 777 Room 131 below gloveboxes 614, 616, 617, and 620, respectively. Vacuum was used to hold parts to lathes in the gloveboxes as they were being machined. The vacuum accumulators were used in the process line between the lathe and the vacuum pump so that constant vacuum pressure could be maintained on the parts being machined. In the event of an upset condition where the part came loose from the chuck, the cutting oils and solvents used in the machining process would be pulled into the accumulators. Maintenance personnel periodically drained the accumulators of any oil and solvent that accumulated. The lathe in glovebox 617 was never put into operation, and the glovebox windows are open to the room. It is not known whether cold testing was performed or whether solvents were collected in Tank V-618. Tanks V-614, V-616, V-618, and V-620 were drained to a physically empty condition in May and June 1999 under work package T0100104. The vacuum pumps were drained in January 2000.
Unit Boundaries and Interfaces:	The vacuum accumulator systems include the vacuum accumulator tanks, vacuum pumps, and associated piping and valves. These were small stand-alone tank systems and the ancillary equipment is minimal. These tank systems will be entirely removed as part of Set 5 D&D. The attached drawings show schematics of the tank systems.
EPA Waste Codes/ Waste Characterization:	The lines and equipment will be drained prior to packaging as waste. The waste generated at closure will be assigned EPA waste codes of F001 and F002. When the vacuum accumulators were drained, the collected liquids from several tanks were commingled prior to analysis, so it is not known whether Tank V-618 contained hazardous waste. This tank system will be conservatively managed as mixed waste at closure.
Selected Closure Option:	Unit removal without onsite treatment.
Closure Activities:	Closure activities include draining any residual liquids, removal, size reduction (if necessary) and packaging of the regulated tanks and ancillary equipment.
Waste Disposal:	The tanks, piping, pumps, and secondary waste (e.g., PPE and plastic containment material) generated during closure activities will be managed as CERCLA remediation waste. Liquid hazardous wastes, if any, drained from the equipment will be managed as RCRA-regulated wastes. Absorbent will be added to waste packages with items that could contain residual liquids or sludges.

	Upon final radiological characterization, the waste will be packaged and managed in accordance with waste management requirements in Section 6 of the DOP.

B776/777, SET 5
Building 777 Room 131
Vacuum Accumulator V-614



Revision 1
July 1, 2003

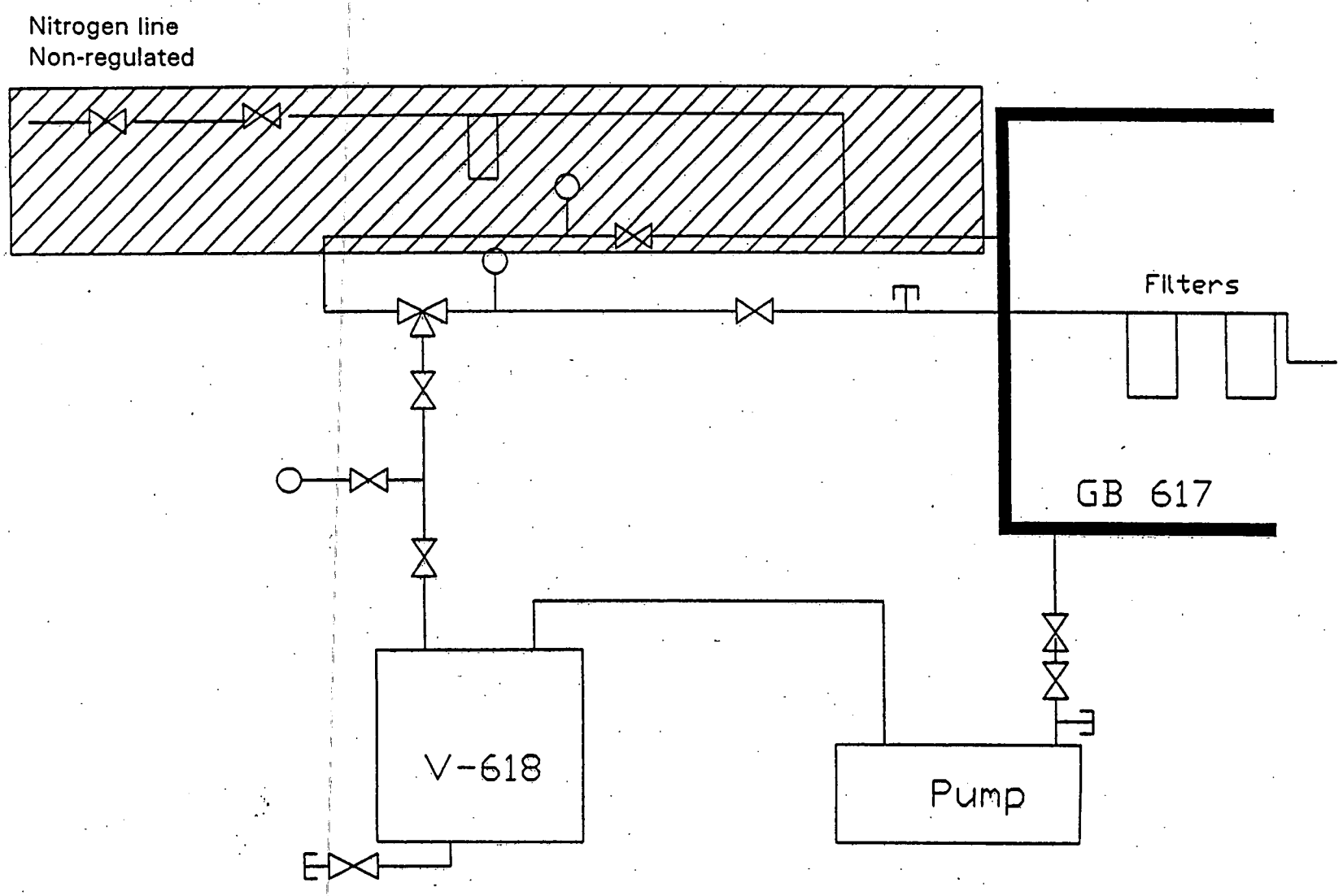
Revision 1
July 1, 2003

299

299

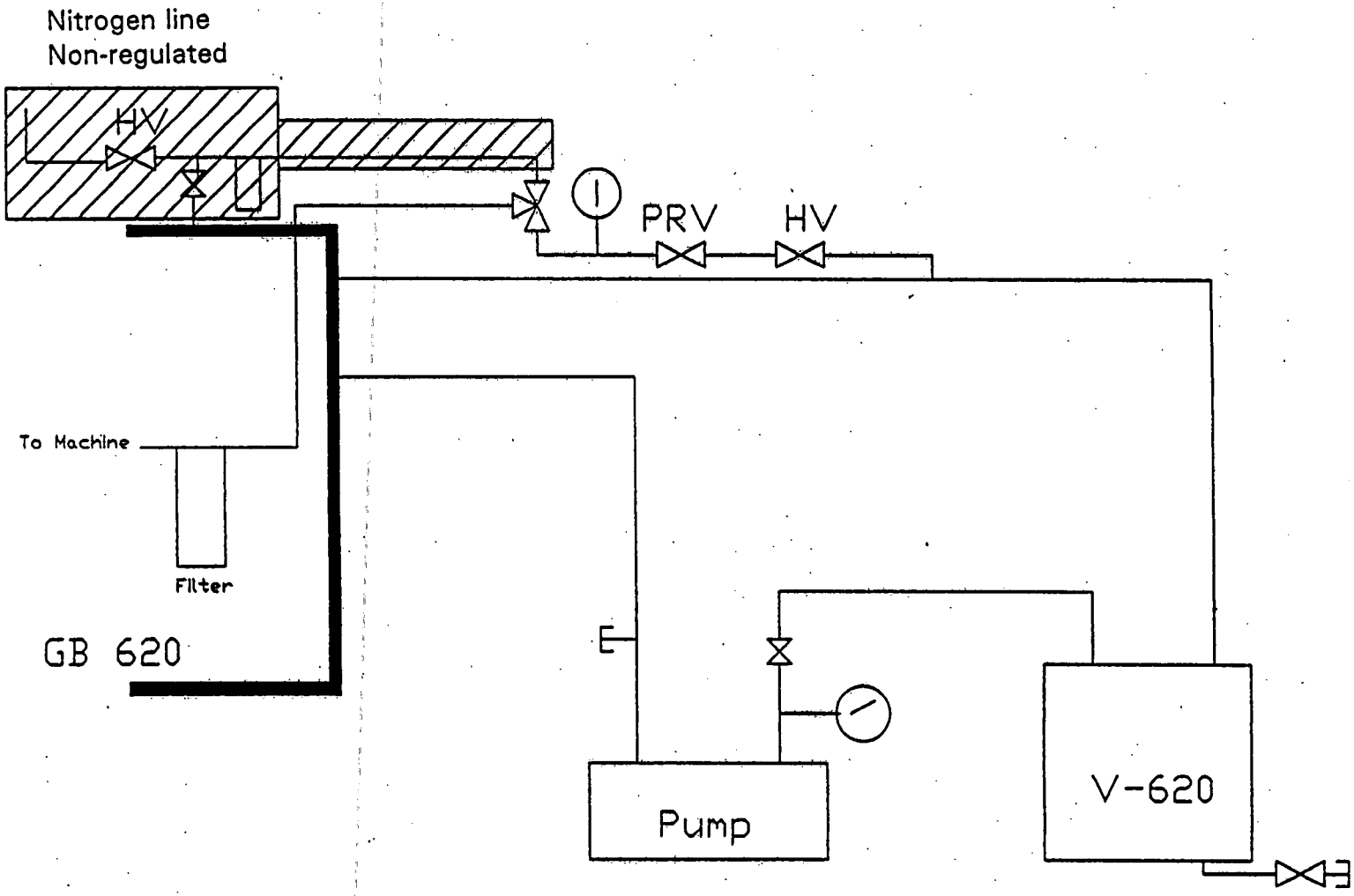
300

B776/777, SET 5
Building 777 Room 131
Vacuum Accumulator V-618



301

B776/777, SET 5
Building 777 Room 131
Vacuum Accumulator V-620



Revision 1
July 1, 2003

301

Appendix H
B776/777 Closure Project
RCRA Unit Closure Information Sheet

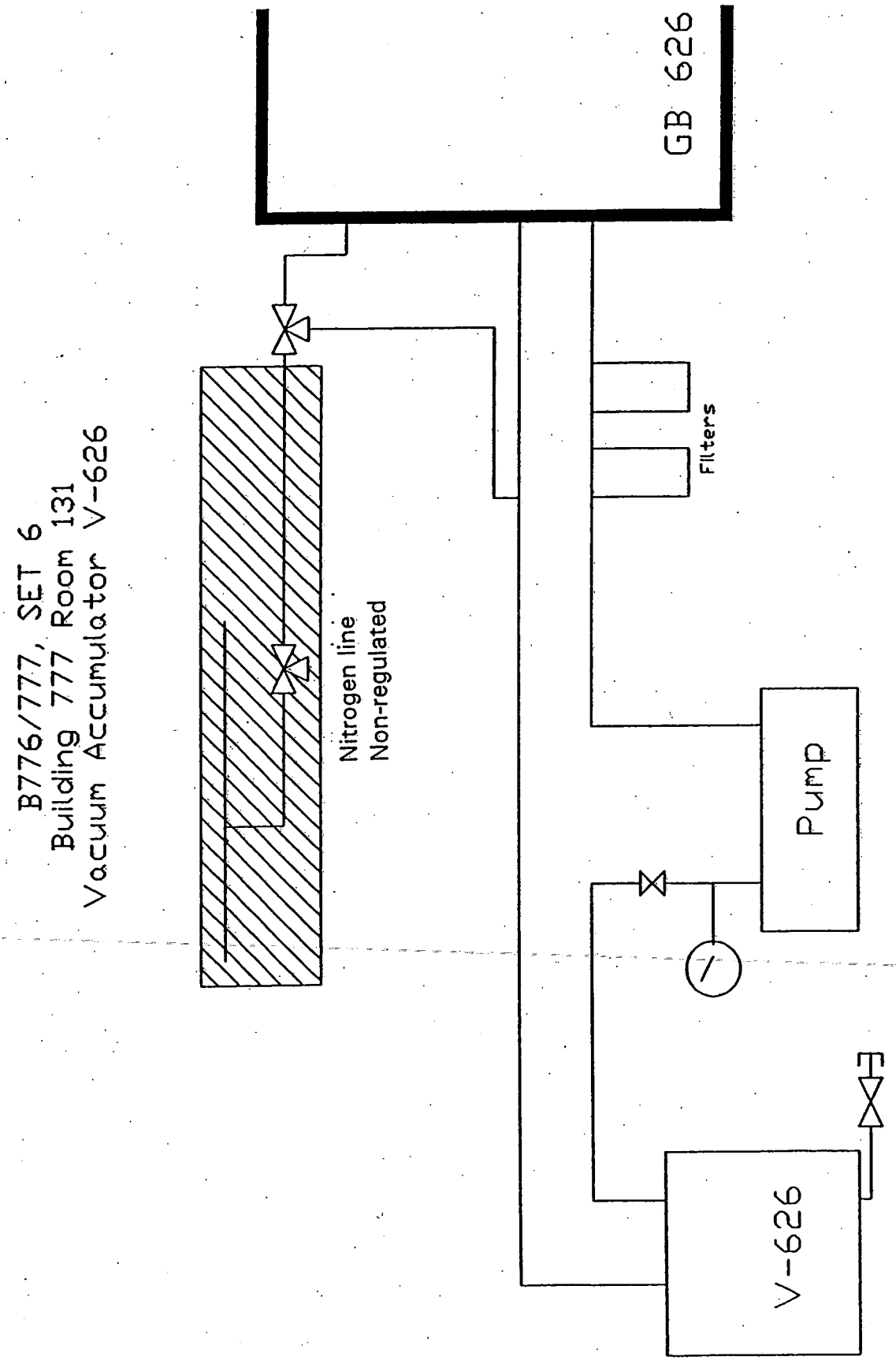
SET #	RCRA Unit #(s)	Description	Regulatory Status	Closure Status
6	NA	Tank V-626	Mixed Residue	Physically Empty/RCRA Stable
	NA	Tank V-627	Mixed Residue	Physically Empty/RCRA Stable
	Ancillary to several units (see below)	Glovebox 642 and ancillary piping	Mixed Residue	Physically Empty

Unit Description:	**Tanks V-626 and V-627** Tanks V-626 and V-627 are vacuum accumulator tanks. They are constructed of carbon steel and both have approximate dimensions of 12 inches in diameter by 23 inches high. The tanks are located in Building 777 Room 131 below gloveboxes 626 and 627, respectively. Vacuum was used to hold parts to a jig borer and a lathe in gloveboxes 626 and 627, respectively, as they were being machined. The vacuum accumulators were used in the process line between the equipment and the vacuum pump so that constant vacuum pressure could be maintained on the parts being machined. In the event of an upset condition where the part came loose from the chuck, the cutting oils and solvents used in the machining process would be pulled into the accumulators. Maintenance personnel periodically drained the accumulators of any oil and solvent that accumulated. Tanks V-626 and V-627 were drained to a physically empty condition in June 1999 under work package T0100104. The vacuum pumps were drained in January 2000. **Glovebox 642 and Ancillary Piping** Glovebox 642 is a filter glovebox where waste from tanks 1103, 1104, 1106 and pencil tanks T-A1, T-A2, T-3, T-4, T-5, T-6, T-10, T-11, and T-12 was passed through Ful-Flo cartridge filters for removal of plutonium. (RCRA Unit Nos. 95.001, 95.002, 95.006 – 95.013, 95.017, and 95.018). The glovebox is located in Building 777 Room 131. All the tanks have been closed by removal, and the six filters in the glovebox have been removed. Remaining equipment includes inlet and outlet piping, and the glovebox itself, which served as secondary containment for the filters.
Unit Boundaries and Interfaces:	**Tanks V-626 and V-627** The vacuum accumulator systems include the vacuum accumulator tanks, vacuum pumps, and associated piping and valves. These were small stand-alone tank systems and the ancillary equipment is minimal. These tank systems will be entirely removed as part of Set 6 D&D. The attached drawings show schematics of the tank systems. **Glovebox 642 and Ancillary Piping** Glovebox 642 and the ancillary equipment below approximately eight feet will be removed during Set 6 D&D, and the ends of the piping leading into the overhead will be capped or plugged. The remaining lines in the overhead in Room 131 will be removed as part of Set 78 (miscellaneous piping over eight feet). The attached drawing shows a schematic of GB642 and associated ancillary equipment.

302

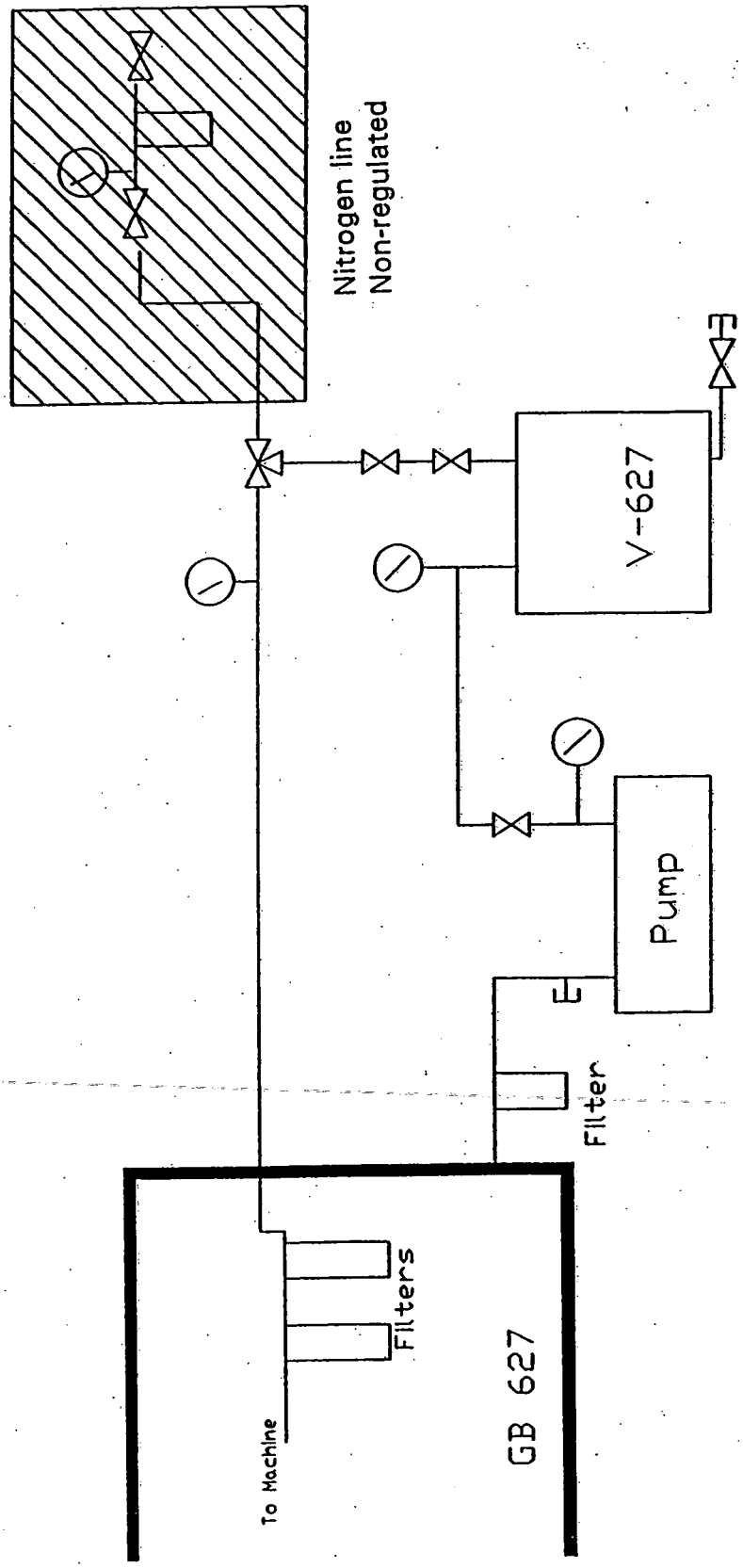
EPA Waste Codes/ Waste Characterization:	The lines and equipment will be drained prior to packaging as waste. The waste generated at closure will be assigned EPA waste codes of F001 and F002.
Selected Closure Option:	Ancillary equipment: Unit removal without onsite treatment. Glovebox 642: Unit removal, preceded by debris rule treatment.
Closure Activities:	Closure activities include draining any residual liquids, removal, size reduction (if necessary) and packaging of the regulated tanks and ancillary equipment. Glovebox 642 will be wiped down using an approved decon solution, and will be visually inspected to determine if it meets the standard for a clean debris surface. If it meets the standard, the glovebox will be closed by removal and managed as non-hazardous waste. Otherwise, it will be closed by removal and managed as mixed waste.
Waste Disposal:	The tanks, piping, glovebox, and secondary waste (e.g., PPE and plastic containment material) generated during closure activities will be managed as CERCLA remediation waste. Liquid hazardous wastes, if any, drained from equipment will be managed as RCRA-regulated wastes. Absorbent will be added to waste packages with items that could contain residual liquids or sludges. Upon final radiological characterization, the waste will be packaged and managed in accordance with waste management requirements in Section 6 of the DOP.

Mod #8


B776/777, SET 6
Building 777 Room 131
Vacuum Accumulator V-626
GB 626
Filters
Nitrogen line
Non-regulated
Pump
V-626

304

B777/776, SET 6
Building 777 Room 131
Vacuum Accumulator V-627

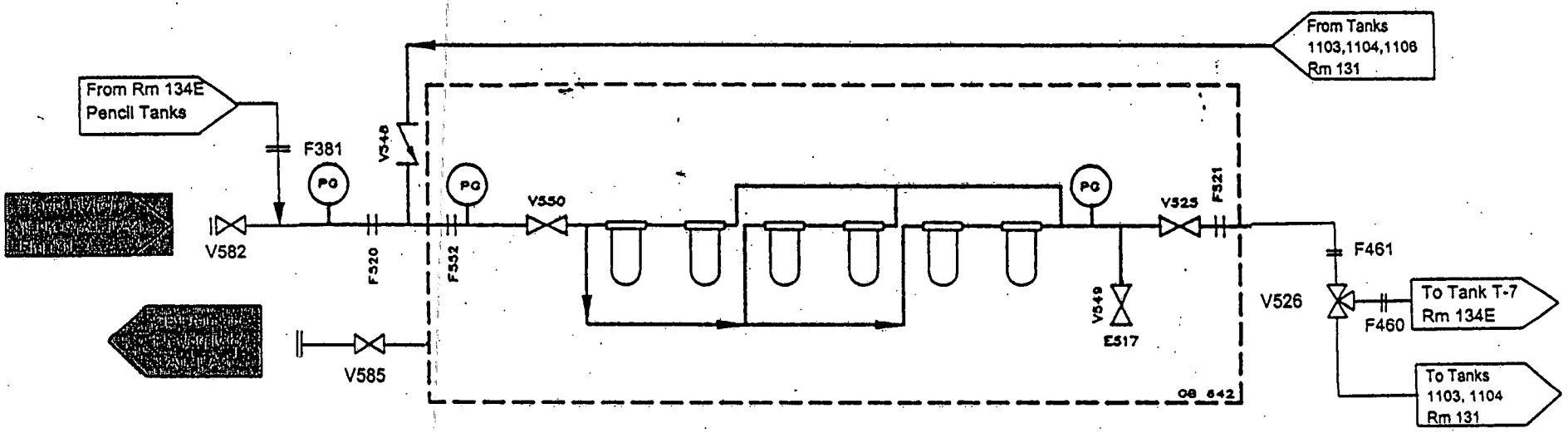


305

306

B776/777, SET 6
Building 777 Room 131
Glovebox 642 Ancillary Piping

Revision 1
July 1, 2003



306

Appendix H
B776/777 Closure Project
RCRA Unit Closure Information Sheet

SET #	RCRA Unit #(s)	Description	Regulatory Status	Closure Status
10	NA	Tank V-752	Mixed Residue	Physically Empty/RCRA Stable
	Various	Ancillary piping	Mixed Residue	Physically Empty

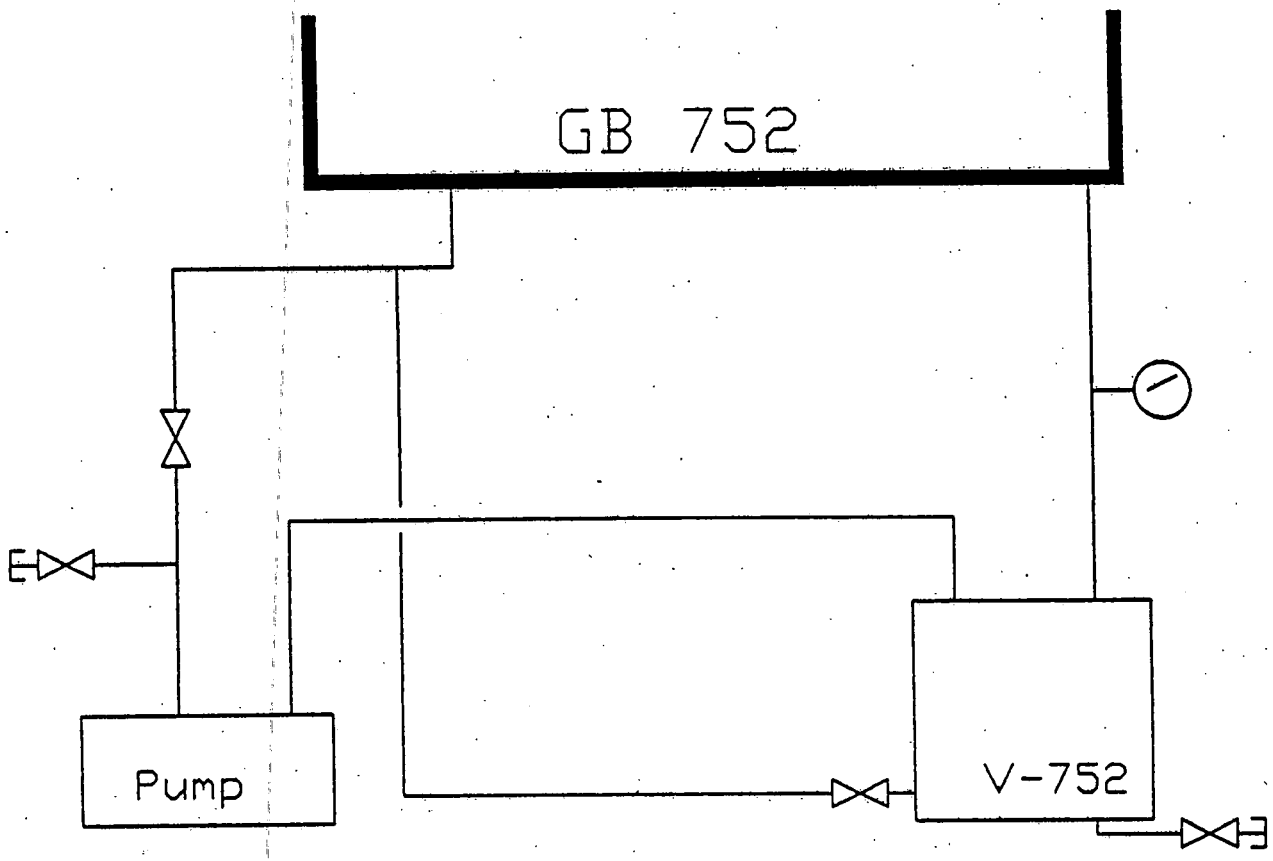
Unit Description:	**Tank V-752** Tank V-752 is a vacuum accumulator tank. It is constructed of carbon steel and has approximate dimensions of 12 inches in diameter by 23 inches high. The tank is located in Building 777 Room 134 East below Glovebox 752. Vacuum was used to hold parts to a jig borer in the glovebox as they were being machined. The vacuum accumulator was used in the process line between the equipment and the vacuum pump so that constant vacuum pressure could be maintained on the parts being machined. In the event of an upset condition where the part came loose from the chuck, the cutting oils and solvents used in the machining process would be pulled into the accumulator. Maintenance personnel periodically drained the accumulator of any oil and solvent that accumulated. Tank V-752 was drained to a physically empty condition in June 1999 under work package T0100104. The vacuum pump was drained in January 2000. **Ancillary Piping** Set 10 contains ancillary piping that was previously used to transfer waste oil and solvents from pencil tanks in Room 134 East to filter glovebox 642 in Room 131. The tanks have been removed.
Unit Boundaries and Interfaces:	The vacuum accumulator system includes the vacuum accumulator tank, vacuum pump, and associated piping and valves. This was a small stand-alone tank system and the ancillary equipment is minimal. This tank system will be entirely removed as part of Set 10 D&D. The attached drawing shows a schematic of the tank system. The Set 10 ancillary piping includes oil/solvent transfer piping beneath the D-line and M-line. All ancillary piping beneath approximately eight feet will be removed as part of Set 10, and the ends of the piping leading into the overhead will be capped or plugged. The remaining lines in the overhead in Room 134 East will be removed as part of Set 78 (miscellaneous piping over eight feet). A drawing is attached showing ancillary equipment in Sets 10 and 11. Endpoints for piping removal associated with each set will be determined during D&D work package preparation.
EPA Waste Codes/ Waste Characterization:	The lines and equipment will be drained prior to packaging as waste. The waste generated at closure will be assigned EPA waste codes of F001 and F002.
Selected Closure Option:	Unit removal without onsite treatment.
Closure Activities:	Closure activities include draining any residual liquids, removal, size reduction (if necessary) and packaging of the regulated tank and ancillary equipment.
Waste Disposal:	The tank, piping, pump, and secondary waste (e.g., PPE and plastic containment material) generated during closure activities will be managed as CERCLA remediation waste. Liquid hazardous wastes, if any, drained from the equipment will be managed as RCRA-

	regulated wastes. Absorbent will be added to waste packages with items that could contain residual liquids or sludges. Upon final radiological characterization, the waste will be packaged and managed in accordance with waste management requirements in Section 6 of the DOP.

308

309

B776/777, Set 10
Building 777 Room 134E
Vacuum Accumulator V-752



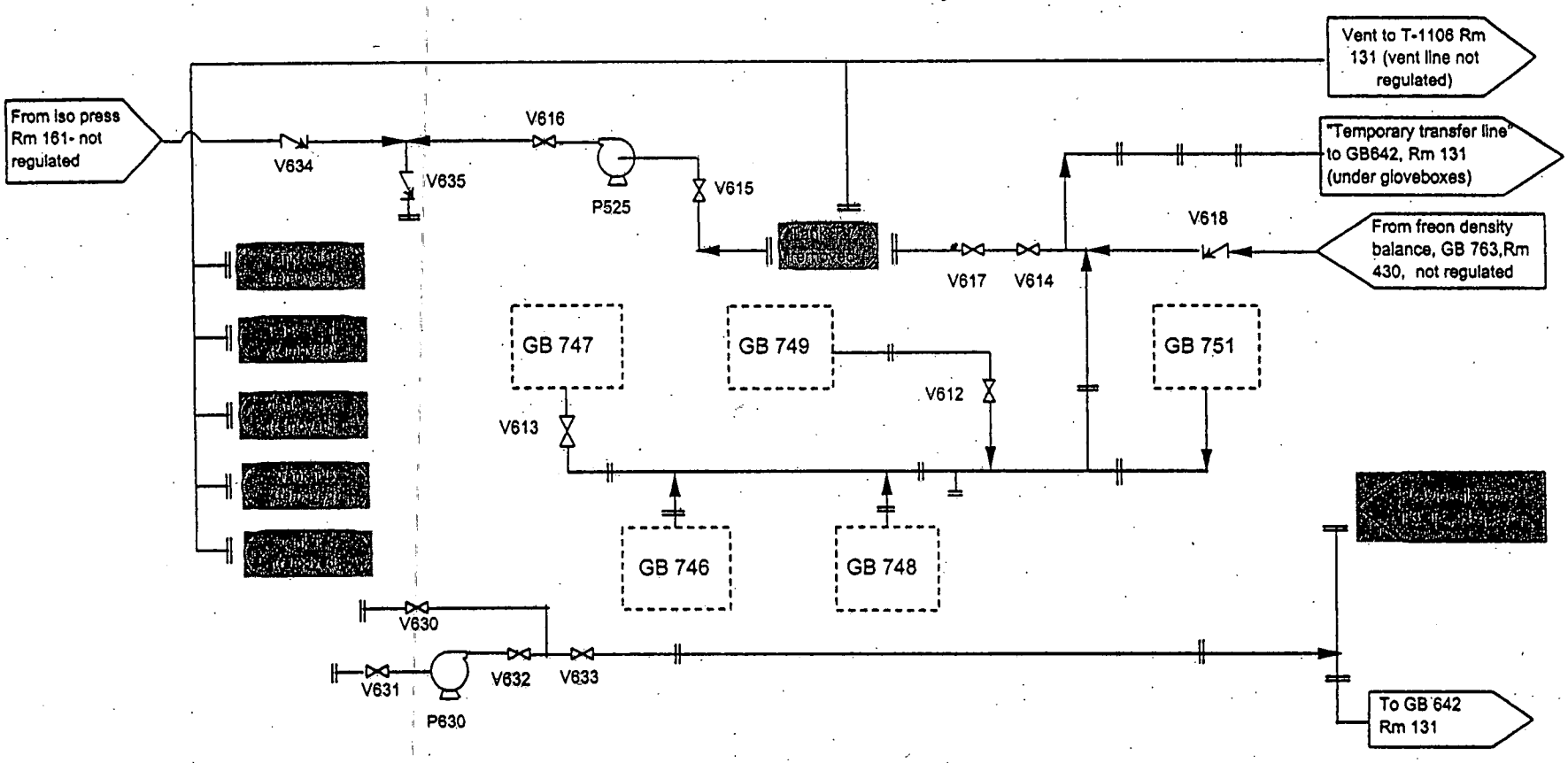
Revision 1
July 1, 2003

369

B776/777, SETS 10 and 11
Building 777 Room 134E
Ancillary Piping

Revision 1
July 1, 2003

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Appendix H
B776/777 Closure Project
RCRA Unit Closure Information Sheet

SET #	RCRA Unit #(s)	Description	Regulatory Status	Closure Status
11	NA	Tank V-746	Mixed Residue	Physically Empty/RCRA Stable
	NA	Tank V-747	Mixed Residue	Physically Empty/RCRA Stable
	NA	Tank V-747A	Mixed Residue	Physically Empty/RCRA Stable
	NA	Tank V-748	Mixed Residue	Physically Empty/RCRA Stable
	NA	Tank V-749	Mixed Residue	Physically Empty/RCRA Stable
	Various	Ancillary equipment	Mixed Residue	Physically Empty

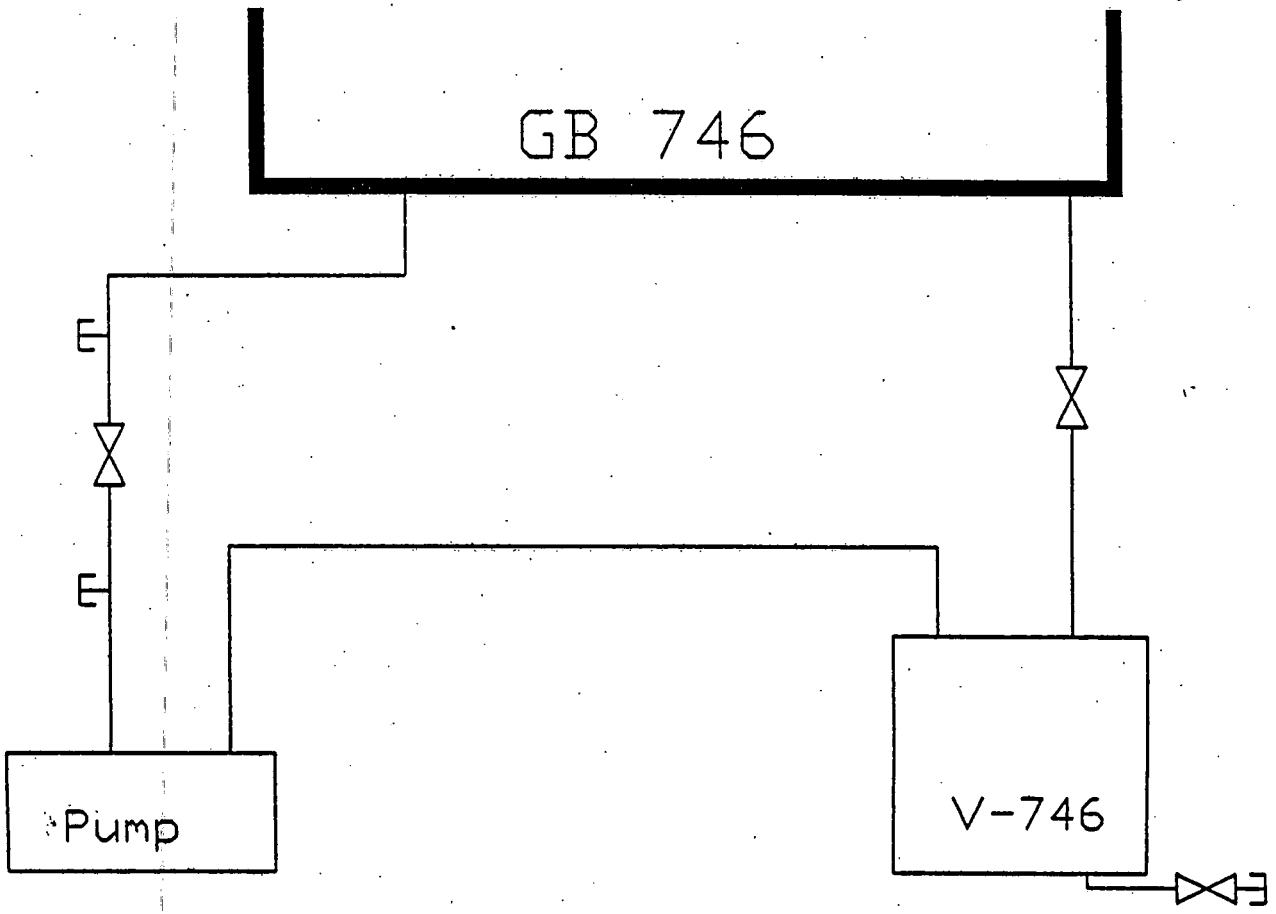
Unit Description:	<u>Tanks V-746, V-747, V-747A, V-748, V-749</u> Tanks V-746, V-747, V-747A, V-748, and V-749 are vacuum accumulator tanks. Tanks V-746, V-747, V-748, and V-749 are constructed of carbon steel and have approximate dimensions of 12 inches in diameter by 23 inches high. Tank V-747A has approximate dimensions of 6 inches in diameter by 12 inches high. The tanks are located in Building 777 Room 134 East. Tank V-747A is below the connector line between glovebox 747 and the M-line. Tanks V-746, V-747, V-748, and V-749 are below the M-line at the junctions with Gloveboxes 746, 748, 749, and just east of 749, respectively. Vacuum was used to hold parts to lathes in the gloveboxes as they were being machined. The vacuum accumulators were used in the process line between the lathe and the vacuum pump so that constant vacuum pressure could be maintained on the parts being machined. In the event of an upset condition where the part came loose from the chuck, the cutting oils and solvents used in the machining process would be pulled into the accumulators. Maintenance personnel periodically drained the accumulators of any oil and solvent that accumulated. The tanks were drained to a physically empty condition in June 1999 under work package T0100104. The vacuum pumps were drained in January 2000. <u>Ancillary Equipment</u> Set 11 contains ancillary equipment that was associated with pencil tanks T-5, 6, 7, 10, 11, and 12. The tanks have all been removed. Remaining ancillary equipment includes pumps, valves, and piping.
Unit Boundaries and Interfaces:	The vacuum accumulator systems include the vacuum accumulator tanks, vacuum pumps, and associated piping and valves. These were small stand-alone tank systems and the ancillary equipment is minimal. These tank systems will be entirely removed as part of Set 11 D&D. The attached drawings show schematics of the tank systems. The ancillary equipment includes oil/solvent transfer piping beneath the M-line and pumps and piping associated with the removed pencil tanks. All ancillary piping beneath approximately eight feet will be removed as part of Set 11, and the ends of the piping leading into the overhead will be capped or plugged. The remaining lines in the overhead. in Room 134E will be removed as part of Set 78 (miscellaneous piping over eight feet). A drawing is attached showing ancillary equipment in Sets 10 and 11. Endpoints for piping

	removal associated with each set will be determined during D&D work package preparation.
EPA Waste Codes/ Waste Characterization:	The lines and equipment will be drained prior to packaging as waste. The waste generated at closure will be assigned EPA waste codes of F001 and F002.
Selected Closure Option:	Unit removal without onsite treatment.
Closure Activities:	Closure activities include draining any residual liquids, removal, size reduction (if necessary) and packaging of the regulated tanks and ancillary equipment.
Waste Disposal:	The tanks, piping, pumps, and secondary waste (e.g., PPE and plastic containment material) generated during closure activities will be managed as CERCLA remediation waste. Liquid hazardous wastes, if any, drained from the equipment will be managed as RCRA-regulated wastes. Absorbent will be added to waste packages with items that could contain residual liquids or sludges. Upon final radiological characterization, the waste will be packaged and managed in accordance with waste management requirements in Section 6 of the DOP.

312

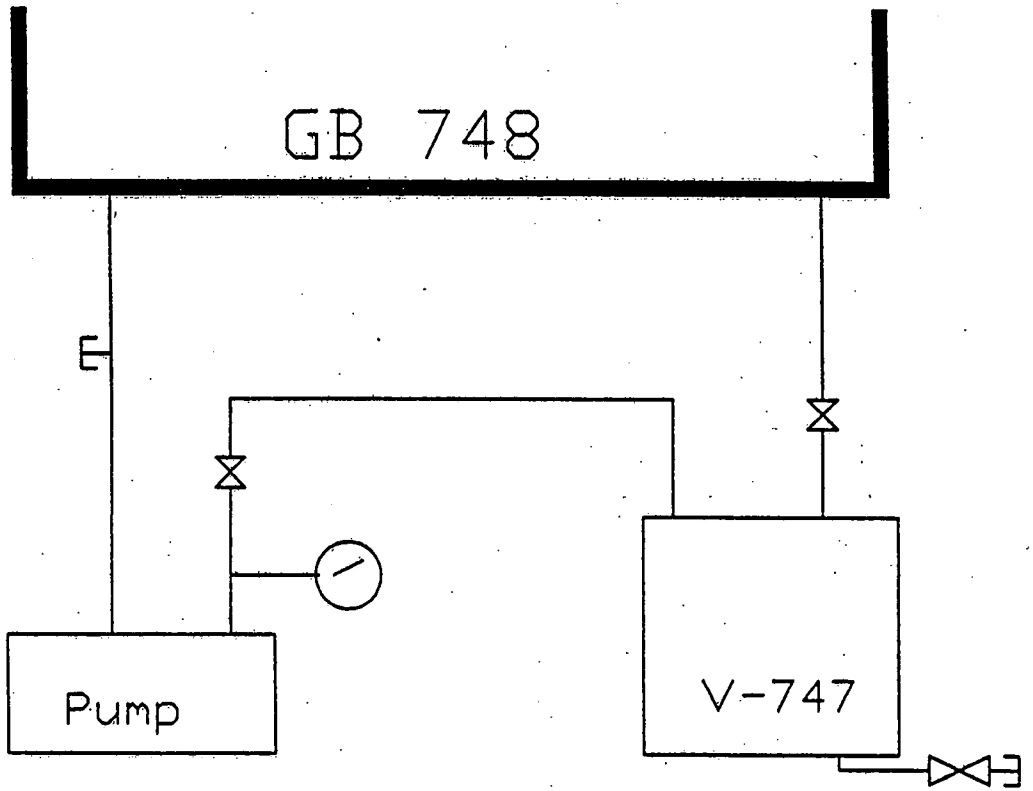
Revision 1
July 1, 2003

B776/777, SET 11
Building 777 Room 134E
Vacuum Accumulator V-746



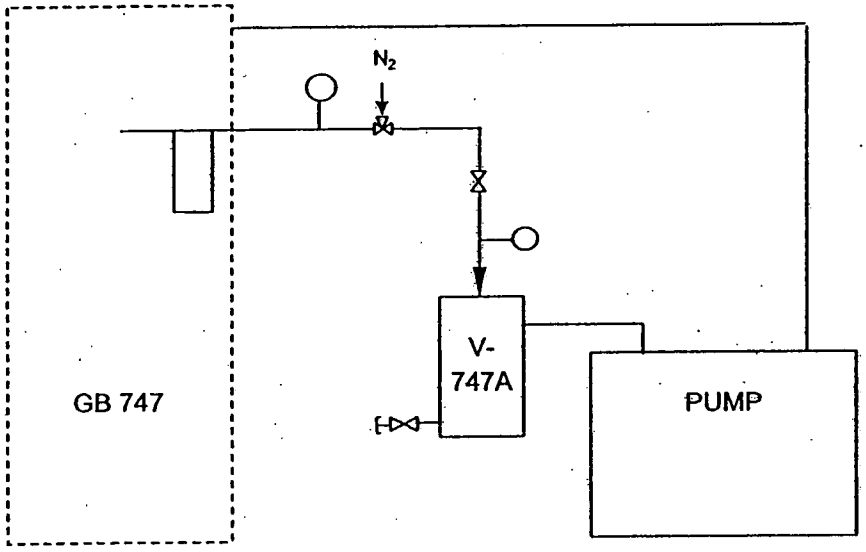
B776/777, SET 11
Building 777 Room 134E
Vacuum Accumulator V-747

Revision 1
July 1, 2003



Revision 1
July 1, 2003

B776/777, SET 11
Building 777 Room 134E
Vacuum Accumulator V-747A



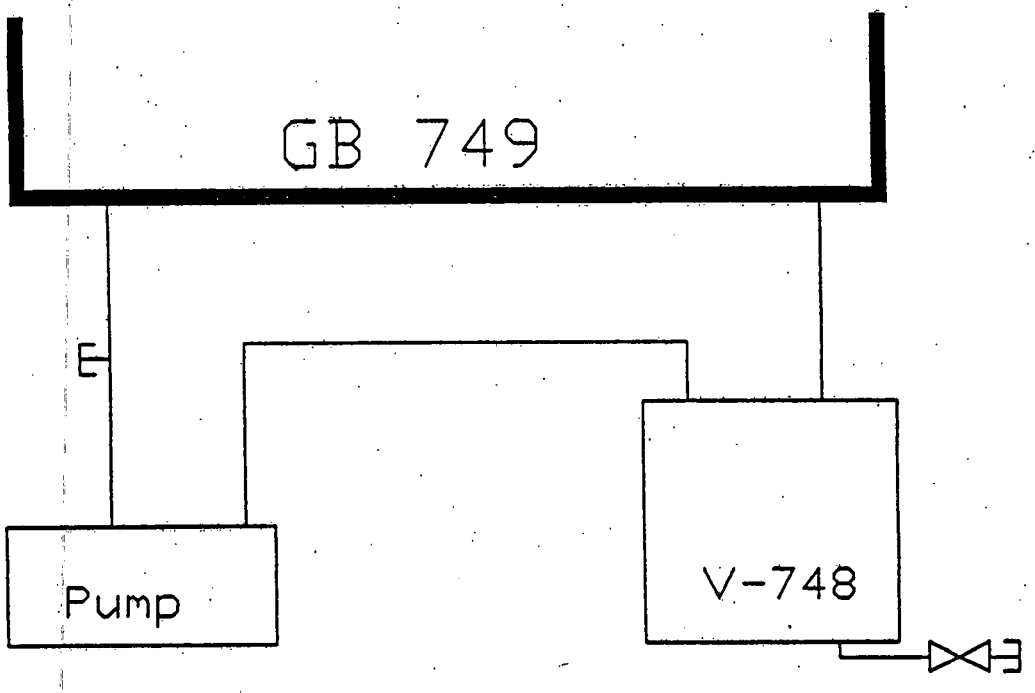
315

315

316

Revision 1
July 1, 2003

B776/777, SET 11
Building 777 Room 134E
Vacuum Accumulator V-748

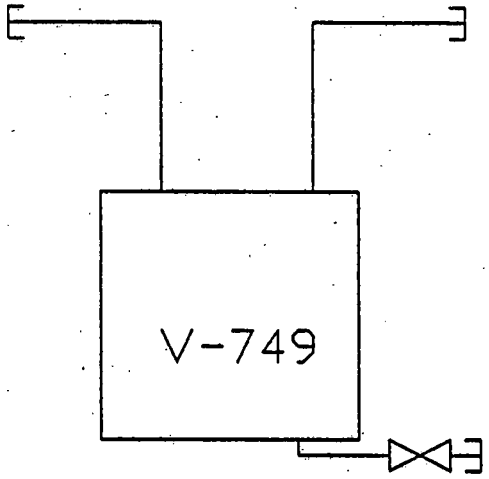


316

317

Revision 1
July 1, 2003

B776/777, SET 11
Building 777 Room134E
Vacuum Accumulator V-749

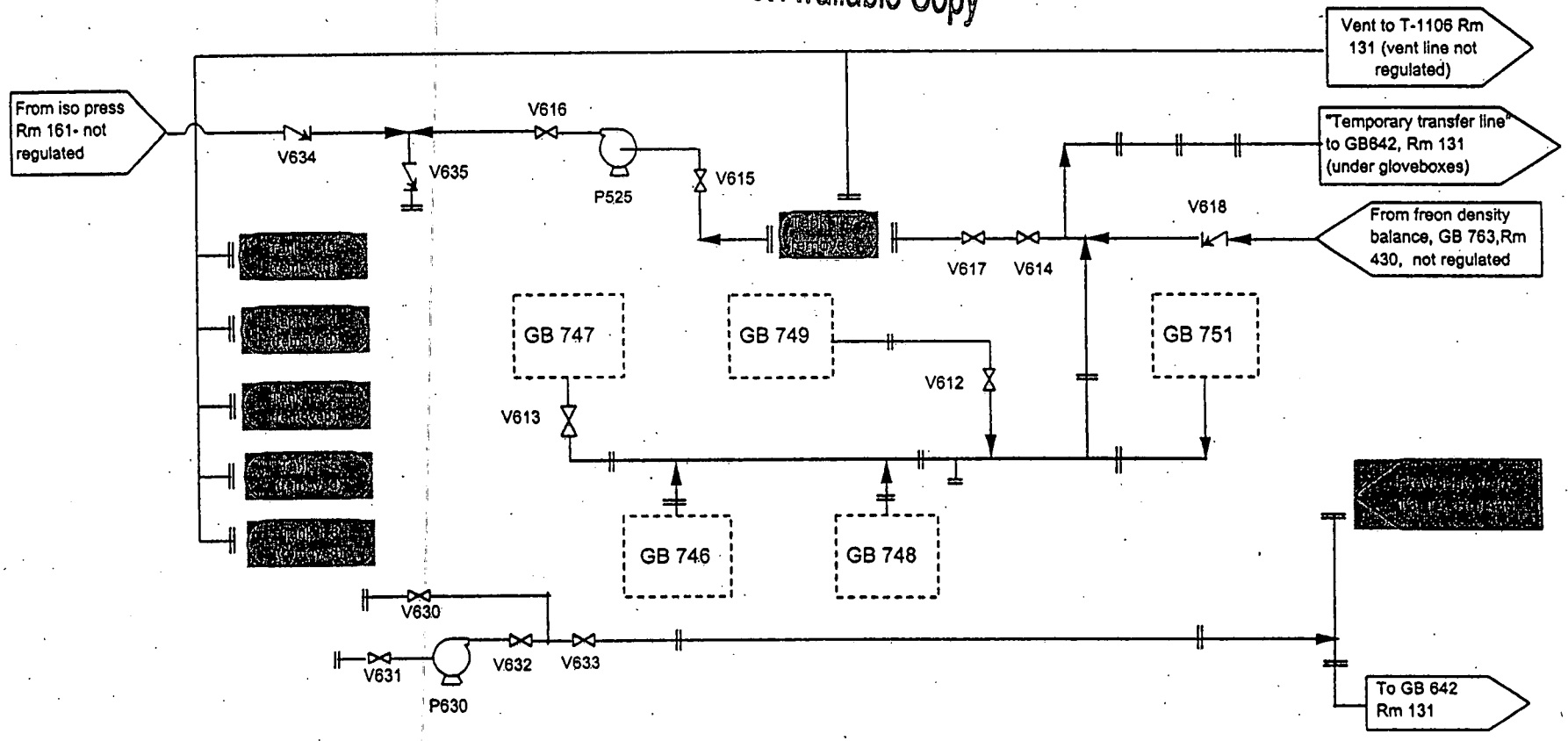


317

B776/777, SETS 10 and 11
Building 777 Room 134E
Ancillary Piping

Revision 1
July 1, 2003

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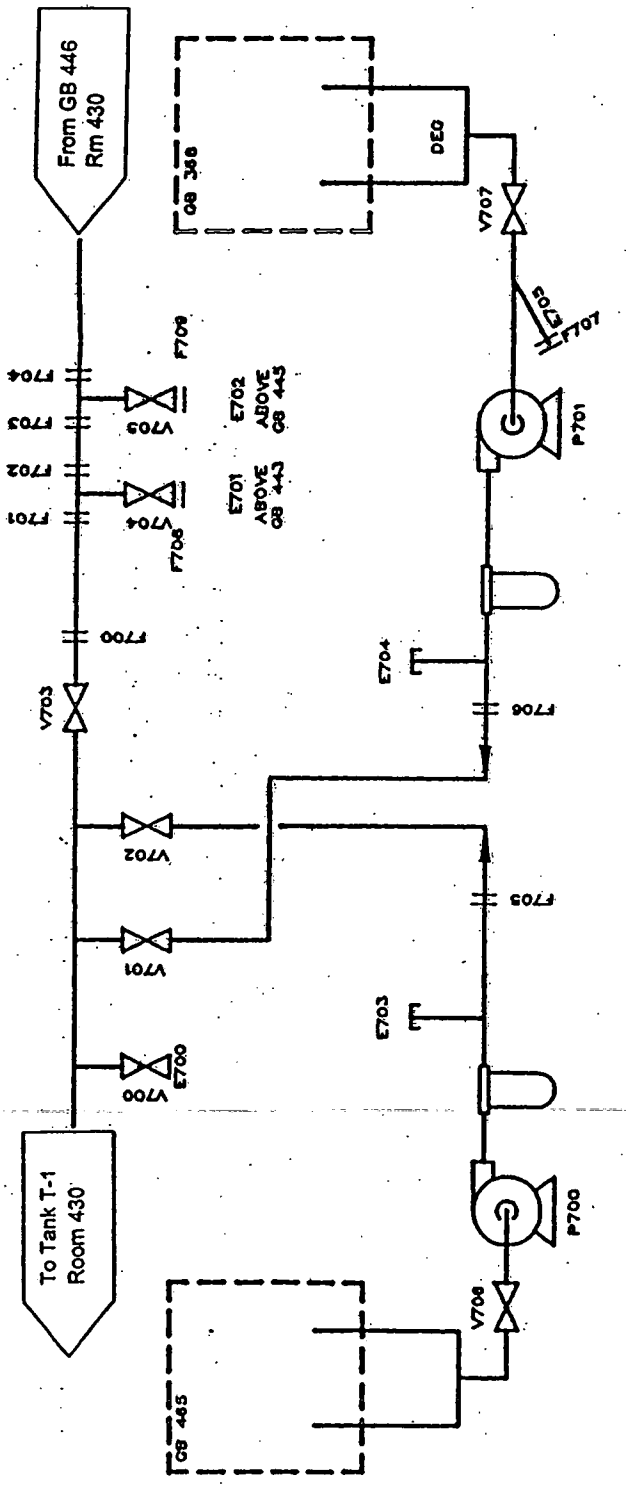


Appendix H
B776/777 Closure Project
RCRA Unit Closure Information Sheet

SET #	RCRA Unit #(s)	Description	Regulatory Status	Closure Status
18	95.015	Ancillary equipment – Gloveboxes 368 and 465	Mixed Residue	Physically Empty

Unit Description:	Set 18 contains ancillary equipment that was previously used to transfer waste 1,1,1-trichloroethane from degreasers/cleaning tanks in Gloveboxes 368 and 465 in Room 430 to Tank T-1 in Room 430. The tank has been removed (Set 26).
Unit Boundaries and Interfaces:	Regulated ancillary equipment associated with both Gloveboxes 368 and 465 includes a pump, filter, and associated valves and piping from a solvent cleaning tank in each glovebox. The cleaning tanks themselves are not regulated. The waste lines from the two gloveboxes join a common line in the overhead in Room 430 that transferred the waste to Tank T-1. The attached drawing shows the ancillary equipment in this set. The pumps, valves, filters, and piping below approximately eight feet will be removed as part of Set 18 D&D, and the ends of the piping leading into the overhead will be capped or plugged. The remaining line in the overhead in Room 430 will be removed as part of Set 78 (miscellaneous piping over eight feet).
EPA Waste Codes/ Waste Characterization:	The lines and equipment will be drained prior to packaging as waste. The waste generated at closure will be assigned EPA waste codes of F001 and F002.
Selected Closure Option:	Unit removal without onsite treatment.
Closure Activities:	Closure activities include draining any residual liquids, removal, size reduction (if necessary) and packaging of the regulated ancillary equipment
Waste Disposal:	The piping, pumps, valves, filters, and secondary waste (e.g., PPE and plastic containment material) generated during closure activities will be managed as CERCLA remediation waste. Liquid hazardous wastes, if any, drained from the equipment will be managed as RCRA-regulated wastes. Absorbent will be added to waste packages with items that could contain residual liquids or sludges. Upon final radiological characterization, the waste will be packaged and managed in accordance with waste management requirements in Section 6 of the DOP.

B776/777, SET 18
Building 777 Room 430
Gloveboxes 368, 465 Ancillary Piping



320

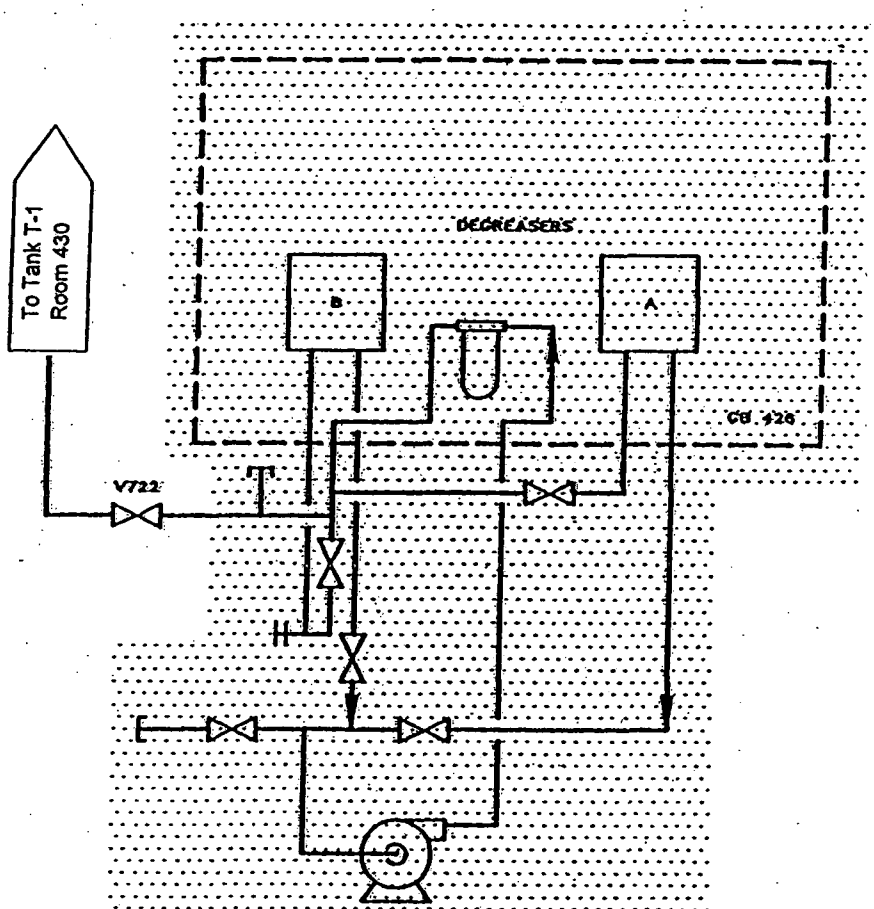
Appendix H
B776/777 Closure Project
RCRA Unit Closure Information Sheet

SET #	RCRA Unit #(s)	Description	Regulatory Status	Closure Status
21	95.015	Ancillary equipment – Glovebox 426	Mixed Residue	Physically Empty

Unit Description:	Set 21 contains ancillary equipment that was previously used to transfer waste 1,1,1-trichloroethane from degreasers/cleaning tanks in Glovebox 426 in Room 430 to Tank T-1 in Room 430. The tank has been removed (Set 26).
Unit Boundaries and Interfaces:	The degreaser tanks, pump, filter, and most valves associated with glovebox 426 are not regulated because the solvent was recirculated through the system for reuse until spent, and became a waste when discharged to T-1. One valve is regulated in the line exiting the glovebox. This line joins a line in the overhead in Room 430 that transferred the waste to Tank T-1. The attached drawing shows the ancillary equipment in this set. The ancillary piping below approximately eight feet will be removed as part of Set 21 D&D, and the end of the piping leading into the overhead will be capped or plugged. The remaining line in the overhead in Room 430 will be removed as part of Set 78 (miscellaneous piping over eight feet).
EPA Waste Codes/ Waste Characterization:	The lines and equipment will be drained prior to packaging as waste. The waste generated at closure will be assigned EPA waste codes of F001 and F002.
Selected Closure Option:	Unit removal without onsite treatment.
Closure Activities:	Closure activities include draining any residual liquids, removal, size reduction (if necessary) and packaging of the regulated ancillary equipment.
Waste Disposal:	The piping, valve, and secondary waste (e.g., PPE and plastic containment material) generated during closure activities will be managed as CERCLA remediation waste. Liquid hazardous wastes, if any, drained from the equipment will be managed as RCRA-regulated wastes. Absorbent will be added to waste packages with items that could contain residual liquids or sludges. Upon final radiological characterization, the waste will be packaged and managed in accordance with waste management requirements in Section 6 of the DOP.

Revision 1
July 1, 2003

B776/777, SET 21
Building 777 Room 430
Glovebox 426 Ancillary Piping



Shading indicates non-regulated equipment

322

322

Appendix H
B776/777 Closure Project
RCRA Unit Closure Information Sheet

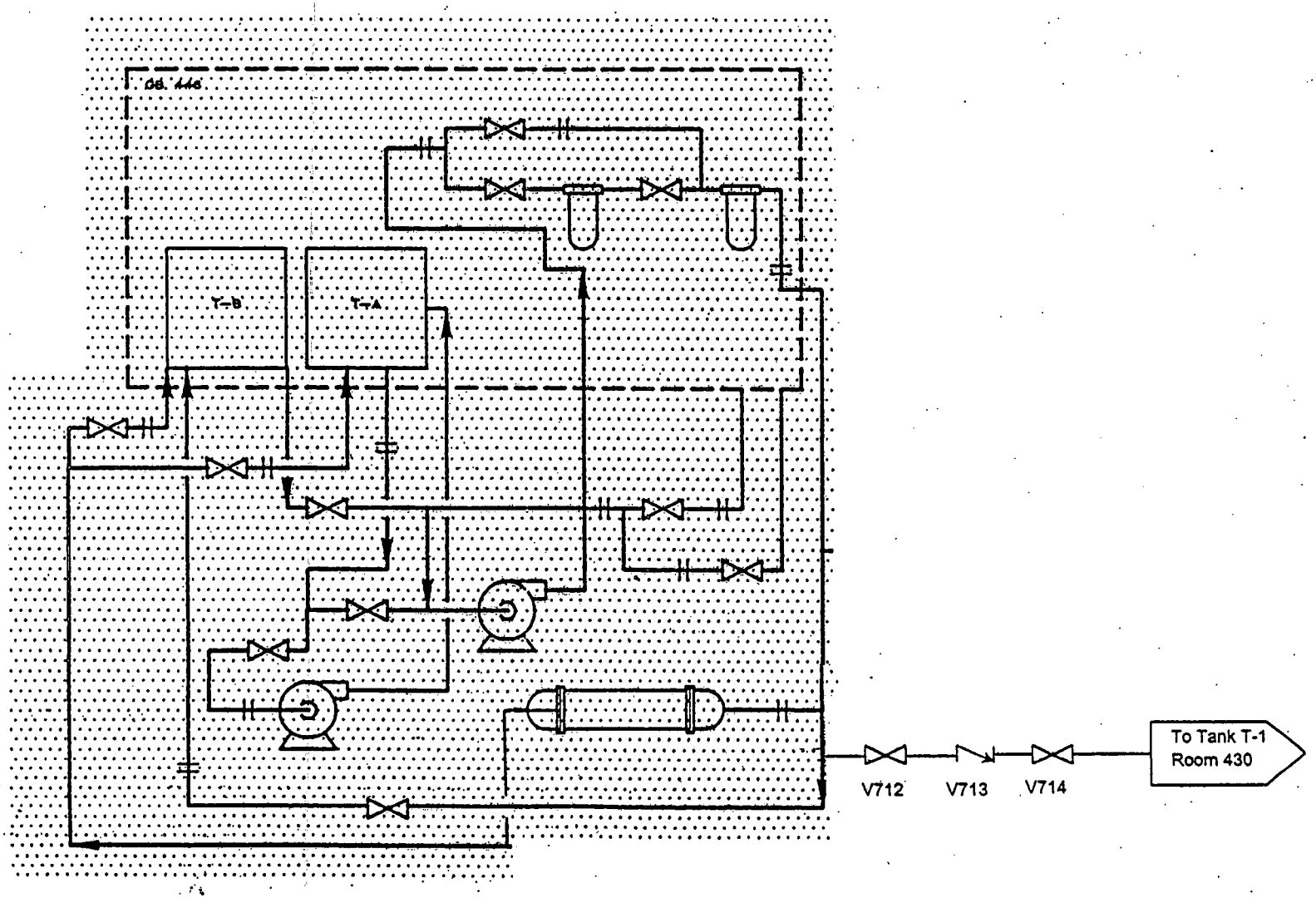
SET #	RCRA Unit #(s)	Description	Regulatory Status	Closure Status
22	95.015	Ancillary equipment – Glovebox 446	Mixed Residue	Physically Empty

Unit Description:	Set 22 contains ancillary equipment that was previously used to transfer waste 1,1,1-trichloroethane from degreasers/cleaning tanks in Glovebox 446 in Room 430 to Tank T-1 in Room 430. The tank has been removed (Set 26).
Unit Boundaries and Interfaces:	The degreaser tanks, pumps, filters, and most valves associated with glovebox 446 are not regulated because the solvent was recirculated through the system for reuse until spent, and became a waste when discharged to T-1. There are three regulated valves in the line exiting the glovebox. This line joins a line in the overhead in Room 430 that transferred the waste to Tank T-1. The attached drawing shows the ancillary equipment in this set. The ancillary piping below approximately eight feet will be removed as part of Set 21 D&D, and the end of the piping leading into the overhead will be capped or plugged. The remaining line in the overhead in Room 430 will be removed as part of Set 78 (miscellaneous piping over eight feet).
EPA Waste Codes/ Waste Characterization:	The lines and equipment will be drained prior to packaging as waste. The waste generated at closure will be assigned EPA waste codes of F001 and F002.
Selected Closure Option:	Unit removal without onsite treatment.
Closure Activities:	Closure activities include draining any residual liquids, removal, size reduction (if necessary) and packaging of the regulated ancillary equipment.
Waste Disposal:	The piping, valves, and secondary waste (e.g., PPE and plastic containment material) generated during closure activities will be managed as CERCLA remediation waste. Liquid hazardous wastes, if any, drained from the equipment will be managed as RCRA-regulated wastes. Absorbent will be added to waste packages with items that could contain residual liquids or sludges. Upon final radiological characterization, the waste will be packaged and managed in accordance with waste management requirements in Section 6 of the DOP.

32 5

B776/777, SET 22
Building 777 Room 430
Glovebox 446 Ancillary Piping

Revision 1
July 1, 2003



Shading indicates non-regulated equipment

324

Appendix H
B776/777 Closure Project
RCRA Unit Closure Information Sheet

SET #	RCRA Unit #(s)	Description	Regulatory Status	Closure Status
27	777.1	Room 432C Container Storage Unit	Permitted	Drums will be removed prior to closure

Unit Description:	Set 27 includes a permitted RCRA container storage unit in Building 777 Room 432C. It was originally permitted as Unit 17, and is now part of Unit 777.1. The room measures approximately 9'3" by 15'5". It has a stainless steel floor and a six-inch continuous stainless steel berm. The room has been used for storage of low level mixed waste containing solidified scintillation cocktail.
Unit Boundaries and Interfaces:	Room 432C provided secondary containment for RCRA container storage and is the only RCRA-regulated portion of set 27. No drawing is provided for this set, since the unit boundary is the room boundary.
EPA Waste Codes/ Waste Characterization:	The solidified scintillation cocktail stored in Room 432C has been characterized with the EPA waste code of D001 because it may contain free liquid. The waste containers will be removed prior to closure.
Selected Closure Option:	Unit removal in conjunction with debris rule treatment.
Closure Activities:	The stainless steel floor will be washed using water with an appropriate detergent, such as trisodium phosphate. Following washing, the floor will be visually inspected to determine if it meets the "clean debris surface" standard. If it meets the standard, the stainless steel floor will be removed and managed as non-hazardous low level waste. If it does not meet the standard, it will either be re-washed and re-inspected until it meets the standard, or closed by removal and characterized appropriately.
Waste Disposal:	The stainless steel floor and secondary waste (e.g., PPE, mop heads) generated during closure activities will be managed as CERCLA remediation waste. Liquid from washing the floor will be characterized and managed appropriately. Upon final radiological characterization, the waste will be packaged and managed in accordance with waste management requirements in Section 6 of the DOP.

Appendix H
B776/777 Closure Project
RCRA Unit Closure Information Sheet

SET #	RCRA Unit #(s)	Description	Regulatory Status	Closure Status
29	95.015	Ancillary equipment	Mixed Residue	Physically Empty

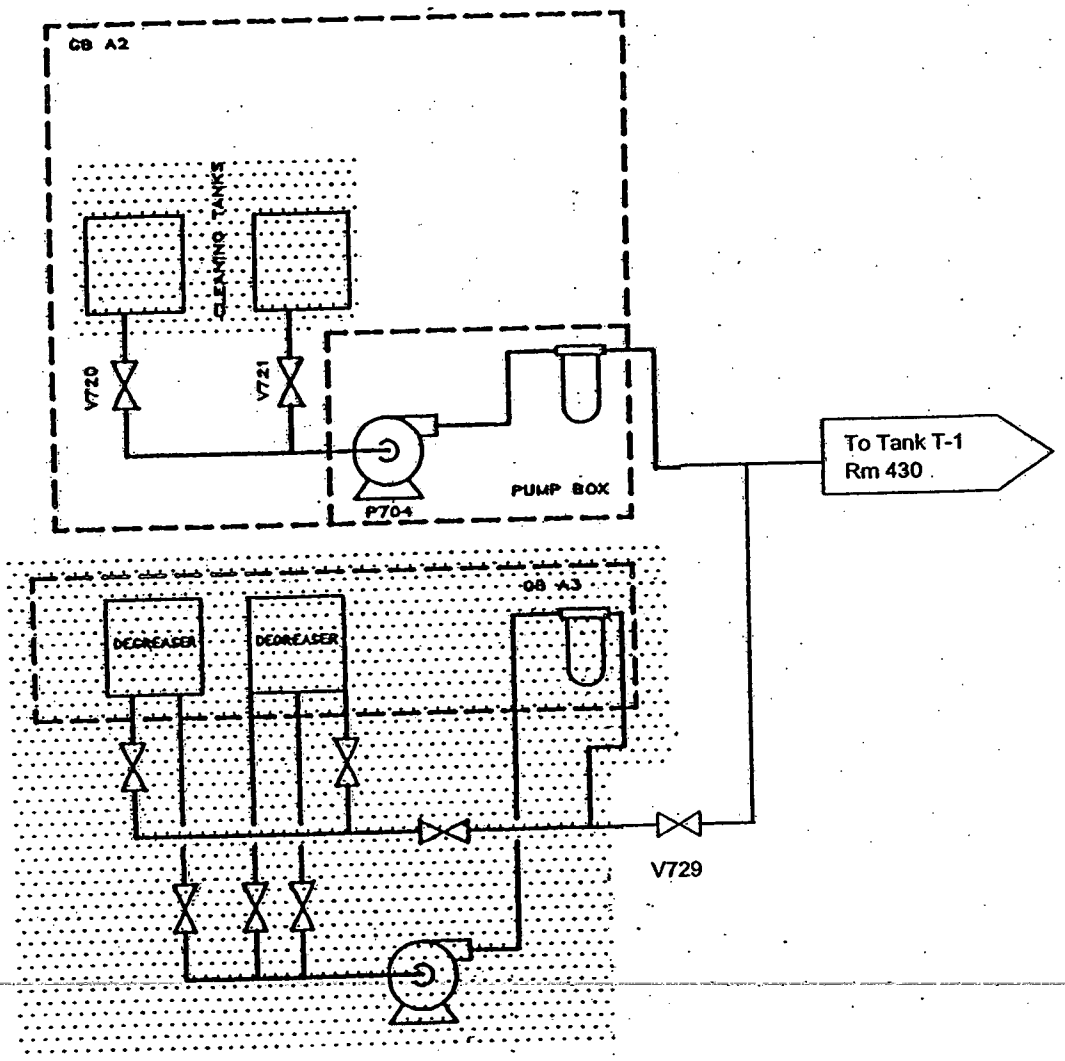
Unit Description:	Set 29 contains ancillary piping that was previously used to transfer waste 1,1,1-trichloroethane from degreasers/cleaning tanks in Gloveboxes A-2 and A-3 in Room 437 to Tank T-1 in Room 430. The tank has been removed (Set 26).
Unit Boundaries and Interfaces:	Regulated ancillary equipment in Glovebox A-2 includes a pump, filter, and associated valves and piping from two solvent cleaning tanks in the glovebox. The cleaning tanks themselves are not regulated. Glovebox A-2 served as secondary containment for the ancillary equipment within it. In Glovebox A-3, the degreaser tanks, pump, filter, and valves are not regulated because the solvent was recirculated through the system for reuse until spent, and became a waste when discharged to T-1. The waste lines from the two gloveboxes join in Room 437 prior to exiting through the south wall into Room 430. The attached drawing shows the ancillary equipment in this set. Most of the regulated ancillary equipment and waste lines will be removed as part of Set 29 D&D, and the end of the piping leading into Room 430 will be capped or plugged. The remaining line in the overhead in Rooms 430 and 437 will be removed as part of Set 78 (miscellaneous piping over eight feet).
EPA Waste Codes/ Waste Characterization:	The lines and equipment will be drained prior to packaging as waste. The waste generated at closure will be assigned EPA waste codes of F001 and F002. If Glovebox A-2 surveys as LLW, debris rule treatment may be conducted, and if successful, the glovebox will be managed as non-hazardous LLW. Otherwise, the glovebox will be managed as mixed waste with EPA waste codes of F001 and F002.
Selected Closure Option:	Ancillary piping: Unit removal without onsite treatment. Glovebox A-2: Unit removal, optionally preceded by debris rule treatment.
Closure Activities:	Closure activities include draining any residual liquids, removal, size reduction (if necessary) and packaging of the regulated ancillary equipment If Glovebox A-2 surveys as LLW and debris treatment is determined to be feasible, it will be wiped down using trisodium phosphate solution or another approved decon solution, and will be visually inspected to determine if it meets the standard for a clean debris surface. If it meets the standard, the glovebox will be closed by removal and managed as non-hazardous waste. Otherwise, it will be closed by removal and managed as mixed waste.
Waste Disposal:	The piping, pump, valves, filter, and secondary waste (e.g., PPE and plastic containment material) generated during closure activities will be managed as CERCLA remediation waste. Liquid hazardous wastes, if any, drained from the equipment will be managed as RCRA-regulated wastes. Absorbent will be added to waste packages with items that could contain residual liquids or sludges. Upon final radiological characterization, the waste will be packaged and managed in accordance with waste management requirements in Section 6 of the DOP.

Mod #8

327

Revision 1
July 1, 2003

B776/777, SET 29
Building 777 Room 437
Gloveboxes A2, A3 Ancillary Piping



Shading indicates non-regulated equipment

Appendix H
B776/777 Closure Project
RCRA Unit Closure Information Sheet

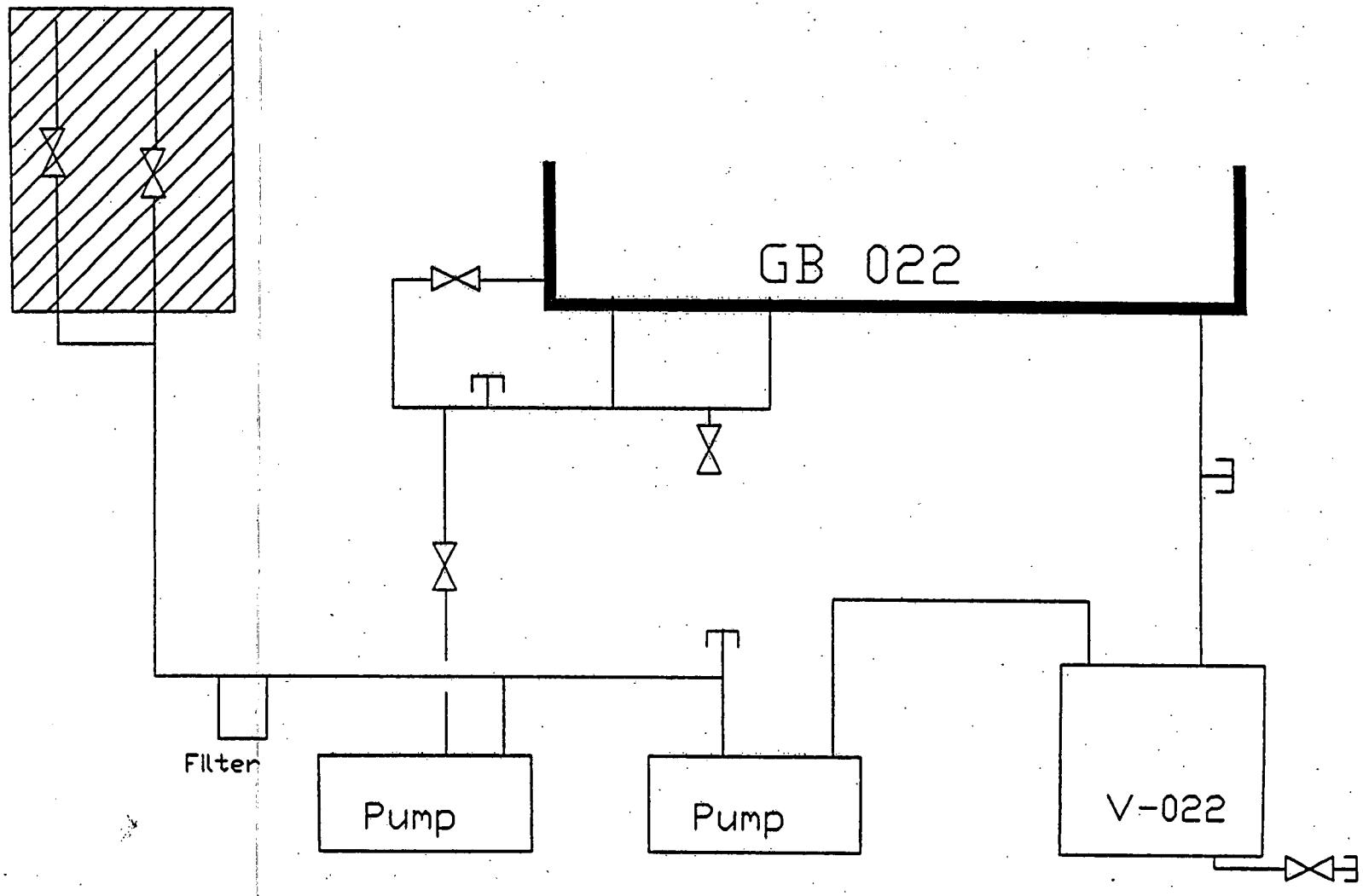
SET #	RCRA Unit #(s)	Description	Regulatory Status	Closure Status
34	NA	Tank V-022	Mixed Residue	Physically Empty/RCRA Stable

Unit Description:	Tank V-022 is a vacuum accumulator tank. It is constructed of carbon steel and has approximate dimensions of 12 inches in diameter by 23 inches high. The tank is located in Building 777 Room 452 below Glovebox 022. Vacuum was used to hold parts to equipment in the glovebox as they were being machined. The vacuum accumulator was used in the process line between the equipment and the vacuum pump so that constant vacuum pressure could be maintained on the parts being machined. In the event of an upset condition where the part came loose from the chuck, the cutting oils and solvents used in the machining process would be pulled into the accumulator. Maintenance personnel periodically drained the accumulator of any oil and solvent that accumulated. Tank V-022 and the associated vacuum pumps were drained to a physically empty condition in January 2000 under work package T0100104.
Unit Boundaries and Interfaces:	The vacuum accumulator system includes the vacuum accumulator tank, vacuum pumps, and associated piping and valves. This was a small stand-alone tank system and the ancillary equipment is minimal. This tank system will be entirely removed as part of Set 34 D&D. The attached drawing shows a schematic of the tank system.
EPA Waste Codes/ Waste Characterization:	The lines and equipment will be drained prior to packaging as waste. The waste generated at closure will be assigned EPA waste codes of F001 and F002.
Selected Closure Option:	Unit removal without onsite treatment.
Closure Activities:	Closure activities include draining any residual liquids, removal, size reduction (if necessary) and packaging of the tank and regulated ancillary equipment.
Waste Disposal:	The tank, piping, pumps, and secondary waste (e.g., PPE and plastic containment material) generated during closure activities will be managed as CERCLA remediation waste. Liquid hazardous wastes, if any, drained from the equipment will be managed as RCRA-regulated wastes. Absorbent will be added to waste packages with items that could contain residual liquids or sludges. Upon final radiological characterization, the waste will be packaged and managed in accordance with waste management requirements in Section 6 of the DOP.

330

Revision 1
July 1, 2003

B776/777, SET 34
Building 777 Room 452
Vacuum Accumulator V-022



329

Appendix H
B776/777 Closure Project
RCRA Unit Closure Information Sheet

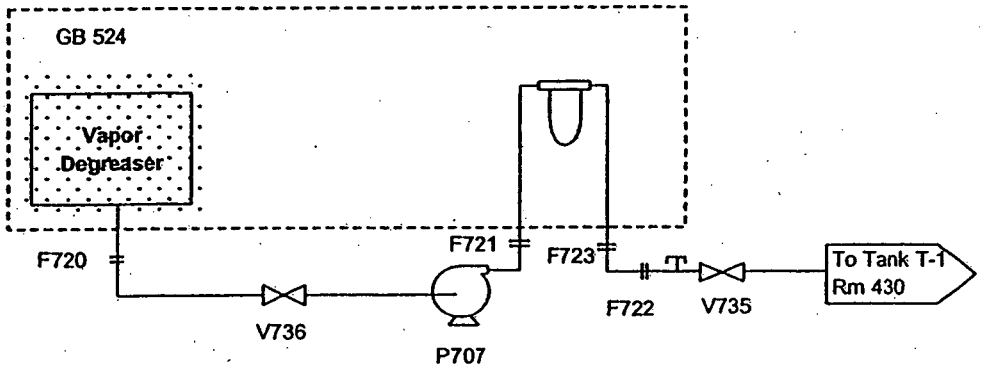
SET #	RCRA Unit #(s)	Description	Regulatory Status	Closure Status
35	95.015	GB 524 Ancillary equipment	Mixed Residue	Physically Empty

Unit Description:	Set 35 contains ancillary piping that was previously used to transfer waste 1,1,1-trichloroethane from a vapor degreaser in Glovebox 524 in Room 452 to Tank T-1 in Room 430. The tank has been removed (Set 26).
Unit Boundaries and Interfaces:	Regulated ancillary equipment associated with Glovebox 524 includes a pump, filter, and associated valves and piping from a vapor degreaser in the glovebox. The degreaser tank itself is not regulated. Glovebox 524 served as secondary containment for the ancillary equipment within it. The waste line from the glovebox goes through the overhead in Room 452 prior to exiting through the west wall on the north side of the Modulab. The pump, valves, filter, and piping below eight feet will be removed as part of Set 35 D&D and the end of the piping leading into the overhead will be capped or plugged. The remaining line in Room 452 will be removed as part of Set 36 and/or Set 78 (miscellaneous piping over eight feet). Endpoints for piping removal associated with each set will be determined during D&D work package preparation. The attached diagram shows the regulated equipment associated with Glovebox 524.
EPA Waste Codes/ Waste Characterization:	The lines and equipment will be drained prior to packaging as waste. The waste generated at closure will be assigned EPA waste codes of F001 and F002. If Glovebox 524 surveys as LLW, debris rule treatment may be conducted, and if successful, the glovebox will be managed as non-hazardous LLW. Otherwise, the glovebox will be managed as mixed waste with EPA waste codes of F001 and F002.
Selected Closure Option:	Ancillary equipment: Unit removal without onsite treatment. Glovebox 524: Unit removal, optionally preceded by debris rule treatment.
Closure Activities:	Closure activities include draining any residual liquids, removal, size reduction (if necessary) and packaging of the regulated ancillary equipment associated with GB 524. If Glovebox 524 surveys as LLW and debris treatment is determined to be feasible, it will be wiped down using trisodium phosphate solution or another approved decon solution, and will be visually inspected to determine if it meets the standard for a clean debris surface. If it meets the standard, the glovebox will be closed by removal and managed as non-hazardous waste. Otherwise, it will be closed by removal and managed as mixed waste.
Waste Disposal:	The piping, pump, filter, and secondary waste (e.g., PPE and plastic containment material) generated during closure activities will be managed as CERCLA remediation waste. Liquid hazardous wastes, if any, drained from the equipment will be managed as RCRA-regulated wastes. Absorbent will be added to waste packages with items that could contain residual liquids or sludges. Upon final radiological characterization, the waste will be packaged and managed in accordance with waste management requirements in Section 6 of the DOP.

Mod #8

Revision 1
July 1, 2003

B776/777, SET 35
Building 777 Room 452
Glovebox 524 Ancillary Piping



Shading indicates non-regulated equipment

Appendix H
B776/777 Closure Project
RCRA Unit Closure Information Sheet

Set #	RCRA Unit #(s)	Description	Regulatory Status	Closure Status
36	NA	Tank V-543	Mixed Residue	Physically Empty/RCRA Stable

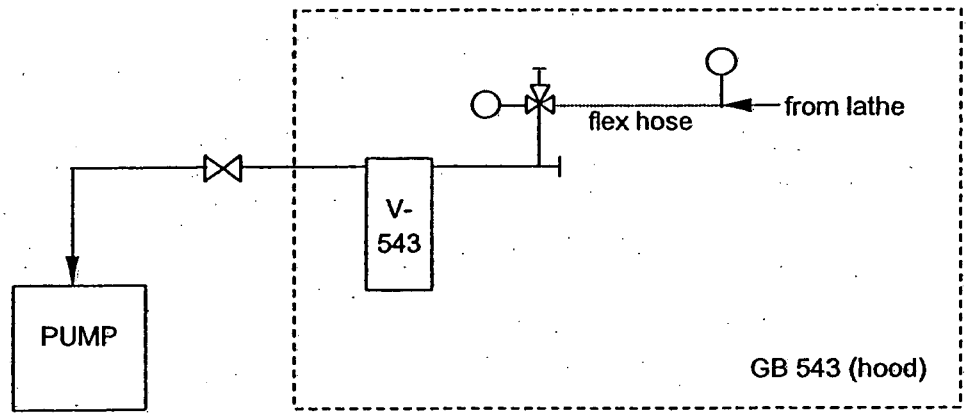
Unit Description:	Tank V-543 is a vacuum accumulator tank. It is constructed of carbon steel and has approximate dimensions of four inches in diameter by eight inches high. The tank is located in Building 777 Room 452 inside Glovebox 543. The vacuum pump is located outside the glovebox. Vacuum was used to hold parts to a lathe in Glovebox 543 as they were being machined. The vacuum accumulator was used in the process line between the equipment and the vacuum pump so that constant vacuum pressure could be maintained on the parts being machined. In the event of an upset condition where the part came loose from the chuck, the cutting oils and solvents used in the machining process would be pulled into the accumulator. Maintenance personnel periodically drained the accumulator of any oil and solvent that accumulated. Tank V-543 and the associated vacuum pump were drained to a physically empty condition in January 2000 under work package T0100104.
Unit Boundaries and Interfaces:	The vacuum accumulator system includes the vacuum accumulator tank, vacuum pump, and associated piping and valves. This was a small stand-alone tank system and the ancillary equipment is minimal. This tank system will be entirely removed as part of Set 36 D&D. Glovebox 543 served as secondary containment for the ancillary equipment within it. The attached drawing shows a schematic of the tank system.
EPA Waste Codes/ Waste Characterization:	The lines and equipment will have been drained prior to packaging as waste. The waste generated at closure will be assigned EPA waste codes of F001 and F002. If Glovebox 543 surveys as LLW, debris rule treatment may be conducted, and if successful, the glovebox will be managed as non-hazardous LLW. Otherwise, the glovebox will be managed as mixed waste with EPA waste codes of F001 and F002.
Selected Closure Option:	Tank and ancillary equipment: Unit removal without onsite treatment. Glovebox 543: Unit removal, optionally preceded by debris rule treatment.
Closure Activities:	Closure activities include draining any residual liquids, removal, size reduction (if necessary) and packaging of the tank and ancillary equipment . If Glovebox 543 surveys as LLW and debris treatment is determined to be feasible, it will be wiped down using trisodium phosphate solution or another approved decon solution, and will be visually inspected to determine if it meets the standard for a clean debris surface. If it meets the standard, the glovebox will be closed by removal and managed as non-hazardous waste. Otherwise, it will be closed by removal and managed as mixed waste.
Waste Disposal:	The tank, piping, pump, and secondary waste (e.g., PPE and plastic containment material) generated during closure activities will be managed as CERCLA remediation waste. Liquid hazardous wastes, if any, drained from the equipment will be managed as RCRA-regulated wastes. Absorbent will be added to waste packages with items that could contain residual liquids or sludges.

Mod #8

	Upon final radiological characterization, the waste will be packaged and managed in accordance with waste management requirements in Section 6 of the DOP.

Revision 1
July 1, 2003

B776/777, SET 36
Building 777 Room 452
Vacuum Accumulator V-543



335

Appendix H
B776/777 Closure Project
RCRA Unit Closure Information Sheet

SET #	RCRA Unit #(s)	Description	Regulatory Status	Closure Status
52	94.007	Tank T-360	Mixed Residue	Physically Empty
	94.008	Tank T-370	Mixed Residue	Physically Empty

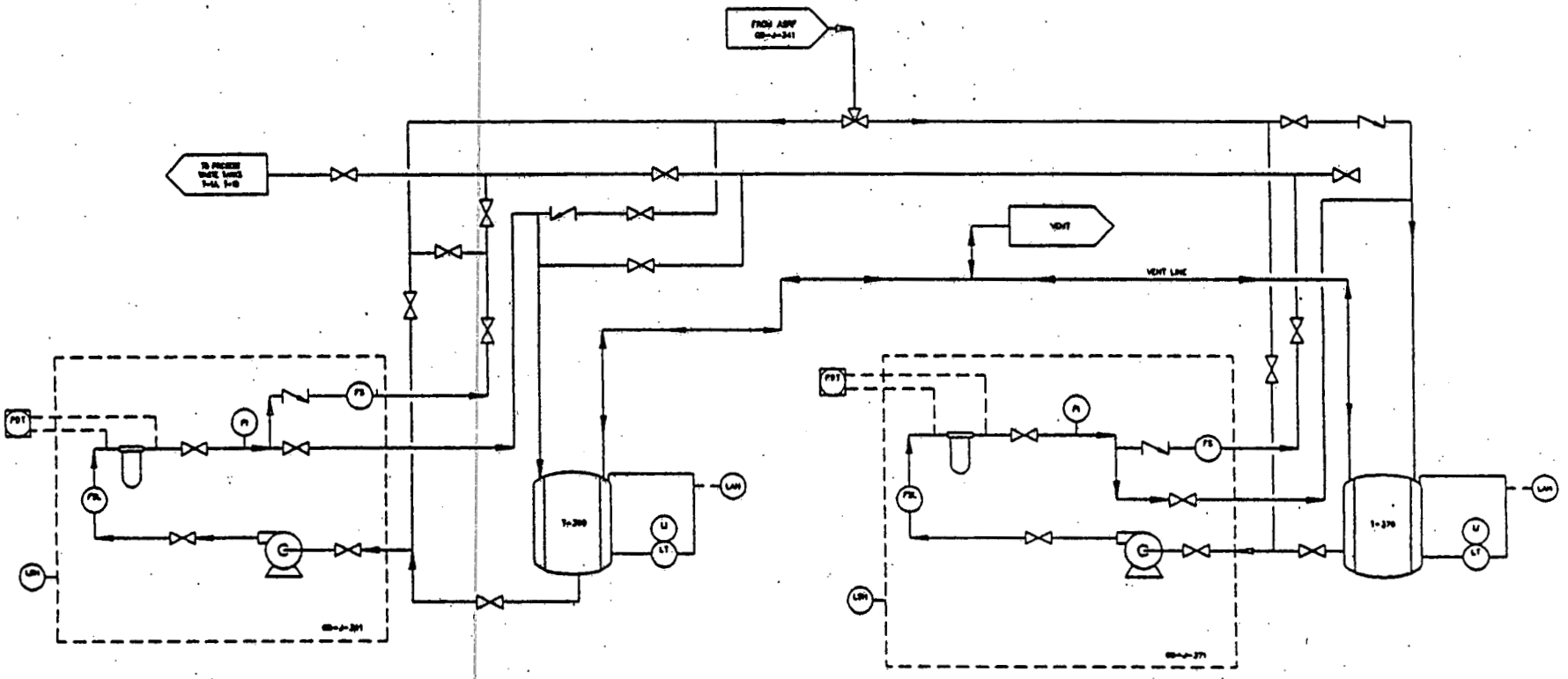
Unit Description:	Tanks T-360 and T-370 (RCRA Units 94.007 and 94.008) are annular tanks located in Room 134 in Building 776. The stainless steel tanks are 60.5" outside diameter by 106" high, with an annular thickness of 2". The operational capacities were approximately 127 gallons each. The tanks were used to collect steam condensate generated in the Advanced Size Reduction Facility (ASRF). The condensate was initially collected in the ASRF pencil tanks T-344 and T-345 (in set 66) prior to shipment to the annular tanks. The waste from Tanks T-360 and T-370 was filtered in Gloveboxes 361 and 371 respectively prior to transfer to Tanks T-1A and T-1B in Room 127 (RCRA Unit 776.2, set 69). Each glovebox contains a pump, Ful-Flo filter, valves, and ancillary piping. The gloveboxes served as secondary containment for the ancillary equipment within them. A bermed concrete area provided secondary containment for the tanks.
Unit Boundaries and Interfaces:	SET 52 includes Tanks T-360 and T-370, Gloveboxes 361 and 371, and ancillary equipment in Room 134. Associated ancillary equipment includes inlet piping coming from Tanks T-344 and T-345, pumps, filters and piping in gloveboxes 361 and 371, recirculation piping, and outlet piping leading to Tanks T-1A and T-1B in Room 127 (SET 69, RCRA Unit 776.2). All ancillary piping beneath approximately eight feet will be removed as part of Set 52, and the ends of the piping leading into the overhead will be capped or plugged. The remaining lines in the overhead in Room 134 will be removed as part of Set 78 (miscellaneous piping over eight feet). A drawing is attached showing the tanks and ancillary equipment. Endpoints for piping removal associated with this set will be determined during D&D work package preparation.
EPA Waste Codes/ Waste Characterization:	The tanks were drained to a physically empty condition in June 2000. Analytical results show that the liquid waste contains low levels of listed solvents (1,1,1 trichloroethane at up to 1100 ug/l and carbon tetrachloride at up to 570 ug/l) and levels of RCRA metals below TCLP. EPA waste codes of F001 and F002 will be applied to the tanks and ancillary equipment upon removal. If Gloveboxes 361 and 371 survey as LLW, debris rule treatment may be conducted, and if successful, the gloveboxes will be managed as non-hazardous LLW. Otherwise, the gloveboxes will be managed as mixed waste with EPA waste codes of F001 and F002. The metal secondary containment berm will be cleaned using debris rule technology and managed as LLW.

Selected Closure Option:	Tanks and ancillary piping: Unit removal without onsite treatment. Gloveboxes 361 and 371 and metal berm: Unit removal in conjunction with debris rule treatment. Concrete floor: Clean closure by decontamination
Closure Activities:	Closure activities for Tanks 360 and 370 and ancillary piping, pumps, valves, and filters include draining any residual liquids, removal, size reduction (if necessary) and packaging of the tanks and ancillary equipment as mixed waste. Gloveboxes 361 and 371 and the metal secondary containment berm will be wiped down using trisodium phosphate solution, and will be visually inspected to determine if they meet the standard for a clean debris surface. If they meet the standard, the gloveboxes and berm will be closed by removal and managed as non-hazardous waste. If they do not meet the standard, they will either be re-washed and re-inspected until they meet the standard, or closed by removal and managed as mixed waste. The concrete floor will be cleaned and rinsed, and the rinse water will be sampled to determine if it meets the closure performance standards listed in Section 4.5.1.1 of the DOP. If test results indicate the standard has been met, the concrete will be considered clean closed. If the standard is not met, CDPHE will be consulted to determine whether the results are protective of human health and the environment, in accordance with the DOP.
Waste Disposal:	The tanks, ancillary equipment, secondary containment, and secondary waste (e.g., PPE and plastic containment material) generated during closure activities will be managed as CERCLA remediation waste. Liquid hazardous wastes, if any, from draining the equipment will be managed as RCRA-regulated wastes. Absorbent will be added to waste packages with items that could contain residual liquids or sludges. Upon final radiological characterization, the waste will be packaged and managed in accordance with waste management requirements in Section 6 of the DOP.

338

Revision 1
July 1, 2003

B776/777, SET 52
Building 776 Room 134
Annular Tanks T-360, T-370
RCRA Units 94.007, 94.008



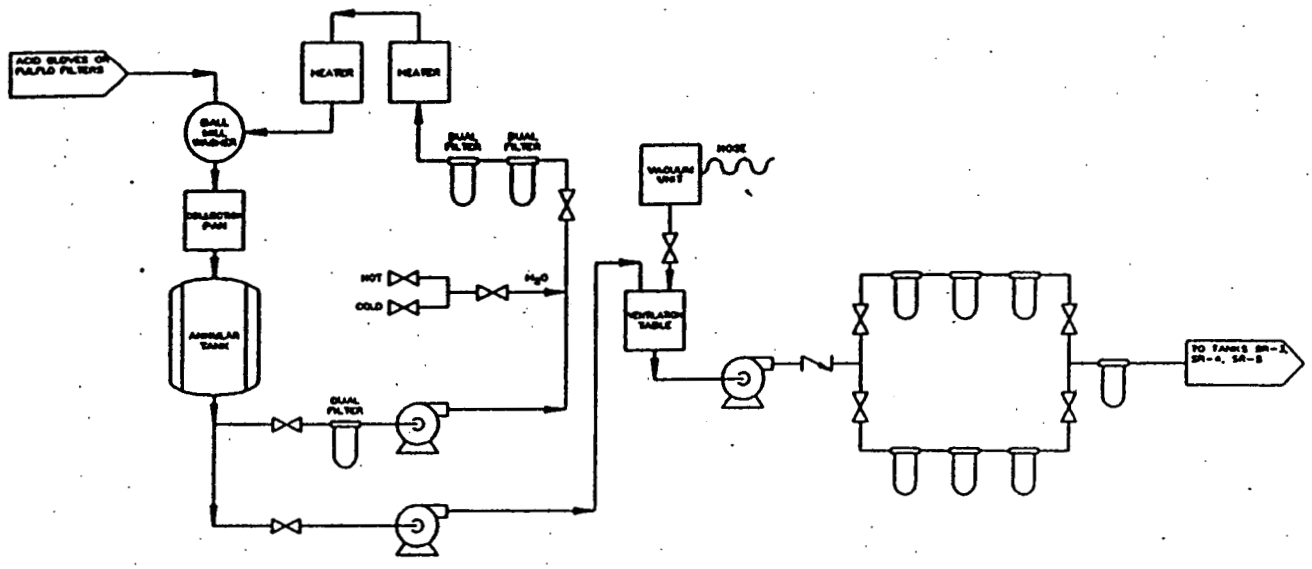
337

Appendix H
B776/777 Closure Project
RCRA Unit Closure Information Sheet

SET #	RCRA Unit #(s)	Description	Regulatory Status	Closure Status
60	61	Size Reduction Vault	Interim Status	Inactive
	94.009	Ball Mill Washer	Mixed Residue	Physically empty
	94.010	Collection Pan	Mixed Residue	Physically empty
	94.011	Annular Tank	Mixed Residue	Physically empty

Unit Description:	The Size Reduction Vault (SRV) is located in Room 146, and is a High Contamination Area (HCA). The SRV was an interim status treatment/storage unit used to repack containers, crush empty drums and HEPA filters in a drum crusher, and consolidate drummed waste into crates. The SRV also contains a ball mill washer used to wash acid-contaminated leaded gloves and metal tooling. Liquid from the ball mill was collected in an open pan beneath the ball mill, then drained into a 12-gallon annular tank. The liquid was then pumped through a bank of cartridge (Ful-Flo) filters in the SRV, and into the SRV tanks in Room 134 (Set 55). The concrete floor in room 146 provided secondary containment for the tank system and the repack operations.
Unit Boundaries and Interfaces:	The ball mill washer tank system includes the washer, pan, annular tank, pumps, and filters located in the SRV and the outlet piping leading to Tanks SR-3, SR-4, and SR-5 in Room 134 (Set 55). A drawing is attached showing the tanks and ancillary equipment. The concrete secondary containment for the SRV will be addressed with SET 82 (building structure).
EPA Waste Codes/ Waste Characterization:	The tanks were verified to be physically empty during an SRV entry made in October 2000. Analytical results of drums of ball mill sludge show that the sludge contains levels of RCRA metals below TCLP, and VOCs were non-detect. Based on the analysis, the ball mill sludge (IDC 340) was re-characterized as non-hazardous in July 2001. (ref. BCF WF46-007-2001) The ball mill sludge had previously been characterized as hazardous for lead (D008) based on process knowledge. The ball mill washer tank system will also be characterized as non-hazardous based on the analytical results of the sludge.
Selected Closure Option:	The ball mill washer tank system will be closed by removal and managed as non-hazardous waste.
Closure Activities:	Closure activities for the tanks and ancillary equipment include draining any residual liquids and sludges, removal, size reduction (if necessary) and packaging of waste.
Waste Disposal:	The ball mill washer tank system and secondary waste (e.g., PPE and plastic containment material) generated during closure activities will be managed as non-hazardous CERCLA remediation waste. Liquids and sludges, if any, drained from the equipment will be tested for pH and if between 2 and 12.5 will be managed as non-hazardous wastes based on previous analyses. Absorbent will be added to waste packages with items that could contain residual liquids or sludges. Upon final radiological characterization, the waste will be packaged and managed in accordance with waste management requirements in Section 6 of the DOP.

B776/777, SET 60
Size Reduction Vault Ball Mill Tank System
Building 776, Room 146



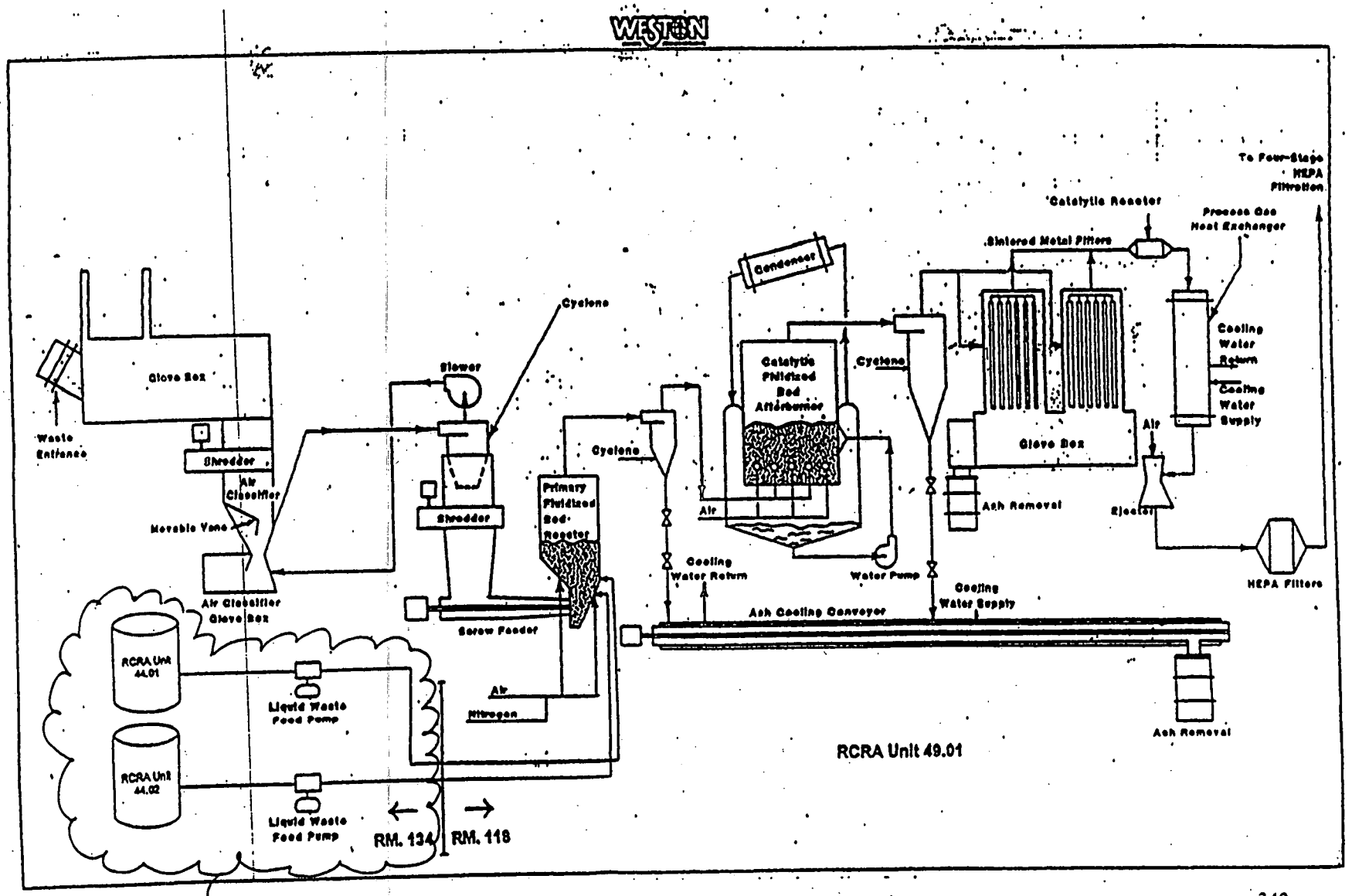
Appendix H
B776/777 Closure Project
RCRA Unit Closure Information Sheet

SEP #	RCRA Unit #(s)	Description	Regulatory Status	Closure Status
61	49.02	Pilot Fluidized Bed Incinerator	Interim Status Treatment Unit	Inactive

Unit Description:	The Pilot Fluidized Bed Incinerator (FBI) is located in Building 776, Room 135. The pilot FBI was built as a scaled up version of a laboratory scale incinerator, with a feed rate of 9 kg/hr. The incinerator could burn both liquid and solid wastes. The wastes were fed into the primary incineration reactor containing a fluidized bed of sodium carbonate and chromic oxide on alumina oxidation catalyst. The off gas from the primary reactor passed through a cyclone separator and entered the afterburner reactor, which also contained a fluidized bed of chromic oxide on alumina oxidation catalyst. The off gas from the afterburner reactor passed through another cyclone separator and through a bank of sintered metal filters that removed the remaining particulate from the air stream. The exhaust then passed through HEPA filters prior to exiting through the building plenum system HEPA filters. The pilot FBI was built in 1973. The unit was tested using new solid feed materials from June 1973 – July 1974. The unit was then modified to accommodate liquid feed in 1974. From February 1975 – July 1980 the unit burned paint thinner from the B333 paint shop; miscellaneous solid wastes such as wipes, plastic, and general building trash; HEPA filters; ion exchange resin; sewage sludge from the Rocky Flats sewage plant; a new tri-butyl phosphate/kerosene mixture; and wastes such as naphtha, methylene chloride paint stripper, ultrasonic cleaner and rinse, #6 fuel oil sludge, spent kerosene, benzene, xylene, and color indicators. (Ref. FBI Trial Burn Plan, 1/14/88) A PCB trial burn was conducted in May 1981. The test burn feed was prepared by mixing 25 weight percent pyranol and 75 weight percent kerosene. The pilot FBI demonstrated a 99.9999 percent destruction efficiency for PCBs.
Unit Boundaries and Interfaces:	The pilot FBI unit boundary includes all equipment and gloveboxes within Room 135. A drawing showing the pilot FBI system is attached. The feed tanks (pencil tanks T-1 and T-2) in Room 134 were removed in March 2000.
EPA Waste Codes/ Waste Characterization:	Ash from the pilot FBI has been characterized with EPA waste codes D007 and F005. D007 is assigned to the ash based on the chromium oxide in the fluid bed catalyst. The liquid feed was characterized with EPA waste codes of D001, D007, D035, and F005. (Ref. Backlog Waste Reassessment Baseline Book, Subpopulation 1D.) There is no evidence to suggest the solid feed was hazardous. Portions of the unit that have come into contact with ash or liquid wastes will either be treated according to the debris rule, or removed and managed as mixed waste with EPA waste code F005. The liquid feed system and ash will be tested to determine if they are contaminated with PCBs, and the waste will be managed appropriately based on the sampling results.
Selected Closure Option:	Liquid waste feed system: Unit removal without onsite treatment. Primary reactor, afterburner reactor, cyclones, sintered metal filters, connecting ductwork: Unit removal, optionally preceded by debris rule treatment if insides of system can be

	accessed for cleaning. Ash collection glovebox: Unit removal in conjunction with debris rule treatment.
Closure Activities:	Closure activities include draining any residual liquids, removing any residual catalyst material and ash, size reduction (as necessary) and packaging of the equipment. The liquid waste feed system (piping, pump, filters) will be removed and packaged as LLM waste. Closure activities for the gloveboxes and components will include cleaning using an approved decon solution. After cleaning, the surfaces will be visually inspected to determine if they meet the standard for a clean debris surface. If they meet the standard, the component will be closed by removal and managed as non-hazardous waste. Otherwise, they will be closed by removal and managed as mixed waste.
Waste Disposal:	The piping, FBI equipment, gloveboxes and secondary waste (e.g., PPE and plastic containment material) generated during closure activities will be managed as CERCLA remediation waste. Upon final radiological characterization, the waste will be packaged and managed in accordance with waste management requirements in Section 6 of the DOP.

B776/777, SET 61
Pilot Fluidized Bed Incinerator
Building 776, Room 135

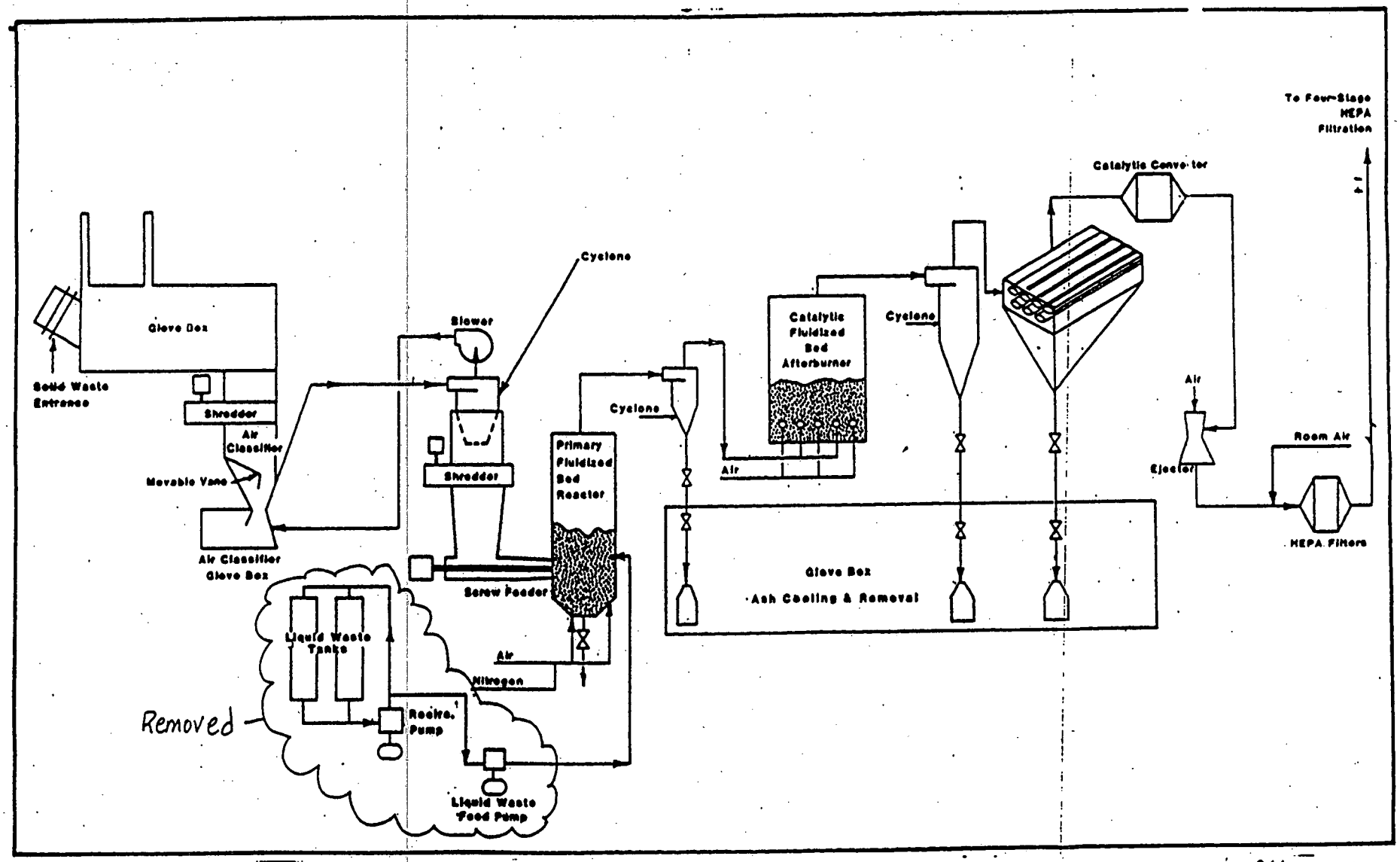


Appendix H
B776/777 Closure Project
RCRA Unit Closure Information Sheet

SET #	RCRA Unit #(s)	Description	Regulatory Status	Closure Status
63	49.01	Production Fluidized Bed Incinerator	Interim Status Treatment Unit	Inactive

Unit Description:	The Production Fluidized Bed Incinerator (FBI) is located in Building 776, Room 118. The production FBI was built as a 9 to 1 scaled up version of the pilot FBI. The incinerator could burn both liquid and solid wastes. The wastes were fed into the primary incineration reactor containing a fluidized bed of sodium carbonate and chromic oxide on alumina oxidation catalyst. The off gas from the primary reactor passed through a cyclone separator and entered the afterburner reactor, which also contained a fluidized bed of chromic oxide on alumina oxidation catalyst. The off gas from the afterburner reactor passed through another cyclone separator and through a bank of sintered metal filters that removed the remaining particulate from the air stream. The exhaust then passed through HEPA filters prior to exiting through the building plenum system HEPA filters. The production FBI was built in 1978. The first runs (1978-1981) used non-contaminated office trash, B776 low-level combustible waste, and compressor oil as test materials. Further testing was conducted from 1985-1988 using methanol, diesel products, and nonradioactive surrogate combustibles (shredded coveralls, leather gloves, rolls of PVC plastic, wood, and paper (Ref. Backlog Waste Reassessment Baseline Book and FBI Trial Burn Plan, 1/14/88)
Unit Boundaries and Interfaces:	The Set 63 boundary includes all equipment within the incinerator canyon, room 118, and associated gloveboxes and control equipment in rooms 118A, 118B, 118C, 118D, 118E, 118F, 118G, and 118 H. A drawing showing the production FBI system is attached. The feed tanks (raschig ring tanks T-1 and T-2) in Room 134 were removed in January 2000 with Set 62.
EPA Waste Codes/ Waste Characterization:	Ash from the production FBI has been characterized with EPA waste code D007 based on the chromium oxide in the fluid bed catalyst. The solids and liquids burned in this unit were not known to contain any EPA-listed wastes. (Ref. Backlog Waste Reassessment Baseline Book, Subpopulation 1C.)
Selected Closure Option:	Unit removal without onsite treatment.
Closure Activities:	Closure activities include draining any residual liquids, removing any residual catalyst material and ash, size reduction (as necessary) and packaging of the equipment. As the equipment is dismantled, the interior surfaces will be visually inspected to determine if they are free from significant quantities of residual wastes. If so, the component will be closed by removal and managed as non-hazardous waste. If significant residual material remains that cannot be readily removed, the component will be closed by removal and managed as mixed waste with waste code D007.
Waste Disposal:	The piping, FBI equipment, gloveboxes and secondary waste (e.g., PPE and plastic containment material) generated during closure activities will be managed as CERCLA remediation waste. Upon final radiological characterization, the waste will be packaged and managed in accordance with waste management requirements in Section 6 of the DOP.

B776/777, SET 63
Production Fluidized Bed Incinerator
Building 776, Room 118



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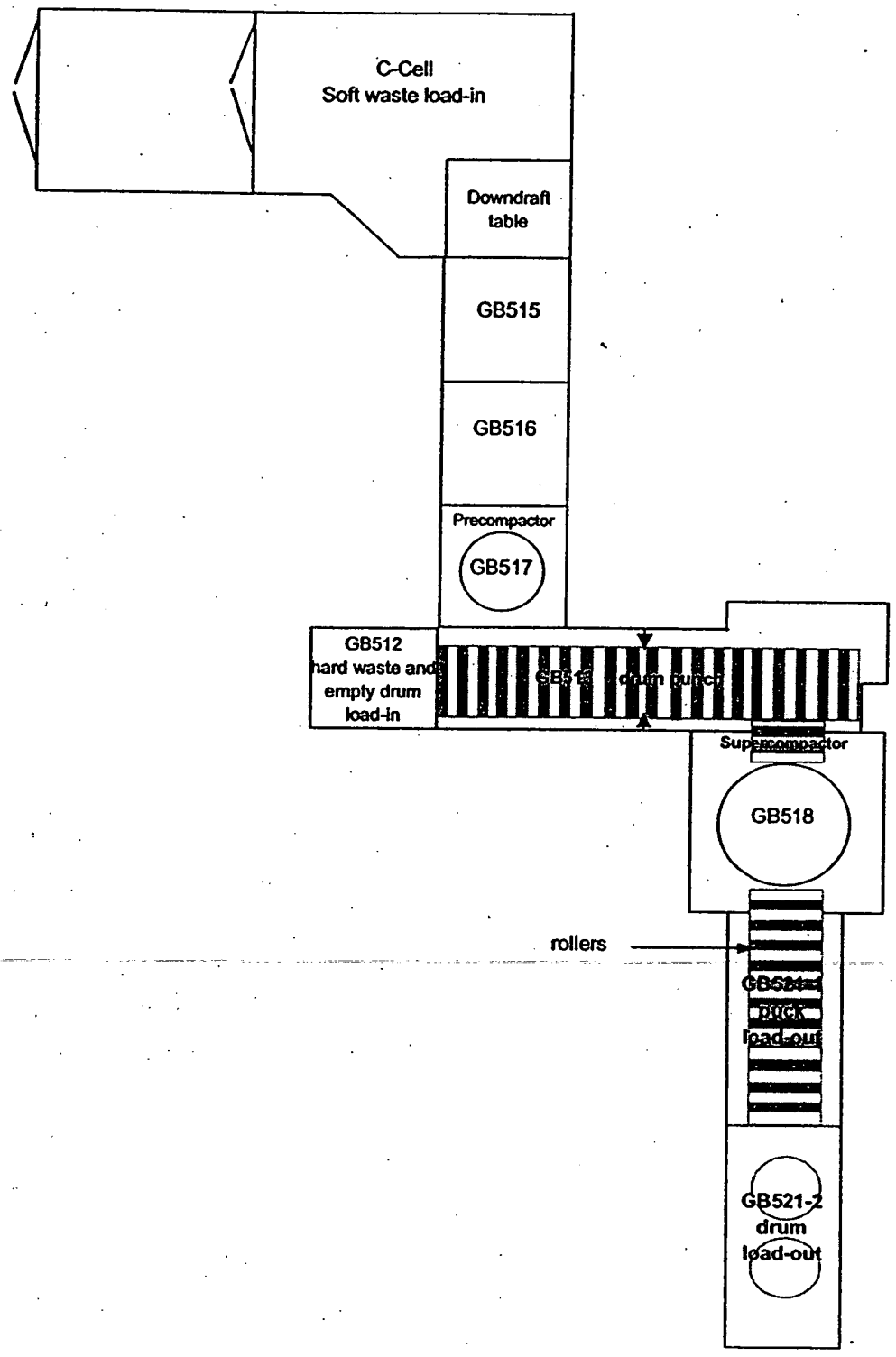
Appendix H
B776/777 Closure Project
RCRA Unit Closure Information Sheet

SET	RCRA Unit #(s)	Description	Regulatory Status	Closure Status
64	74	Supercompactor and Repackaging Facility	Interim Status Treatment Unit	Inactive

Unit Description:	The Supercompactor and Repackaging Facility (SARF) is located in Building 776, Room 134. The SARF was installed in the early 1990's and operated briefly in 1993-1994. The largest pieces of equipment are a 2000 ton (force) supercompactor, 30 ton pre-compactor, and associated hydraulic systems. Much of the SARF equipment is located inside of gloveboxes, including GBs 512, 513, 515, 516, 517, 518, and 521. A c-cell was constructed on the north end of GB515 to provide containment for drum load-in. Drums of soft waste (paper, plastic) were unloaded in the c-cell on a downdraft table. The inner waste bags were transferred into GB516 where they were opened and sorted to remove non-conforming items. The waste was then placed into 35-gallon drums in GB517 for precompaction. The precompactor ram compressed soft waste within the 35-gallon drum. Filled drums were transferred via motorized rollers into GB513 for piercing. 35-gallon drums of hard waste (metal, glass) were loaded into GB512 for direct transfer into GB513 for piercing, and did not go through the precompactor. The drums were pierced to allow air to escape from the 35-gallon drum during supercompaction, which occurred in GB518. Supercompaction involved crushing the entire 35-gallon drum plus contents into a "puck." There was a collection ring at the base of the supercompactor to collect any liquids, but no liquid was ever encountered. The compressed pucks were loaded out into 55-gallon drums from GB521. The hydraulic systems were located outside the gloveboxes and did not come in contact with hazardous waste. Secondary containment for the SARF is provided by the gloveboxes.
Unit Boundaries and Interfaces:	The SARF unit boundary includes the glovebox system and the attached c-cell. A drawing showing the SARF layout is attached. The SARF was a stand-alone system and did not connect to any other gloveboxes or piping systems.
EPA Waste Codes/ Waste Characterization:	A WEMS query identified only 11 drums of mixed waste generated by the SARF. Ten drums carry EPA waste codes of F001 and F002, and one drum has F005, D007, and D008 in addition to F001 and F002. The glovebox floors and rollers and the precompactor and supercompactor rams will be cleaned using debris rule technology and managed as LLW or TRU waste.
Selected Closure Option:	Unit removal in conjunction with debris rule treatment.
Closure Activities:	The SARF components and containment that directly contacted listed waste include the floors of GBs 516, 517, 513, 518, and 521, the rollers in GBs 513 and 521, the drum punching/piercing unit, and the precompactor and supercompactor rams. Closure activities for these gloveboxes and components will include cleaning using an approved decon solution. After cleaning, the surfaces will be visually inspected to determine if they meet the standard for a clean debris surface. If they meet the standard, the component will be

	closed by removal and managed as non-hazardous waste. Otherwise, they will be closed by removal and managed as mixed waste.
Waste Disposal:	The gloveboxes, precompactor, supercompactor, and secondary waste (e.g., PPE, decon wipes, and plastic containment material) generated during closure activities will be managed as CERCLA remediation waste. Upon final radiological characterization, the waste will be packaged and managed in accordance with waste management requirements in Section 6 of the DOP.

B776/777, SET 64
Supercompactor and Repackaging Facility (SARF)
Building 776, Room 134



348

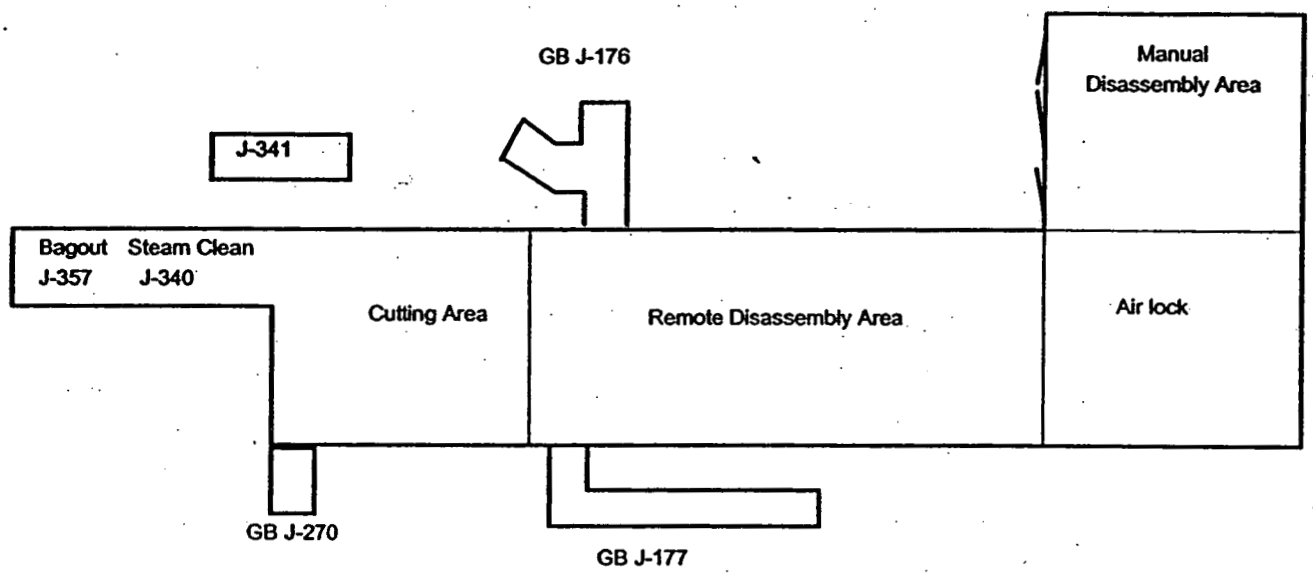
Appendix H
B776/777 Closure Project
RCRA Unit Closure Information Sheet

SET #	RCRA Unit #(s)	Description	Regulatory Status	Closure Status
66	776.1, 776.3 94.005, 94.006	Advanced Size Reduction Facility Tanks T-344, T-345	Permitted Storage and Treatment Unit Mixed Residue	Active Physically empty

Unit Description:	The Advanced Size Reduction Facility (ASRF) is located in Room 134. The ASRF is a large stainless steel containment canyon that extends from ground level on the first floor through the 2nd floor (Room 209). There are five gloveboxes (J-176, -177, -270, -340, and -357) attached to the ASRF. Another free-standing glovebox (J-341) is located north of GB J-340. The ASRF was installed and operated in the 1980's for remote size reduction of equipment and gloveboxes. The ASRF has four major areas, which are the Manual Disassembly Area (MDA), Transfer Area, Remote Disassembly Area (RDA) and Cutting Area. The MDA is currently used for waste treatment and repackaging. Once the cutting was completed, the pieces were passed through GB J-340 into J-357. GB J-340 was designed with a steam cleaner. Steam condensate was collected in pencil tank T-345 below GB J-340 and filtered in GB J-341. The condensate was then either cooled in heat exchangers and collected in Pencil Tank T-344 for recycle to the steam guns in the ASRF, or transferred to Annular Tanks T-360 and T-370 (Set 52). Glovebox J-176 has a drum drop and was originally designed as a waste sorting area. This glovebox has been used for leaded glove washing, LECO crucible repackaging, and other repack and sampling operations. Gloveboxes J-177 and 270 have been used for the storage of RCRA-regulated liquids. Secondary containment for the ASRF is provided by a stainless steel floor in the ASRF, a stainless steel catch pan beneath T-344 and T-345, and all associated gloveboxes.
Unit Boundaries and Interfaces:	The ASRF unit boundary includes the entire canyon area and all attached gloveboxes. A drawing showing the ASRF layout is attached. A drawing is attached showing the T-344/T-345 tank system. Regulated piping beneath approximately eight feet will be removed as part of Set 66, and the ends of the piping leading into the overhead will be capped or plugged. The remaining line in the overhead in Room 134 will be removed as part of Set 78 (miscellaneous piping over eight feet).
EPA Waste Codes/ Waste Characterization:	The tanks were drained to a physically empty condition in June 2000. Analytical results show that the liquid waste contains low levels of listed solvents (1,1,1 trichloroethane at up to 1100 ug/l and carbon tetrachloride at up to 570 ug/l) and levels of RCRA metals below TCLP. The T-344/T-345 tanks and ancillary equipment will either be treated according to the debris rule, washed/flushed/rinsed and sampled, or removed and managed as mixed waste with EPA waste codes of F001 and F002. The gloveboxes, catch pan, and the stainless steel floor of the ASRF will be cleaned using debris rule technology and managed as LLW or TRU waste.

Selected Closure Option:	Regulated ancillary equipment: Closure by removal. Optionally the piping may be washed, rinsed and sampled or cleaned to meet debris rule standards prior to removal. Gloveboxes, stainless steel catch pan, and stainless steel floor of the ASRF: Unit removal in conjunction with debris rule treatment.
Closure Activities:	Closure activities for the ancillary equipment include draining any residual liquids, removal, size reduction, and packaging of waste. Optional closure activities include flushing/washing the piping with a solution capable of removing the contaminants of concern followed by rinsing and sampling, or debris rule cleaning followed by closure by removal. Closure activities for the gloveboxes, stainless steel catch pan, and the stainless steel floor of the ASRF will include cleaning using an approved decon solution. After cleaning, the surfaces will be visually inspected to determine if they meet the standard for a clean debris surface. If they meet the standard, the component will be closed by removal and managed as non-hazardous waste. Otherwise, they will be closed by removal and managed as mixed waste.
Waste Disposal:	The tanks, piping, pumps, gloveboxes, stainless steel floor/catch pan, and secondary waste (e.g., PPE and plastic containment material) generated during closure activities will be managed as CERCLA remediation waste. Absorbent will be added to waste packages with items that could contain residual liquids or sludges. Upon final radiological characterization, the waste will be packaged and managed in accordance with waste management requirements in Section 6 of the DOP.

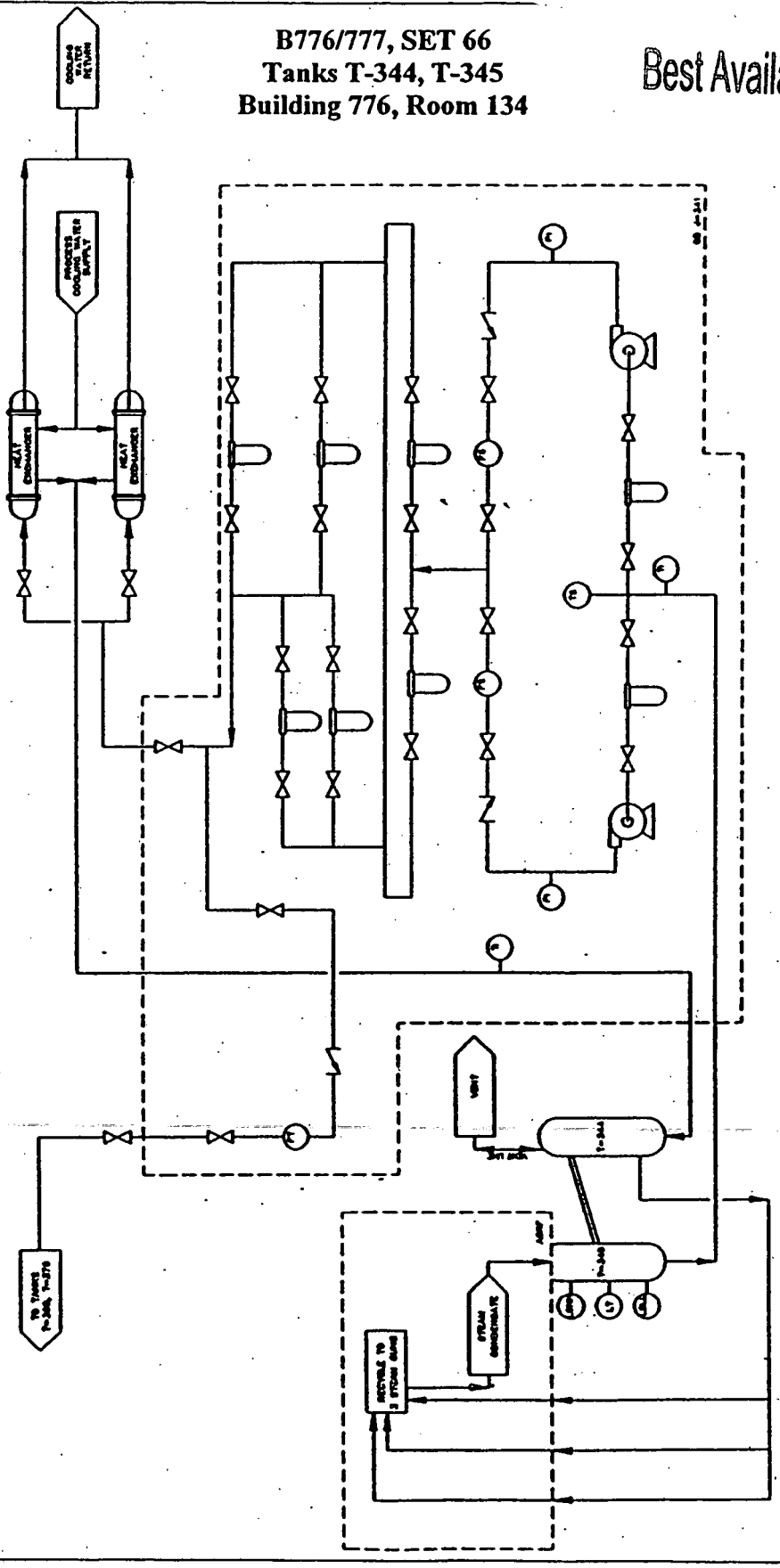
B776/777, SET 66
Advanced Size Reduction Facility
Building 776, Room 134



351

B776/777, SET 66
Tanks T-344, T-345
Building 776, Room 134

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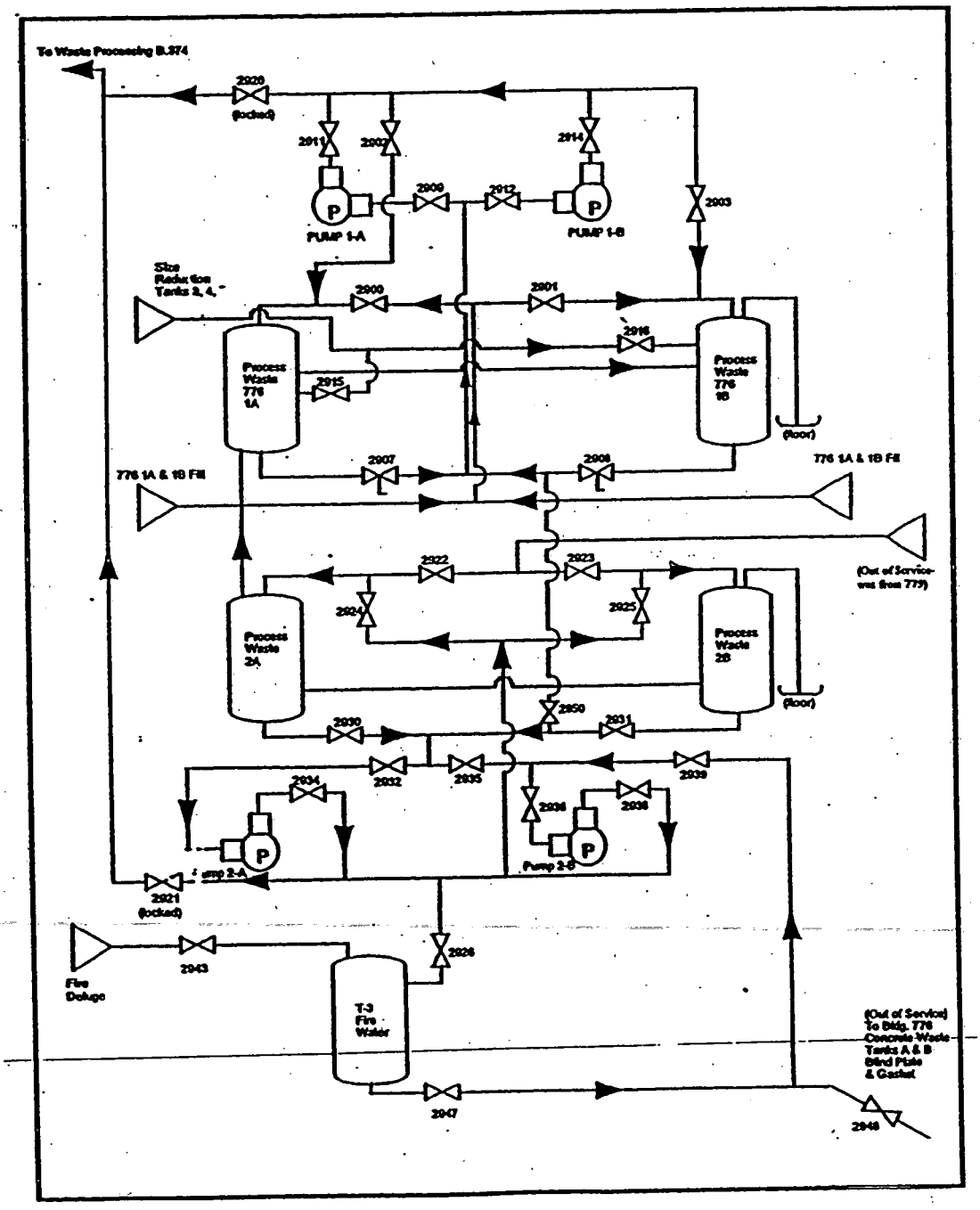
Appendix H
B776/777 Closure Project
RCRA Unit Closure Information Sheet

SET #	RCRA Unit #(s)	Description	Regulatory Status	Closure Status
69	776.2 A, B, C, D	Tanks T-1A, T-1B, T-2A, T-2B	Permitted	Active

Unit Description:	SET 69 includes five fiberglass tanks within a bermed area in Room 127. Four of the tanks are RCRA-permitted process waste tanks. The fifth tank, T3, is a raschig ring filled tank for the collection of plenum deluge water, and is not RCRA regulated. The process waste tanks have been in use since 1977. The tanks have historically collected hazardous and non-hazardous process wastes from Buildings 776, 777, and 779. The tanks currently collect hazardous and non-hazardous remediation wastes from Buildings 776 and 777. The liquids from the tanks are pumped through the process waste lines to Building 374 via valve vault 9. When Building 374 closes, the waste will be collected by tanker truck for transfer to a treatment facility. A hypalon-lined bermed area provides secondary containment for the tanks. The concrete floor of the building provides secondary containment for the ancillary piping.
Unit Boundaries and Interfaces:	The T-tank system includes the four tanks and ancillary equipment in the bermed area, and the outlet piping leading to valve vault 9. All ancillary piping beneath approximately eight feet will be removed as part of Set 69, and the ends of the piping leading into the overhead will be capped or plugged. The remaining lines in the overhead will be removed as part of Set 78 (miscellaneous piping over eight feet). A drawing is attached showing the tanks and ancillary equipment. The hypalon liner and concrete berm will be removed as part of Set 69. The concrete floor will be addressed with Set 82, Building Structure.
EPA Waste Codes/ Waste Characterization:	The T-tanks have stored process waste that was characteristically hazardous for RCRA metals such as cadmium, chromium, and lead (D006, D007, and D008). The tanks also stored low-concentration F-listed wastes (F001, F002) received from ASRF condensate tanks T-360 and T-370.
	The 776 Closure Project may elect to demonstrate that the F-listed wastes are no longer contained in the T-tank system, in conjunction with characterization efforts for the site-wide process waste system (e.g. B374 sludge de-listing petition).
Selected Closure Option:	Tanks and ancillary equipment: The T-tank system will be closed by removal. Optionally the system may be washed, rinsed and sampled or cleaned to meet debris rule standards prior to removal. Hypalon liner in secondary containment: Unit removal in conjunction with debris-rule treatment, or unit removal without onsite treatment.
Closure Activities:	Closure activities for the tanks and ancillary equipment include draining any residual liquids or sludges, removal, size reduction, and packaging of waste. Optional closure activities include flushing/washing the piping with a solution capable of removing the contaminants of concern followed by rinsing and sampling, or debris rule cleaning followed by closure by removal.

	The hypalon liner will be optionally cleaned using debris rule technology, and will be closed by removal.
Waste Disposal:	The tanks, piping, pumps, hypalon liner, and secondary waste (e.g., PPE and plastic containment material) generated during closure activities will be managed as CERCLA remediation waste. Hazardous liquids or sludges, if any, drained from the equipment will be managed as remediation wastes. Absorbent will be added to waste packages with items that could contain residual liquids or sludges. Upon final radiological characterization, the waste will be packaged and managed in accordance with waste management requirements in Section 6 of the DOP.

B776/777, SET 69
Process Waste Tank System Diagram
Building 776, Room 127



Note: Tank T-3 is not part of the RCRA-regulated system

356

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Appendix H
B776/777 Closure Project
RCRA Unit Closure Information Sheet

SET #	RCRA Unit #(s)	Description	Regulatory Status	Closure Status
78	Various – see description below	Overhead RCRA piping above 8 feet	Mixed residue, permitted	T-tanks active All others inactive

Unit Description:	SET 78 includes overhead piping above approximately 8 feet that will remain after removal of tank and glovebox sets. This set includes piping ancillary to the following RCRA tank systems: Tanks T-1, T-2; Units 95.015, 95.016; tanks removed with Set 26. Tank T-7, Unit 95.014, tank removed with Set 11. Tanks 1103, 1104, 1106; Units 95.006, 95.007, 95.008; tanks removed with Set 7. Tanks T-1A, T-1B, T-2A, T-2B ("T-Tanks"); Unit 776.2; tanks to be removed with Set 69. Tanks SR-3, SR-4, SR-5; Units 94.001, 94.002, 94.003; tanks removed with Set 55. Ball mill washer, annular tank, and collection pan in Size Reduction Vault (SRV); Units 94.009, 94.010, 94.011; tanks are physically empty and will be removed with Set 60. Tanks T-344, T-345; Units 94.005, 94.006; tanks are physically empty and will be removed with Set 66. Reverse flow line; ancillary to Unit 774.3B; process waste piping from Building 774 that passes through Building 776 but does not connect to B776 waste lines. The concrete floor of the building provides secondary containment for the ancillary piping.
Unit Boundaries and Interfaces:	A drawing is attached (Plate 1) showing the piping covered in Set 78. The drawing also shows some non-regulated piping for clarification, as many non-regulated lines are marked as "process waste" in the building. The aqueous process waste lines (reverse flow line and T-tank line to Building 374) will be removed from the south end of the 771 tunnel (where the two lines enter the 776 elevator basement) through Building 776 and 778, and the lines will be capped where they exit Building 778 leading to valve vault 9. Although Building 778 is included in the Building 707 DOP, the process waste lines will be closed under the Building 776 DOP. The machine coolant/solvent waste line and trichloroethane waste line entering Building 777 from Building 707 will be cut and capped at the boundary between Buildings 777 and 778 hallway. The machine coolant/solvent waste line exiting the north side of Building 776 going toward Building 774 will be cut and capped at a logical point between the buildings mutually agreed upon between the two closure projects. The concrete floor that serves as secondary containment in Buildings 776 and 777will be addressed with Set 82, Building Structure.

EPA Waste Codes/ Waste Characterization:	The piping associated with mixed residue tanks T-1, T-2, T-7, 1103, 1104, and 1106 contained waste oils and/or solvents, and will be characterized with EPA codes F001 and F002. Piping associated with the T-tanks, including the feed line from Building 779 and the outlet line to Building 374, transferred only characteristic hazardous waste for several years, although historically they were permitted for F-listed waste codes. The 776 Closure Project may elect to demonstrate that the F-listed wastes are no longer contained in the T-tank system, in conjunction with characterization efforts for the site-wide process waste system (e.g. B374 sludge de-listing petition). This characterization will also be applied to the reverse flow line from Building 774. The outlet lines from Tanks T-344, T-345, T-360, and T-370 will be managed with EPA waste codes F001 and F002, consistent with the tank characterization (refer to closure plans for Sets 52 and 66). The outlet lines from the ball mill washer system in the SRV and Tanks SR-3, SR-4, and SR-5 leading to the T-tanks will be managed as non-hazardous LLW at closure, based on characterization of the ball mill sludge as non-hazardous. (Refer to closure plan for Set 60.)
Selected Closure Option:	Closure by removal. Optionally the piping may be washed, rinsed and sampled or cleaned to meet debris rule standards prior to removal.
Closure Activities:	Closure activities for the piping include draining any residual liquids or sludges, removal, size reduction, and packaging of waste. Optional closure activities include flushing/washing the piping with a solution capable of removing the contaminants of concern followed by rinsing and sampling, or debris rule cleaning followed by closure by removal.
Waste Disposal:	The piping and secondary waste (e.g., PPE and plastic containment material) generated during closure activities will be managed as CERCLA remediation waste. Hazardous liquids and sludges, if any, drained from mixed residue systems will be managed as RCRA wastes. Absorbent will be added to waste packages with items that could contain residual liquids or sludges. Upon final radiological characterization, the waste will be packaged and managed in accordance with waste management requirements in Section 6 of the DOP.

Appendix H
B776/777 Closure Project
RCRA Unit Closure Information Sheet

Set #	RCRA Unit #(s)	Description	Regulatory Status	Closure Status
82	See attached list	Concrete secondary containment for tank systems, container storage, and treatment units	Permitted, Mixed residue, Interim Status	Tank systems: removed or operationally empty Container storage units: some active, some empty Treatment units: inactive

Unit Description:	Set 82, Building 776/777 structure/shell, includes all concrete secondary containment areas that provided containment for RCRA tank systems, container storage units, and treatment units throughout the building. A list of units for which the building provided containment is attached.
Unit Boundaries and Interfaces:	The attached map shows the RCRA units included in Set 82. The boundaries of the container storage units and treatment units are the entire floor areas of the regulated units. The boundaries of the tank systems include the floor areas beneath the regulated tanks and ancillary equipment, and will include an area approximately four feet wide beneath the overhead piping. No known releases from the tanks and piping systems extended beyond the immediate vicinity of the equipment; all were small volumes and were immediately cleaned up.
EPA Waste Codes/ Waste Characterization:	Permitted and interim status container storage units, tank systems, and treatment units were authorized for many EPA waste codes as listed in the RCRA Part A and Part B permit All the mixed residue tank systems were characterized with EPA waste codes F001 and F002. The mixed residue container storage units stored wastes with EPA waste codes listed in the mixed residues Part B Permit Application (June 30, 1992). Wastes generated during closure activities (e.g., wash water, debris rule treatment residuals) will be characterized and managed appropriately.
Selected Closure Option:	Clean closure by decontamination, debris rule treatment, or closure by removal.
Closure Activities:	If clean closure by decontamination is selected as the closure option, the concrete secondary containment areas will be washed with a decontamination solution such as trisodium phosphate, then rinsed with clean water. The rinsate will be sampled and the results compared to the closure performance standard in Section 4.5.1.1 of the DOP. If debris rule treatment is selected, a debris technology appropriate for concrete will be applied, such as hydrolasing or scabbling. The debris standard is removal of at least 0.6 cm of the surface layer and treatment to a clean debris surface. A waste determination will be made for the treatment residuals and they will be managed accordingly. If decontamination or debris treatment fail to achieve the closure performance standard, or if 776/777 closure project personnel elect to close directly by removal, the concrete waste will be characterized appropriately and packaged for disposal. Secondary containment areas may be closed individually or in groups, and may be sub-divided in smaller sections where partial closure is conducted for each section. The D&D project schedule will dictate the order and grouping of closure activities. In cases where a single area provided containment for both tanks and containers, closure will be concurrent. The 776/777 project will track the status of RCRA secondary containment closures in the facility operating record.

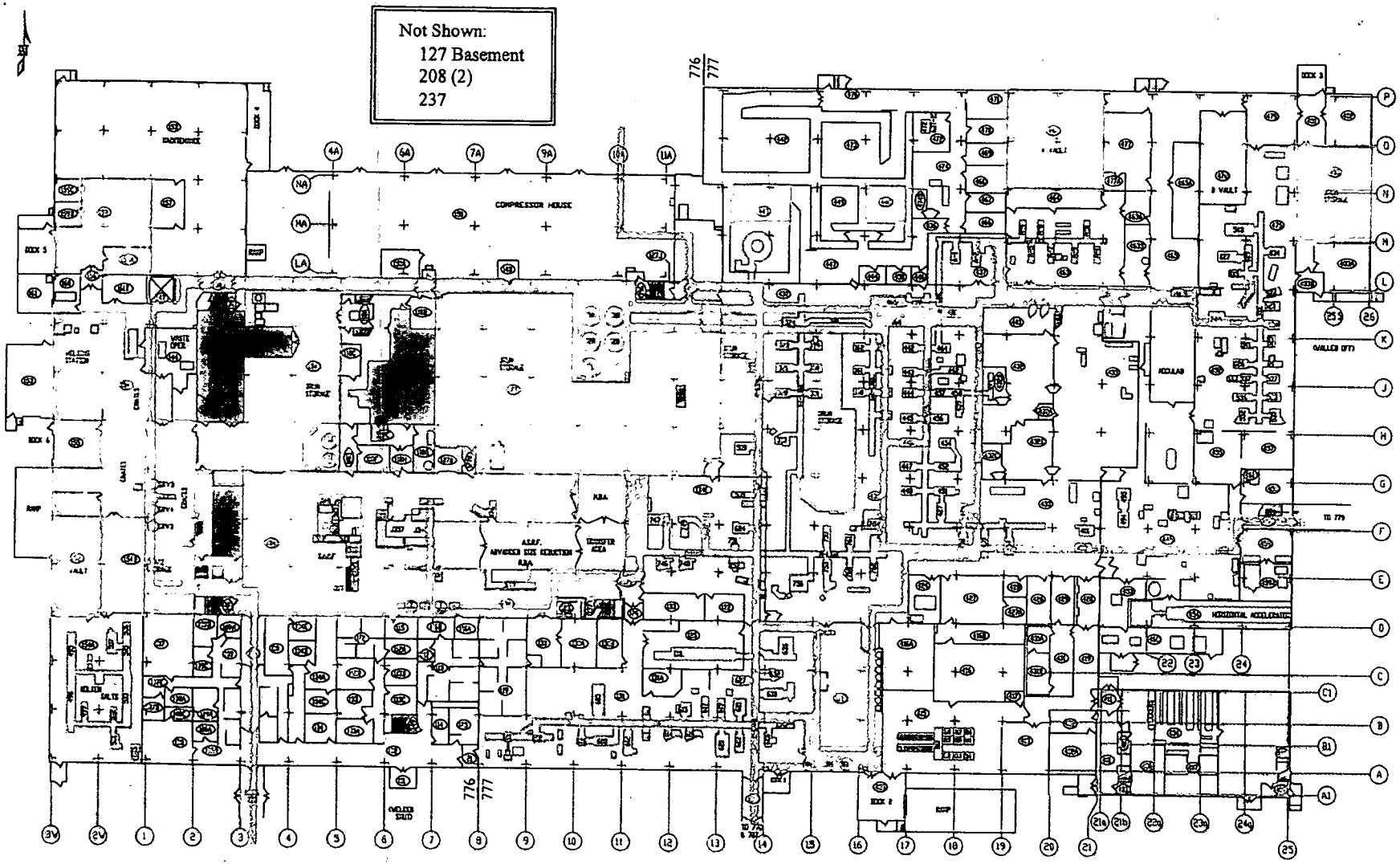
Waste Disposal:	All liquid and solid wastes generated during closure activities will be managed as CERCLA remediation waste. Hazardous liquid wastes will be managed in the process waste tanks (Unit 776.2) or in another approved unit. Upon final radiological characterization, the solid waste will be packaged to meet the waste acceptance criteria (WAC) of the approved disposal facility. Absorbent will be added to waste packages with items that could contain residual liquids. In the event this waste cannot be shipped directly to the approved disposal facility, it will be stored in an approved on-site storage area until shipment can be scheduled.

Unit 82
RCRA Units Secondary Containment Closure

Unit No.	Bldg	Room	Unit Description	Regulatory Status
44.01, 44.02	776	134	Fluidized Bed Incinerator Oil Storage Tanks T-1, T-2	Interim Status
49.01	776	118	Fluidized Bed Incinerator Unit (Production)	Interim Status
49.02	776	135	Fluidized Bed Incinerator Unit (Pilot) & tanks T-1 and T-2	Interim Status
61	776	146	Size Reduction Vault (Container Storage, Treatment Unit)	Interim Status
90.85	776	152	Container Storage Vault	Mixed Residue
90.99	776	127	Container Storage, Rm. 127 Basement	Mixed Residue
94.001 - 94.003	776	154	Tanks SR-3, SR-4, SR-5	Mixed Residue
94.005, 94.006	776	134	Tanks T-344, T-345	Mixed Residue
94.007, 94.008	776	134	Tanks T-360, T-370	Mixed Residue
776.1	776	127	Container Storage	Permitted
776.1	776	208	Container Storage	Permitted
776.1	776	237	Container Storage	Permitted
776.1	776	134, 154, 159	Container Storage	Permitted
776.2	776	127	Tank Storage, Tanks T-1A , T-1B, T-2A, T-2B	Permitted
90.49	777	131	Container Storage	Mixed Residue
95.001, 95.002	777	131	Pencil Tanks T-A1*, T-A2*	Mixed Residue
95.006 - 95.008	777	131	Tanks 1103,1104, 1106	Mixed Residue
95.009 - 95.014	777	134E	Pencil Tanks T-5*, T-6*, T-7, T-10*, T-11*, T-12*	Mixed Residue
95.015, 95.016	777	430	TCA Tanks T-1, T-2	Mixed Residue
95.017, 95.018	777	430	Pencil Tanks T-3*, T-4*	Mixed Residue
95.019	777	131	Tank DL-776	Mixed Residue
777.1	777	208	Container Storage, Rm. 208, Area 10	Permitted
777.1	777	430	Container Storage, Rm. 430, Area 2	Permitted
777.1	777	430	Container Storage, Rm. 430, Area 3	Permitted
777.1	777	462	Container Storage	Permitted
777.1	777	483	Container Storage, Rm. 483, Area 8	Permitted
777.1	777	443	Vault Container Storage	Permitted
777.1	777	448	Vault Container Storage (Non-Destructive Testing [NDT] Vault)	Permitted
N/A	777	452	Vacuum Accumulator Tanks V-022, V-543	Mixed Residue
N/A	777	131	Vacuum Accumulator Tanks V-605, V-614, V-616, V-618, V-620, V-626, V-627	Mixed Residue
N/A	777	134E	Vacuum Accumulator Tanks V-746, V-747, V-747A, V-748, V-749, V-752 and Pencil Tanks T-8*, T-9*	Mixed Residue

*These tanks are not listed in Table 6 of this DOP because they were closed by removal prior to approval of the DOP. However, secondary containment was not previously closed, and is covered in the Set 82 closure scope.

361



Set 82 Secondary Containment

- Tanks/Piping
- Container Storage
- Treatment Units

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APPENDIX I
Demolition Plan

1.0 INTRODUCTION 362

1.1 DEMOLITION OBJECTIVES AND ALARA 362
1.2 OVERALL PROCESS 362
1.3 PUBLIC INVOLVEMENT 363

2.0 SCREENING OF ALTERNATIVES 363

2.1 ALTERNATIVE 1: COMPLETE DECONTAMINATION TO FREE RELEASABLE STANDARDS FOLLOWED BY DEMOLITION 364
2.1.1 Effectiveness 364
2.1.2 Implementability 364
2.1.3 Costs 366
2.2 ALTERNATIVE 2: DEMOLITION INSIDE A FULL CONTAINMENT STRUCTURE 366
2.2.1 Effectiveness 366
2.2.2 Implementability 367
2.2.3 Costs 367
2.3 ALTERNATIVE 3: MECHANICAL/SELECTIVE DEMOLITION WITH LOCAL CONTAINMENT 368
2.3.1 Effectiveness 368
2.3.2 Implementability 368
2.3.3 Costs 369
2.4 ALTERNATIVE 4: DECONTAMINATION FOLLOWED BY DEMOLITION 369
2.4.1 Effectiveness 370
2.4.2 Implementability 370
2.4.3 Costs 371
2.5 COMPARATIVE ANALYSIS OF ALTERNATIVES 371

3.0 PRE-DEMOLITION ACTIVITIES AND METHODS 374

4.0 PRE-DEMOLITION EVALUATION 378

4.1 REGULATORY FRAMEWORK AND ASSESSMENT 378
4.2 BUILDING 776/777 PROJECT SPECIFIC FINAL CHARACTERIZATION 379

5.0 DEMOLITION ACTIVITIES AND METHODS 380

5.1 DEMOLITION PLANNING AND EXECUTION 380
5.2 DEMOLITION HAZARDS, CONTROLS, AND MONITORING 381
5.2.1 Air Emissions Control 381
5.2.2 Radiological Protection and Control 383
5.2.3 Industrial Hazards and Controls 384

6.0 ENVIRONMENTAL PROTECTION AND MONITORING 384

6.1 SITE AIR MONITORING 384
6.2 SOIL DISTURBANCE PERMIT 385
6.3 DEMOLITION NOTIFICATION 385
6.4 MIGRATORY BIRD CLEARANCE 385
6.5 SURFACE WATER MANAGEMENT 386
6.6 GROUNDWATER MANAGEMENT 386

7.0 TRANSITION TO ENVIRONMENTAL RESTORATION 387

1.0 Introduction

The Rocky Flats Cleanup Agreement (RFCA) definition of decommissioning includes facility component removal, size reduction, decontamination, and demolition. This appendix to the Building 776/777 Decommissioning Operations Plan (DOP) includes details for building demolition, which were not available at the time the DOP was prepared. This demolition plan is being appended to the DOP through a major modification as required in the original DOP (Revision 0) which was approved on November 3, 1999. The responsiveness summary resulting from the formal public comment on this appendix is contained in Appendix J. A minor modification to the original DOP is being prepared concurrently with this Appendix to ensure consistency within the document.

This demolition plan describes the selected demolition method and characterization surveys that will be conducted, and describes demolition techniques and controls. The goal of Building 776/777 decommissioning is to safely demolish and remove building components and structures to at least three feet below final grade and package and transport the debris to an approved disposal facility. The characterization and remediation of the soil and groundwater beneath the facility is not within the scope of this DOP. Building 776/777 Project Management will coordinate with Environmental Restoration (ER) when making decisions on leaving below-grade structures or components in place.

1.1 Demolition Objectives and ALARA

The absolute goal of the 776/777 demolition project is to maintain releases to the environment and doses to the workers as low as reasonably achievable (ALARA). Before demolition, selected contaminated areas will be removed, and others will be hydrolased. During demolition, the ALARA goals will be accomplished by the usage of a combination of reasonable decontamination techniques including component removal, fixation and/or encapsulation of remaining contamination, and demolition techniques designed to minimize releases of any residual contamination. Basic techniques for these processes are described under Section 5.0. The overall demolition objectives for Building 776/777 are to:

- Protect the environment;
- Protect the public to the extent practical by maintaining emissions as low as reasonably achievable;
- Protect worker health and safety;
- Package the majority of the building as waste for disposal at off-site facilities (e.g., Nevada Test Site, Hanford, Envirocare);
- Remove building components to at least three feet below final grade; and
- Accommodate future land-use as a national wildlife refuge.

1.2 Overall Process

The decommissioning process for Building 776/777 will involve decontamination, removals, and application of controls inside the building before demolition and application of controls outside the building during demolition. The current Building 776/777 DOP (Revision 0) covers the decontamination, removals, and application of controls inside the building before demolition. This Appendix to the DOP specifically addresses the demolition. Since the proposed demolition method relies on the preparation of the facility before demolition as a control, this appendix addresses the overall methodology. While the building is being prepared for demolition, evaluations will be made to ensure that the goals and objectives stated in this appendix to the DOP are maintained. These evaluations will be based on what is removed from the building before demolition, what will remain in the building during demolition, and the nature and extent of contamination of the building before demolition.

Facility demolition will involve the use of large mechanical equipment, which may include excavators equipped with a hydraulic hoe-ram and grapple, hoists and cranes, and front-end loaders. These will be used to size reduce, segregate, and load the concrete, steel and other facility materials into waste containers, with enhanced controls for radiological protection. The following is a simplified outline of the proposed Building 776/777 decommissioning process:

1. Facility decontamination and component removal (risk reduction) are initiated with concurrent in-process characterization. (addressed in Sections 1.2, 3.0, and 4.0)
    - Decisions are made throughout the facility to decontaminate, fix, or remove contamination and/or contaminated components.
2. Resource Conservation and Recovery Act (RCRA) units are closed.
3. Chemicals and hazardous substances are removed.
4. Beryllium regulated and controlled areas are closed.
5. Polychlorinated biphenyls (PCB) hazards and equipment are removed.
6. Asbestos is abated.
7. The final characterization is conducted. (addressed in Section 4.2)
8. Areas with contamination or with potential contamination are fixed and encapsulated. (addressed in Section 3.0 and 4.2)
9. The *Final Characterization Report* is prepared, reviewed, and concurred to by the Lead Regulatory Agency (LRA). (addressed in Section 4.2)
10. The Contractor Demolition Plan and work packages for demolition are prepared and reviewed. (addressed in Section 5.1)
11. Demolition is completed. (addressed in Section 5.2)
12. Final project closeout reports and documentation are prepared, reviewed and approved by the LRA. (addressed in Section 4.18.4 of the original DOP (Revision 0))
13. Remediation activities (soil and groundwater) are initiated, as necessary. (addressed in Section 7.0 and other RFCA decision documents)

Although this process is laid out in a sequential manner, many of the activities overlap. For instance, characterization may be conducted in rooms adjacent to decontamination activities. All of 13 steps/processes described will have the opportunity for information exchanges and participation with DOE, Kaiser-Hill and its subcontractors, the regulatory agencies, and the public.

1.3 Public Involvement

Approval of this major modification to the DOP is the first step in the public involvement process for the Building 776/777 Project. It is anticipated that there will be continued public interest in the progress of the decommissioning activity. There will be numerous opportunities for standard information exchanges potentially including the following:

- ER/D&D Monthly Status Meeting – Status of the facility preparation for demolition, characterization and demolition activity.
- Rocky Flats Coalition of Local Governments Monthly Meeting – Presentations and information exchanges as requested.
- Rocky Flats Citizens Advisory Board Monthly Meetings – Presentations and information exchanges as requested.

At a minimum, it is anticipated that presentations and information exchanges will occur before the finalization of characterization plan, finalization of the characterization report, and demolition initiation.

2.0 Screening of Alternatives

This evaluation applies RFCA's criteria in evaluating alternatives for demolishing Building 776/777. Four alternatives for the demolition of Building 776/777 were evaluated, which are:

Alternative 1: Complete decontamination to unrestricted release levels followed by demolition
Alternative 2: Demolition inside a full containment structure
Alternative 3: Mechanical/selective demolition with local containment
Alternative 4: Decontamination followed by demolition

In accordance with the RFCA Implementation Guidance Document (IGD), the selected alternatives were evaluated for effectiveness, implementability, and cost. If the alternatives pass the initial screening based on effectiveness, implementability, and cost, then alternatives will be compared on a qualitative basis using descriptors such as high, medium, or low.

2.1 Alternative 1: Complete decontamination to free releasable standards followed by demolition

This alternative assumes that decontamination efforts would result in a facility that meets the unrestricted release criteria. In this alternative, decontamination technologies (hydrolasing, scabbling, scarification, etc.) that remove the outermost layers of concrete, steel, and other construction materials would be used to result in a surface that meets unrestricted release levels. Portions of the building that could not be decontaminated to free release criteria would be removed, such as the original roof, the second floor, and portions of the first floor. Following decontamination, radiological surveys would be performed to verify that the remaining materials would meet unrestricted release criteria. The released structure could then be demolished, and the concrete would be managed per the RFCA Standard Operating Protocol (RSOP) for Recycling Concrete. The released concrete portion of the building would be reused as fill on-site as demolition debris. The remaining building debris would be disposed of at an off-site facility.

2.1.1 Effectiveness

Effectiveness considers whether the alternative provides protection of public health and the environment. Bringing the facility to unrestricted release levels before demolition reduces the overall potential for the release of contamination to the environment. This alternative has no short-term adverse impacts to public health and the environment, and complies with the applicable or relevant and appropriate requirements (ARARs). However, this alternative has significant potential short-term adverse impacts to the workers implementing the action, due to the extended schedule requiring additional exposure to radiological and industrial hazards and the potential for partial building collapse. Long-term effectiveness is not relevant because the demolition activity is short-term, and once the building has been removed, the risk has been removed.

2.1.2 Implementability

Implementability addresses the technical and administrative feasibility of implementing an alternative and the availability of the services and materials required.

Technical Feasibility

This alternative carries the potential of partial building collapse due to the possibility that structural supports will be required as decontamination efforts erode the building's structural integrity. In addition, decontamination to the unrestricted release levels is not feasible, based on the following information:

Building 776/777's cinder block construction accounts for approximately 40% of the building exterior walls. Subject matter experts believe that plutonium-laden smoke penetrated these blocks during the 1969 fire, rendering complete decontamination technically unattainable. The porous nature of this material would require scabbling or hydrolasing to remove the contaminants. Work to-date indicates that the smoke did contaminate conduit and pipe penetrations in the block walls. Decontamination activities would render the walls structurally

unstable with a high risk of collapse. Similarly, plutonium impregnated smoke is expected to have penetrated into steel joints, footer joints, sheet metal overlaps on the original roof, and virtually all other cracks or crevices in the areas that held smoke or water in May 1969.

In 1969, fire recovery efforts included encasing a portion of the building's structural steel beam columns in envelopes of concrete. This concrete was intended to provide additional structural support for steel weakened from the heat of the fire. Joints and base plates for metal columns throughout the building expanded with heat and may have allowed contamination from smoke and water under the plates/joints. When the metal beams cooled, the contamination was trapped. Removing the steel columns would render the building structurally unsound.

Cracks and penetrations within the walls of the building and ceiling were contaminated with firewater and smoke. For approximately two years after the 1969 fire, decontamination operations were conducted within the building with a cleanup target of 5,000 dpm/100 cm^2 removable and the fixed contamination was not given an upper limit. This exhaustive effort removed, at least in some areas, more than 99% of the contamination from the fire. Interviews with management personnel involved in the effort indicated that contamination removal activities ceased only when additional work did not result in additional decontamination. After two years, many contaminated areas exceeded this limit and were fixed with epoxy and paint.

Some areas within the Building 776/777 complex were filled with concrete after the 1969 fire in an effort to fix the contamination. Decontamination within the concrete cannot be successfully completed given that the contamination is now trapped inside concrete layers.

The post-fire decontamination effort was conducted to the existing radiological exposure and safety standards current at the time. Rocky Flats Environmental Technology Site (RFETS or Site) records indicate that decontamination personnel experienced radiological uptakes and some still carry plutonium body burdens dating from these activities. Additional decontamination efforts would be conducted to more modern exposure and safety standards, but a large-scale decontamination effort carries risk of exposures that are not necessary if safer demolition alternatives with a lower worker exposure risk are available.

No unique permits would be required for this alternative. This alternative is protective of the environment as all decontamination and demolition activities would be conducted under full containment, reducing the likelihood of a release to the environment.

Availability of Services and Materials

Equipment for decontamination, surveys, and structural support would be required for this alternative. It is uncertain whether technology and/or equipment exist to decontaminate cinder block walls that cannot be removed before demolition. Personnel and services, monitoring, and outside laboratory testing may be required in the short- and long-term to address any increased monitoring that may be required. ER would address post-removal site control, as necessary.

Administrative Feasibility

This alternative is administratively feasible because there is no need for coordination with other offices or agencies for permits, easements for rights-of way, or zoning variances. There may be an impact to adjoining property if contamination were to migrate offsite. Under this alternative, existing Site management and access controls would be maintained until the demolition was complete. This alternative would be acceptable to the State and/or local communities.

2.1.3 Costs

Evaluation of costs should consider the capital costs to engineer, procure, and construct the required equipment and facilities, and the operating and maintenance costs associated with the alternative. In accordance with the IGD, cost estimates can be "order-of-magnitude" with sufficient accuracy to allow comparison and ranking of the alternatives.

Capital Cost

Alternative 1 is estimated to cost approximately $41,500,000.

Operation and Maintenance

There are no operations and maintenance costs associated with this alternative.

Present Worth Cost

This analysis was not completed; it is assumed that the alternative would be implemented fairly soon; therefore, today's dollars are a fair estimate.

2.2 Alternative 2: Demolition inside a full containment structure

Building 776/777 and a portion of the Building 779 pad would be enclosed inside a steel structure; either fabric covered or hard-sided. The structure's approximate dimensions would be 400 feet wide by 800 feet long by 100 feet tall. The containment size is designed to allow conventional demolition equipment to operate without significant restrictions. The structure would be designed to withstand winds between 90 miles per hour and 125 miles per hour, and be effectively sealed and negatively ventilated. Installation would require building a rail system to support assembly of the frame in sections over the Building 779 pad. These sections would then be rolled into position over Building 776/777 to avoid heavy lifts over the building during ongoing decommissioning of the interior.

Operating equipment within the structure would be powered by propane, requiring that the ventilation system be sized to support sufficient air changes to prevent accumulations of unacceptable levels of airborne exhaust.

Activities inside the containment would include localized decontamination coupled with demolition. Packages of contaminated building debris would exit the containment at the 779 pad.

2.2.1 Effectiveness

Effectiveness considers whether the alternative provides protection of public health and the environment. This alternative has no short-term adverse impacts to public health and the environment, and complies with the ARARs. However, this alternative has significant potential short-term adverse impacts to the workers implementing the action because this alternative involves assembly and disassembly of a 400 feet wide by 800 feet long by 100 feet tall containment. The amount and type of construction activities involved in erecting and disassembly of a free span structure of this size is significant. Any project of this magnitude involves an added risk to the workers from an occupational accident. Construction related accidents during erection and disassembly could result in significant or fatal accidents affecting a number of personnel. The schedule impacts associated with this approach proportionately increases the risk due to the longer duration and potential for additional injuries. Long-term effectiveness is not relevant because the demolition activity is short-term and once the building has been removed, the risk has been removed.

2.2.2 Implementability

Implementability addresses the technical and administrative feasibility of implementing an alternative and the availability of the services and materials required.

Technical Feasibility

This alternative involves assembly and disassembly of a 400 feet wide by 800 feet long by 100 feet tall containment. The amount and type of construction activities involved in the erection and disassembly of a free span structure of this size is significant. In addition to its size, the structure would have to be constructed to withstand significant winds and snow loads. A structure of this size has never been constructed, and may not be feasible.

No unique permits would be required for this alternative. This alternative would be adaptable to environmental conditions because all work would be conducted within a tent designed to withstand the environment.

Availability of Services and Materials

Equipment for decontamination, surveys, structural support, and tent construction would be required for this alternative. A structure this size, designed for containment, has never been constructed over a facility; the technology is unproven. Personnel and services, monitoring, and outside laboratory testing may be required in the short- and long-term to address any increased monitoring that may be required. ER would address post-removal site control, as necessary.

Administrative Feasibility

This alternative is administratively feasible because there is no need for coordination with other offices or agencies for permits, easements for rights-of way, or zoning variances. There may be an impact to adjoining property if contamination were to migrate offsite. Under this alternative, existing Site management and access controls would be maintained until the demolition was complete. This alternative would be acceptable to the State and/or local communities.

2.2.3 Costs

Evaluation of costs should consider the capital costs to engineer, procure, and construct the required equipment and facilities, and the operating and maintenance costs associated with the alternative. In accordance with the IGD, cost estimates can be "order-of-magnitude" with sufficient accuracy to allow comparison and ranking of the alternatives.

Capital Cost

Alternative 2 is estimated to cost approximately $48,600,000.

Operation and Maintenance

There are no operations and maintenance costs associated with this alternative.

Present Worth Cost

This analysis was not completed; it is assumed that the alternative would be implemented fairly soon; therefore, today's dollars are a fair estimate.

2.3 Alternative 3: Mechanical/selective demolition with local containment

The selective demolition alternative would require a piece-by-piece decontamination and demolition of the building under either the radiological controls that currently exist within the building, or alternatively under new controls constructed to maintain comparable integrity. Each area could require localized containment to maintain negative ventilation. Selective demolition requires a combination of techniques, to include at a minimum:

- All exterior walls would be removed using a specially constructed rolling scaffold designed to maintain negative ventilation. This would involve moving the rolling scaffold and establishing seals to support negative ventilation at each location. All the exterior walls would need to be replaced with a fire rated panel, so that building integrity would be maintained during subsequent demolition of the interior. The moving scaffold would need to be designed to support removal of 32-foot block walls that may be subject to collapse during removal.
- Concurrently, the interior walls could be removed with the building intact and airflow controlled by building ventilation.
- Temporary ventilation would need to be installed to maintain negative ventilation while the remaining air exhaust ducts and plenums are removed.
- The original roof would be removed from the second floor using scaffolding.
- After removal of the original roof, the second floor could be removed from the first floor using scaffolding.
- Next, the building floor slab would be removed with the building still intact and ventilated by the existing air plenums.
- Once the interior of the building has been gutted and only the skeleton of the building and roof remain, then the replacement exterior panels could be removed.
- The building shell and steel superstructure would be removed in small sections inside of a movable partial containment with temporary ventilation.
- The building footings, pipe, and concrete would be removed to 3 feet below grade inside the movable partial containment.

Structural analysis would be required for all of these steps to assure that the remaining structure is not subject to collapse, and that the building could maintain a sufficiently negative air pressure. It is probable that additional structural elements (such as buttresses to hold up the building frame) would be required to maintain building integrity while crews concurrently dismantle the building. Removal of the ceiling and the second floor would require numerous lift plans and careful engineering to ensure worker safety.

2.3.1 Effectiveness

Effectiveness considers whether the alternative provides protection of public health and the environment. This alternative has no short-term adverse impacts to public health and the environment, and complies with the ARARs. However, this alternative has significant potential short-term adverse impacts to the workers implementing the action because this alternative is labor intensive with high worker risk due to elevated work activities, more "hands on" activities versus use of heavy equipment, and increased potential for dose to workers. Assembling and dismantling rolling scaffold and building additional containment's increases worker industrial and radiological risk. Removal of the interior structural elements could degrade the structural integrity of portions of the remaining facility possibly causing unplanned collapses.

2.3.2 Implementability

Implementability addresses the technical and administrative feasibility of implementing an alternative and the availability of the services and materials required.

Technical Feasibility

The piece-by-piece disassembly of a facility this size under localized containment has not been demonstrated. Structural evaluations would be required throughout this alternative; however, accurate evaluations are probably not possible, due to the history of the facility and because many of the structural elements cannot be accessed without destruction.

No unique permits would be required for this alternative. This alternative would be adaptable to environmental conditions because all work would be conducted within containment designed to withstand the environment.

Availability of Services and Materials

Equipment for decontamination, surveys, structural support, and localized tent construction would be required for this alternative. Personnel and services, monitoring, and outside laboratory testing may be required to address any increased monitoring that may be required. ER would address post-removal site control, as necessary.

Administrative Feasibility

This alternative is administratively feasible because there is no need for coordination with other offices or agencies for permits, easements for rights-of way, or zoning variances. There may be an impact to adjoining property if contamination were to migrate offsite. Under this alternative, existing Site management and access controls would be maintained until the demolition was complete. This alternative would be acceptable to the State and/or local communities.

2.3.3 Costs

Evaluation of costs should consider the capital costs to engineer, procure, and construct the required equipment and facilities, and the operating and maintenance costs associated with the alternative. In accordance with the IGD, cost estimates can be "order-of-magnitude" with sufficient accuracy to allow comparison and ranking of the alternatives.

Capital Cost

Alternative 3 is estimated to cost approximately $45,700,000.

Operation and Maintenance

There are no operations and maintenance costs associated with this alternative.

Present Worth Cost

This analysis was not completed; it is assumed that the alternative would be implemented fairly soon; therefore, today's dollars are a fair estimate.

2.4 Alternative 4: Decontamination followed by demolition

Alternative 4 would involve decontamination, removals, and application of controls inside the building before demolition and application of controls outside the building during demolition. While the building is being prepared for demolition, evaluations will be made to ensure that the remaining contamination can be controlled during the demolition. These evaluations will be based on what is removed from the building before demolition, what will remain in the building during demolition, and the nature and extent of contamination of the building before demolition.

Contamination would be identified through radiological surveys of the accessible areas of the building surfaces using a sodium iodide or similar detector. Hard to characterize areas would be investigated using a variety of measurement and sampling techniques. Identified areas will be decontaminated, fixed, or engineering controls applied so that subsequent demolition has minimal risk of radiological releases. Final scan results would be compiled in a project-specific characterization report that will be submitted to Colorado Department of Public Health and Environment (CDPHE).

Once contamination has been removed or fixed, facility demolition will involve the use of large mechanical equipment, which may include excavators equipped with a hydraulic hoe-ram and grapple, hoists and cranes, and front-end loaders. These will be used to size reduce, segregate, and load the concrete, steel and other facility materials into waste containers, with enhanced controls for radiological protection. Radiological monitoring to demonstrate protection of workers, co-located workers, and the public would be utilized. The concrete slab would be removed and loaded in waste containers using an excavator after the upper portion of the structure has been dispositioned. Engineering and administrative controls would be used during demolition of the building reduce the spread of contamination. These controls include but are not limited to:

- Dust suppression alternatives, such as water spray, to ensure the demolition area is wet;
- If contamination is present in an inaccessible area before removal, additional controls may be used such as encapsulation or selective removal.

In addition, all building waste would be shipped to off-site facilities; none would be used on-site as backfill.

2.4.1 Effectiveness

Effectiveness considers whether the alternative provides protection of public health and the environment. Evaluating the radiological risk to the public from implementing this alternative establishes that dose levels to the public are well within established limits and no gain is realized to the public health from the other alternatives.

2.4.2 Implementability

Implementability addresses the technical and administrative feasibility of implementing an alternative and the availability of the services and materials required.

Technical Feasibility

The techniques required for this alternative are standard and proven techniques for demolition. The demolition approach is consistent with commercial nuclear standards and to a lesser extent some specific government practices. This technique has been proven to be safe and effective.

No unique permits would be required for this alternative. This alternative would require specific controls to address changes in environmental conditions.

Availability of Services and Materials

Equipment for decontamination and surveys would be required for this alternative. Personnel and services, monitoring, and outside laboratory testing may be required in the short- and long-term to address any increased monitoring that may be required. ER would address post-removal site control, as necessary.

Administrative Feasibility

This alternative is administratively feasible because there is no need for coordination with other offices or agencies for permits, easements for rights-of way, or zoning variances. There may be an impact to adjoining property if contamination were to migrate offsite. Under this alternative, existing Site management and access controls would be maintained until the demolition was complete. This alternative would be acceptable to the State and/or local communities; however, it is anticipated that supplementary consultation would be required.

2.4.3 Costs

Evaluation of costs should consider the capital costs to engineer, procure, and construct the required equipment and facilities, and the operating and maintenance costs associated with the alternative. In accordance with the IGD, cost estimates can be "order-of-magnitude" with sufficient accuracy to allow comparison and ranking of the alternatives.

Capital Cost

Alternative 4 is estimated to cost approximately $15,500,000.

Operation and Maintenance

There are no operations and maintenance costs associated with this alternative.

Present Worth Cost

This analysis was not completed; it is assumed that the alternative would also be implemented fairly soon; therefore, today's dollars are a fair estimate.

2.5 Comparative Analysis of Alternatives

As indicated by the IGD, only alternatives passing the initial screening based on effectiveness, implementability, and cost are compared against each other. Only one alternative passed the initial screen, Alternative 4. Alternatives 1 through 3 are not technically feasible, primarily due to the history of the building.

Table I-1 presents a comparative analysis of alternatives made on a semiquantitative ranking system based on effectiveness, implementability, and cost. Each category has been scored low (L), medium (M), or high (H). A low score means that the criteria cannot be achieved; a medium score means that the criteria can be achieved most of the time; and a high score means that the criteria will always be achieved or is not required under the alternative.

Decontamination followed by demolition provides the optimum benefits for on-site workers while providing protection to both the environment and off-site receptors. This alternative is the only alternative that is consistent with all of the goals established in the RFCA to:

- Reduce the residual radiation and to do so by an approach that minimizes the amount of waste generated;
- Minimize the risk potentially associated with radiological exposure; and
- Balance radiological exposures against economic and social factors producing a positive net benefit to the worker, public, and the environment.

Alternative 4 has been selected as the alternative that provides the optimum benefits for on-site workers, while still providing regulatory compliant protection off-site for human health and the environment.

Table I-1
Comparative Analysis of Alternatives

Screening Criteria	Alternative 1 Complete decontamination to unrestricted release levels followed by demolition	Alternative 2 Demolition inside a full containment structure	Alternative 3 Mechanical/selective demolition with local containment	Alternative 4 Decontamination followed by demolition
Effectiveness[1]				
Protectiveness				
Public health	H	H	H	H
Workers	L	L	L	H
Environment	H	H	H	H
Attains ARARs	H	H	H	H
Implementability				
Technical Feasibility				
Construction and operation	M	L	L	H
Demonstrated performance	L	L	L	H
Adaptable to environmental conditions	M	L	M	M
Need for permits	H	H	H	H
Availability of Services and Materials				
Equipment	M	L	L	H
Personnel and services	M	L	M	H
Outside laboratory testing	H	H	H	H
Offsite treatment and disposal	H	H	H	H
Post-removal site control	H	H	H	H

[1] Each category has been scored low (L), medium (M), or high (H). A low score means that the criteria cannot be achieved; a medium score means that the criteria can be achieved most of the time; and a high score means that the criteria will always be achieved or is not required under the alternative.

Screening Criteria	Alternative 1 Complete decontamination to unrestricted release levels followed by demolition	Alternative 2 Demolition inside a full containment structure	Alternative 3 Mechanical/selective demolition with local containment	Alternative 4 Decontamination followed by demolition
Implementability				
Administrative Feasibility				
Permits required	H	H	H	H
Easements for rights-of-way required	H	H	H	H
Impact on adjoining property	H	H	H	H
Ability to impose institutional controls	H	H	H	H
Acceptable to State and local communities	H	H	H	M
Costs[2]				
Capital cost	L	L	L	H
Operation and maintenance	H	H	H	H
Present worth cost	H	H	H	H

[2] Each category has been scored low (L), medium (M), or high (H). A low score means that the criteria cannot be achieved; a medium score means that the criteria can be achieved most of the time; and a high score means that the criteria will always be achieved or is not required under the alternative.

3.0 Pre-Demolition Activities and Methods

Building 776/777 is different from other plutonium buildings at the Site for several reasons. The building has structural steel framing with perimeter transite panels and cinder block walls, instead of only poured-in-place concrete. The foundation has former basements and equipment pits up to 25 feet deep, filled with solid concrete. Finally, the 1969 fire caused extensive damage that resulted in contamination throughout the building from the fire, smoke, and water. All of these factors make decontamination to the unrestricted release levels impractical. Therefore, a general approach has been developed and will be refined to include decontamination followed by demolishing the structure and packaging and shipping the debris as low level waste.

This decommissioning process will involve decontamination, removals, and application of controls inside the building before demolition and application of controls outside the building during demolition. The current Building 776/777 DOP covers the decontamination, removals, and application of controls inside the building prior to demolition; however, the general process will be documented within this appendix to the DOP for completeness.

Before demolition, RCRA units will be closed, asbestos will be abated, and chemicals and hazardous constituents will be removed. Transuranic (TRU) waste, gloveboxes, and contaminated process waste piping will be removed. Non-process piping, ducting, and other equipment left within the facility at the time of demolition will be assessed and the information documented in the project specific final characterization report. Examples include fire suppression piping, plant steam and water lines, and nitrogen and plant air lines.

To date, preliminary characterization of the building has been conducted for work planning purposes. As work planning continues, additional in-process characterization will be performed, and work packages will be prepared to address the activities that must be conducted before the demolition. The purpose of these characterization efforts is to demonstrate the extent and magnitude of the existing radiological contamination, before demolition of the building. Alternatively, due to the technical limitations of decontaminating or removing some of the facility's inaccessible locations, additional radiological controls will be applied, as appropriate, to limit the release of contamination from these areas during demolition. The decision for each of these particular actions will be based on the following:

- Levels and types of contamination;
- Extent of the contaminated areas;
- Material the contamination is on (e.g., cinderblock vs. concrete);
- Ability to control contamination during demolition and waste handling;
- Potential for releases to the environment;
- Structural consequences; and
- Industrial safety risk, worker exposure, and cost associated with removing, decontaminating, and/or fixing the contamination.

A variety of decontamination methods have been evaluated, including hydrolasing, pressure washing, scabbling, and concrete shaving. The method or methods used will be selected based on the above criteria.

Table I-2 documents the potential pre-demolition methodology and how the decisions may be made to implement those actions and controls. This table is not all-inclusive. The final decision-making will be made at the project level and documented in the work packages. CDPHE will have the opportunity to participate in work package review per the consultative process outlined in RFCA and in Section 11 of the DOP.

376

In balancing the worker safety, environmental and human health protection, and cost/schedule, it is currently conceived that removal and the use of fixatives and encapsulants will generally be conducted as follows; however, specific decisions will be made on a case-by-case basis:

- Floors with high to medium contamination will be decontaminated.
- Floor with low contamination will not be decontaminated and fixatives and encapsulants will be applied.
- Ceilings with high contamination will be decontaminated or removed.
- Ceilings with medium to low contamination will not be decontaminated and fixatives and encapsulants will be applied.
- The upper half of walls with high contamination will be decontaminated or removed.
- The upper half of walls with medium to low contamination will be encapsulated.
- The lower half of walls with high to medium contamination will be decontaminated or encapsulated.
- The lower half of walls with low contamination will be encapsulated.

The list above is as an example of the general decision-making given the current characterization information. The initial air modeling indicates the project will be protective of the environment and public health. Consequently, the decision-making will be primarily based on the risks to the workers, and can generally be simplified into the following single rule:

If

Risks (industrial and radiological) to the workers are greater than the benefit in source term reduction

And

Controls can be applied to reduce emissions,

Then

The work (decontamination and/or removal) will not be conducted

And

Controls will be applied before and/or during demolition.

377

Table I-2
Pre-Demolition Methodology

	Pre-demolition Method	Potential Decision Criteria	
		If	Then
Walls	Decontaminate	Decontamination could affect the structural integrity of the wall	Decontamination is not an alternative
		Contamination is removable	Consider decontamination if it reduces worker exposure during subsequent activities
		Decontamination will be effective at removing the majority of the surface contamination with one pass	Evaluate the worker risk and cost associated with conducting the decontamination
	Remove – cut out	The wall is structural or potentially structural	Removal is not an alternative
	Apply fixative and encapsulants	Removal and decontamination are not selected	Survey the area in accordance with the approved survey plan and apply fixatives and encapsulants, as appropriate
	Delineate the area with paint	The contamination level requires additional controls[3] during the demolition activity	Mark the area so it can be readily identified during demolition
Floors	Decontaminate	Contamination is removable	Consider decontamination if it reduces worker exposure during subsequent activities
		Decontamination will be effective at removing the majority of the surface contamination with one pass	Evaluate the worker risk and cost associated with conducting the decontamination
	Remove – cut out	The slab thickness is conducive to cutting	Evaluate the worker risk and cost associated with conducting the slab removal
	Apply fixative and encapsulants	Removal and decontamination are not selected	Survey the area in accordance with the approved survey plan and apply fixatives and encapsulants, as appropriate
	Delineate the area with paint	The contamination level requires additional controls[1] during the demolition activity	Mark the area so it can be readily identified during demolition

[3] Beyond the controls that will be applied through the demolition process. For example, additional controls could be reduced wind speed, additional dust control (i.e., amended water), and/or immediate containerization.

	Potential Actions and Controls	Potential Decision Criteria	
		If	Then
Ceiling	Decontaminate	Contamination is removable	Consider decontamination if it reduces worker exposure during subsequent activities
		Decontamination will be effective at removing the majority of the surface contamination with one pass	Evaluate the worker risk and cost associated with conducting the decontamination
	Remove – cut out	Contamination is localized and accessible	Evaluate the worker risk and cost associated with conducting the ceiling removal
	Apply fixative and encapsulants	Removal and decontamination are not selected	Survey the area in accordance with the approved survey plan and apply fixatives and encapsulants, as appropriate
	Delineate the area with paint	The contamination level requires additional controls[1] during the demolition activity	Mark the area so it can be readily identified during demolition
Columns/ Joints	Apply fixative and encapsulants	Removal and decontamination are not a viable alternative	Survey the area in accordance with the approved survey plan and apply fixatives and encapsulants, as appropriate
	Decontaminate	Contamination is removable	Consider decontamination if it reduces worker exposure during subsequent activities
	Delineate the area with paint	The contamination level requires additional controls[1] during the demolition activity	Mark the area so it can be readily identified during demolition

[1] Beyond the controls that will be applied through the demolition process. For example, additional controls could be reduced wind speed, additional dust control (i.e., amended water), and/or immediate containerization.

4.0 Pre-Demolition Evaluation

While the building is being prepared for demolition, evaluations will be made to ensure that the goals and objectives stated in this appendix to the DOP are maintained. These evaluations will be based on what is removed from the building before demolition, what will remain in the building during demolition, and the nature and extent of contamination of the building before demolition. This section outlines that evaluation process, the regulatory basis for evaluation, and the characterization approach.

4.1 Regulatory Framework and Assessment

The applicable regulatory requirements from the *National Emission Standards for Emissions of Radionuclides Other than Radon from Department of Energy Facilities* are:

- 40 CFR § 61.92, which states that emissions of radionuclides to the ambient air from US Department of Energy (DOE) facilities shall not exceed those amounts that would cause any member of the public to receive in any year an effective dose equivalent of 10 millirem per year (mrem/yr); and
- 40 CFR § 61.93(b)(4), which states radionuclide emission measurements shall be made at all release points which have a potential to discharge radionuclides into the air which could cause an effective dose equivalent in excess of 1% of the 10 mrem standard (0.1 mrem) to any member of the public.

The relevant and appropriate regulatory requirements from the *Colorado Radiation Control Division of Laboratory & Radiation Services* are:

- RH 4.5.2, which states that to the extent practical, procedures and engineering controls based on sound radiation protection principles should be used to achieve doses to members of the public that are as low as reasonably achievable; and
- RH 4.5.4, which states that a constraint on air emissions shall be established such that the individual member of the public likely to receive the highest dose will not be expected to receive a total effective dose equivalent in excess of 0.1 millisievert per year (equivalent to 10 mrem/yr) from these emissions.

Since Building 776/777 is part of a much larger closure project, a project-specific emissions objective of 0.1 mrem project contribution has been established for the Building 776/777 demolition. The emissions objective is based on the principle of maintaining the project emissions as low as reasonably achievable, and is the project's commitment to a 99% reduction of the allowable emissions to the closest public receptor. The emissions objective has several components:

- This is the regulatory criterion used to determine when radiological air monitoring is required;
- The actual measured average contamination remaining after decontamination is expected to be well below the level required to meet the 0.1 mrem emissions objective;
- The air modeling assumptions are very conservative; and
- Additional demolition controls will be used that are not credited in the air model (e.g., dust suppression misting, use of fixatives, and controls on waste piles and container loading).

Compliance with this emissions objective will ensure the 0.1 mrem annual project contribution to the public is not exceeded.

After the targeted decontamination and removals are complete, final characterization activities will be conducted to collect information to complete the following:

- Model emissions that could result from the demolition activity to determine potential impacts to the immediate and co-located workers and the public;
- Finalize the work area controls required during the demolition; and

- Verify that the waste acceptance criteria for the demolition debris are met.

The success of the decontamination and removal activities will be determined by comparing the goals and objectives in this DOP appendix with the results of the air modeling. After completion of decontamination and/or removal activities, the remaining contamination will be measured and the resultant building average will be modeled using an US Environmental Protection Agency (EPA)-approved air model (ISCST3) to derive the effective dose equivalent at the fenceline. If the modeling indicates that a level of 0.1 mrem will be exceeded at the Site fenceline because of demolition of Building 776/777, additional decontamination and/or removal will be performed. Engineering controls such as the application of fixatives and/or encapsulants will then be applied to areas with significant remaining contamination. The air modeling results will be provided to the LRA as part of a project specific final characterization report.

In addition to evaluating the impact of the demolition at the Site boundary, the modeling will be used to finalize the work area boundaries/controls and worker protection requirements during demolition. The modeling will provide conservative estimates of the potential dose to the immediate and collocated worker and the potential deposition of contamination during demolition. Based on these results, work area boundaries and personnel protection equipment will be established in the health and safety plan, radiological work permits (RWPs), and job hazard analysis. Project area air sampling and personnel monitoring will be used to verify these protection factors/controls are effective. Project area air sampling and personnel monitoring could involve high and/or low volume air samplers within the work area and lapel air samplers. Based on the results of this monitoring and the ambient conditions, the controls may be increased or decreased, as necessary throughout the demolition project.

Radiological controls and monitoring during demolition will be performed in accordance with the DOE approved Site Radiation Protection Program (RPP), RPP-0001, Revision 3. The Site RPP is implemented through the Site Radiological Control Manual, MAN-102-SRCM, Revision 1 and the Radiological Safety Practices Manual, which implement the requirements of 10 CFR Part 835. These requirements and implementing documents are focused on occupational (worker) exposure and protection and are based on the process of maintaining worker exposure to ALARA. Section 6.1 of this modification addresses air monitoring and standards for emissions and public health and environment protection. Enhanced radiological controls will be applied for outside work, as applicable, such as continuously evaluating wind direction impact on air monitoring locations.

Full-time Radiological Control Technician support will be used during demolition activities to ensure the radiological controls are consistently implemented to minimize the dose to individuals, the environment and the public from exposure to DOE-added radioactive materials.

The pre-demolition characteristics of the soil surrounding the project will need to be assessed to ensure that the project contribution to soil contamination is as low as reasonably achievable. Since the project is predominantly surrounded by paving, the surrounding area may be periodically sprayed and/or cleaned to ensure that particulate matter does not accumulate throughout the demolition project and become available for re-suspension by wind. The preliminary assessment of the soils surrounding the project and the modeling projection of the potential soil deposition will be included in the project specific final characterization report, which will be provided to the LRA.

4.2 Building 776/777 Project Specific Final Characterization

Following decontamination and/or removal efforts, a final characterization will be conducted, followed by air modeling to verify the 0.1 mrem maximum dose contribution from Building 776/777 demolition. The survey will be conducted in accordance with a project-specific characterization plan, which will be submitted to the LRA for review and approval.

The measurements that will be performed during final characterization will be total surface contamination. The final characterization survey results will be included in a project specific characterization report and submitted to the LRA. This process will confirm that decontamination activities (i.e., decontaminate or remove) are complete, residual contamination will not result in a dose of greater than 0.1 mrem at the site boundary, and the facility is ready for application of fixatives followed by demolition.

Non-radiological contaminants such as hazardous waste/substances, beryllium, PCBs, and asbestos will be characterized and/or removed before the final characterization is completed and will be managed in accordance with Industrial Hygiene and Waste Acceptance Criteria requirements. Building characterization for non-radiological contaminants before demolition will be documented in the project-specific characterization report or other reports provided to the LRA, such as the asbestos clearance certification and demolition permit application.

Once the facility characterization is complete, fixatives and encapsulants will be applied throughout the facility. Areas that will not be encapsulated will be those areas that meet the unrestricted release criteria. For example, the offices, annex and potentially the vault area may not require encapsulants.

5.0 Demolition Activities and Methods

Facility demolition will involve the use of large mechanical equipment, which may include excavators equipped with a hydraulic hoe-ram and grapple, hoists and cranes, and front-end loaders. These will be used to size reduce, segregate, and load the concrete, steel and other facility materials into waste containers, with enhanced controls for radiological protection. The primary demolition steps and mechanical techniques for dismantling, segmenting, and demolishing will be provided in activity-specific work package(s).

Excavator-mounted attachments are industry standard for a variety of demolition projects, and provide a controlled method to disassemble a structure. Attachments include concrete pulverizers, shears, grapples, and rams. Demolition methods that may be used on concrete floors and thick walls include abrasive cutters, diamond wire cutters, paving breakers (i.e., jackhammers), and cracking agents.

After facility components and structures have been disconnected and disassembled, they will be size reduced and packaged for disposal. Removal of large items and sections of walls and flooring will be accomplished using mechanical lifting and hauling devices, such as hoists and cranes. Such devices will be inspected and approved for the work, and operated by qualified operators. Excavation work will be conducted in accordance with the Occupational Safety and Industrial Hygiene (OS&IH) Program Manual, which includes requirements for soil disturbance permits, if applicable, such as when excavating buried structures that contact soil.

5.1 Demolition Planning and Execution

Demolition activities will be executed using the Site Integrated Work Control Process (IWCP). The work packages will contain the detailed work instructions, selected demolition methods, and demolition sequence including radiological controls, health and safety practices, and waste management requirements.

A qualified, experienced demolition contractor will perform the demolition activities for Building 776/777, and a Colorado licensed professional structural engineer and certified safety professional will monitor demolition activities to ensure they are conducted safely. The demolition contractor will prepare a Contractor Demolition Plan before initiating demolition activities. The Contractor Demolition Plan will

be prepared in accordance with Occupational Safety and Health Act, 29 CFR 1926, Subpart T, and will detail the methods to be used to demolish the facility.

The demolition process will begin with the mobilization of the demolition contractor followed by demolition site preparation. As part of demolition site preparation, existing features associated with Site utility systems will be located, marked, and evaluated for isolation purposes. The sanitary sewer system will be isolated to prevent inflow of inappropriate wastewater generated by demolition dust control activities.

Electrical power requirements will be identified as a part of the planning process. Maintaining sump and foundation pumps for control of groundwater, power to sanitary sewer lift stations, and some area lighting may be necessary. However, it is likely that power fed from the main distribution system will have been terminated and decommissioning activities will be supported by temporary power.

Protective barriers or fences may be erected around permanent Site features designated to remain during demolition and ER. Electrical distribution switch gear, overhead electrical distribution lines, area lighting, groundwater monitoring wells, and fire protection system hydrants and post indicator valves that will remain operational during and/or after facility demolition will be protected, as required, and flagged for added operator awareness and overall visibility.

As necessary, run-on and run-off controls will be implemented, temporary diversion berms, erosion control silt fencing, and interceptor ditches will be installed, and existing drainage culverts and ditches will be cleaned out as required to divert significant surface flow away from the demolition site. The installation of run-on/run-off controls will be coordinated with Site Services and Environmental Management personnel responsible for the surface water monitoring system surrounding the demolition area. Traffic patterns and loading areas will be established to facilitate waste management activities. Final site grading will be determined and performed in consultation with ER.

5.2 Demolition Hazards, Controls, and Monitoring

Demolition activities present hazards to workers and the environment. Environmental impacts will be minimized through implementation of procedures designed to prevent uncontrolled release of waste, to control water run-on and run-off, and to minimize fugitive particulate emissions. The environmental protection procedures will be detailed in the work packages. Other hazards include radiological and industrial. Hazard controls and monitoring during demolition are discussed in the following sections. Table I-3 outlines the potential controls, depending on the status of the building, during demolition.

5.2.1 Air Emissions Control

In accordance with the Colorado Air Quality Control Commission Regulation 1, a Dust Control Plan will be prepared before initiation of demolition activities that will describe the specific methods to be used to control fugitive particulates during demolition activities. Enhanced control methods will be used to keep fugitive emissions as low as reasonably achievable. As appropriate for each activity, the following list provides typical methods to be used to suppress fugitive emissions.

- A controlled water spray or fixative will be used to minimize fugitive particulate emissions without resulting in excess accumulation or run-off. Depending on the work location, a water truck or hydrant may be used.
- A flag or windsock will be used to assist workers in maintaining the optimal location while directing the water spray.
- Amended water will be used in the event that standard dust control methods are not consistently effective.

Table I-3
Demolition Methodology

Potential Demolition Situation	Potential Control	Control Documentation/Evaluation

Walls, floors, ceilings, or columns/joints have been decontaminated	• Work boundary, exclusion zones
	• Personal protection equipment
	• Water spray (remote or direct)
	• Tailgate meetings and daily planning, involving engineering and health and safety personnel
	• Wind restrictions
		• Contractor Demolition Plan
		  • Dust Control Plan
		• RWPs
		• Work packages
		  • Job Hazard Analysis
		• Health and Safety Plan
		• Worker and work environment monitoring results
		• Radiological ambient air monitoring program (RAAMP) results

Walls, floors, ceilings, or columns/joints have been removed	• No action required	• No action required

Walls, floors, ceilings, or columns/joints decontamination/removal was not feasible – encapsulants applied	• Work boundary, exclusion zones
	• Personal protection equipment
	• Water spray (remote or direct)
	• Tailgate meetings and daily planning, involving engineering and health and safety personnel
	• Wind restrictions
	• Encapsulants
	• Decreased wind restrictions
	• Stockpile restrictions
	• Amended water
	• Fixatives/surfactants
		• Contractor Demolition Plan
		  • Dust Control Plan
		• RWPs
		• Work packages
		  • Job Hazard Analysis
		• Health and Safety Plan
		• Worker and work environment monitoring results
		• RAAMP Results

Walls, floors, ceilings, or columns/joints decontamination/removal are not feasible – encapsulants applied and the area was delineated with paint	• Work boundary, exclusion zones
	• Personal protection equipment
	• Water spray (remote or direct)
	• Tailgate meetings and daily planning, involving engineering and health and safety personnel
	• Wind restrictions
	• Encapsulants
	• Decreased wind restrictions
	• Stockpile restrictions
	• Amended water
	• Fixatives/surfactants
	• Specific controlled demolition procedure
		• Contractor Demolition Plan
		  • Dust Control Plan
		  • Specific Procedure
		• RWPs
		• Work packages
		  • Job Hazard Analysis
		• Health and Safety Plan
		• Worker and work environment monitoring results
		• RAAMP Results

- Water spray nozzles may be mounted directly on demolition equipment arms to target the spray directly at the work area. The spray velocity will be minimized to provide wetting without excessive runoff or aerosolization.
- Facility debris will be loaded into approved waste containers. These containers will be covered when unattended and/or not in use to control fugitive particulate emissions (typically overnight).
- Limitations on waste piles will be established to ensure that building rubble is containerized in a timely manner. Fixatives or covers will be applied to waste piles when unattended and/or not in use to minimize dust (typically overnight).
- Roads may be periodically sprayed and/or cleaned.
- Dust control devices or shrouds may be used on individual pieces of equipment.
- Demolition work will be suspended when wind speeds exceed 30 mph, and work will be evaluated by a safety professional before proceeding. Demolition work will be halted when sustained winds exceed 44 mph, in accordance with the Site OS&IH Program Manual.

Dust control measures will be applied and evaluated for effectiveness throughout the demolition activity. Air monitoring of potential project emissions, which is not a control, but a means of assessing control effectiveness is documented in Section 6.1.

5.2.2 Radiological Protection and Control

Radiological controls and monitoring during demolition will be performed in accordance with the DOE approved Site Radiation Protection Program (RPP), RPP-0001, Revision 3. The Site RPP is implemented through the Site Radiological Control Manual, MAN-102-SRCM, Revision 1 and the Radiological Safety Practices Manual, which implement the requirements of 10 CFR Part 835. These requirements and implementing documents are focused on occupational (worker) exposure and protection and are based on the process of maintaining worker exposure to ALARA. Section 6.1 of this modification addresses air monitoring and standards for emissions and public health and environment protection. Enhanced radiological controls will be applied for outside work, as applicable, such as continuously evaluating wind direction impact on air monitoring locations.

Full-time Radiological Control Technician support will be used during demolition activities to ensure the radiological controls are consistently implemented to minimize the dose to individuals, the environment and the public from exposure to DOE-added radioactive materials.

Engineering controls will be utilized during demolition activities in accordance with the controls specified in the Air Emissions Control section above. Measures will be taken to minimize the dose to individuals by a combination of fixatives, encapsulants, and the use of administrative controls.

Contamination and airborne radioactivity surveys will be performed as necessary to document and detect changes in the radiological conditions in the work area. These surveys will be used to ensure the adequacy and effectiveness of engineering controls in containing radioactive material and minimizing dose. In addition to the Site sampling network discussed in Section 6.1, project-specific air samples will be collected and evaluated as quickly as practicable using the appropriate site approved counting techniques and equipment.

The specific radiological controls and monitoring requirements that will be used during demolition activities, including waste container loading, will be identified in the RWP for the applicable task(s) being performed. The RWP controls will be evaluated against the adequacy and effectiveness of engineering controls and may be upgraded or downgraded as appropriate during the course of demolition activities.

Once the building decontamination and characterization are complete, a final air dispersion model run will be used to develop the final work area boundaries and worker protection requirements. The

immediate and collocated work area requirements and personal protective equipment (PPE) will be based on the regulatory protection factors for determining airborne postings and personnel protection requirements. The work area boundaries and PPE will initially be based on the final model run and conservative assumptions. Once work area sampling results become available, these controls may be modified, as necessary, throughout the demolition.

5.2.3 Industrial Hazards and Controls

The demolition contractor will be required to cover industrial hazards and controls in the Contractor Demolition Plan and in the Job Hazard Analysis. A Colorado qualified structural engineer and certified safety professional will monitor demolition activities to ensure they are conducted safely. Industrial Hygiene will conduct monitoring as necessary for both chemical hazards (e.g. dust, silica, metals, and gases) and physical hazards (e.g. noise, heat, and cold). Engineering and administrative controls will be used to mitigate the potential hazards to workers and the environment.

The selected demolition alternative was chosen in part because it minimizes industrial hazards relative to the other alternatives evaluated. Demolition will be conducted using heavy industrial equipment, and personnel will not be working inside the structure during demolition. Stop work will be implemented in accordance with the Stop Work Action procedure, 1-V10-ADM-15.02; all employees at RFETS are responsible for stopping work when unsafe conditions are identified.

6.0 Environmental Protection and Monitoring

The ARARs and National Environmental Policy Act values presented in Sections 7 and 8 of the DOP have been reviewed relative to building demolition, and have been amended as necessary to address demolition through a minor modification to the DOP. The following sections discuss other environmental considerations and requirements for demolition.

6.1 Site Air Monitoring

Environmental air monitoring will be performed in accordance with the requirements of the Site Integrated Monitoring Plan (IMP). The existing RAAMP sampler network will be used for ambient air monitoring during removal activities. The RAAMP sampler network continuously monitors airborne dispersion of radioactive materials from the Site into the surrounding environment. Thirty-eight samplers comprise the RAAMP network. Fourteen of these samplers are deployed at the Site perimeter and are used to confirm Site compliance with the 10 mrem dose standard mandated in 40 CFR Part 61, Subpart H; these samplers will be used to confirm that demolition has contributed less than 0.1 mrem of dose potential to public receptors. Filters from the 14 perimeter RAAMP samplers are collected and analyzed monthly for uranium, plutonium, and americium isotopes. Results of compliance sampling at the Site perimeter are compiled, communicated to project management as soon as practical following laboratory analysis, and presented in the Quarterly Environmental Monitoring Reports and the Radionuclide Air Emissions Annual Report.

In addition to the perimeter network, project monitoring (PM-Rad) will be carried out during demolition and removal activities using ten existing RAAMP samplers arrayed around the Site's Industrial Area. PM-Rad characterizes potential short-term emissions from the project on ambient air quality and receptors closer to the projects than the Site perimeter by quantifying gross alpha activity on filters. Gross alpha analysis can be performed in a much shorter time frame (days versus weeks) than is necessary for isotopic analysis.

Beginning at least one week before the start of demolition, PM-Rad sampling will begin on a weekly filter exchange schedule. In accordance with the IMP, filters will be collected weekly and screened for long-lived alpha contamination and/or gamma emissions. Results of the radiation screening will be available about four workdays after submitting filters to the laboratory. The results will be used to calculate the

airborne concentration in units of activity per volume of air drawn through the filter (pCi/m^3). These results will then be compared to two predefined Action Levels, based on the expected isotopic composition of materials to be disturbed. Action Level 1 will correspond to a 1.0 mrem dose rate, and Action Level 2 will correspond to a 5.0 mrem dose rate at the sampling location, based on the assumption that the hypothetical receptor has been exposed for two weeks (one week of sample collection, one week for analysis). All alpha activity is assumed to derive from Pu-239 for the purpose of determining whether Action Levels have been exceeded, until isotopic results prove otherwise; this approach provides conservatism.

For radionuclide concentrations below Action Level 1, PM-Rad will continue with weekly filters being screened for radioactivity. If Action Level 1 is exceeded, affected weekly filters from the area-specific samplers will be submitted for isotopic analysis on an expedited schedule. Site environmental personnel will meet with project personnel to evaluate the project for unexpected conditions and to determine what additional sample collection and analysis may be warranted. Site environmental personnel will contact project personnel within six hours of receiving results if Action Level 2 is exceeded, and will meet with project personnel to reassess project parameters and evaluate measures to mitigate future emissions. Mitigating measures may include additional dust control efforts, modifications to demolition techniques, reevaluation of work response to environmental conditions (e.g., high wind), and cessation of work. When sample isotopic results exceeding Action Level 2 also indicate that a 10 mrem dose to the most impacted public receptor could occur (based on the indicated concentration remaining constant for one year), project operations will cease until appropriate controls are in place. Results of performance monitoring will be communicated to project management as soon as practicable following laboratory analysis, and will be summarized in the Quarterly Environmental Monitoring Reports.

6.2 Soil Disturbance Permit

Before the demolition of any building within the Building 776/777 Closure Project, the demolition contractor will complete a Soil Disturbance Evaluation Form. The contractor will identify the location of underground utilities (i.e., sewer, process waste, storm drain, telephone, water, fuel, and electric lines), as well as any known environmental, waste, radiological, and/or safety hazards. When completed, a Site excavation specialist, who will coordinate the review and approval of the demolition work with the appropriate organizations, will review the Soil Disturbance Evaluation Form. Soil disturbance activities will not be performed until the excavation specialist has provided written approval for the work to proceed.[4]

6.3 Demolition Notification

Prior to the demolition of any building or portion of a building within the Building 776/777 Closure Project, the demolition contractor will prepare and submit a Demolition Notification to CDPHE for review and approval in accordance with CAQCC Regulation No. 8, Part B. Demolition activities will not be performed for that portion until CDPHE has provided written approval for the work to proceed.

6.4 Migratory Bird Clearance

Before the demolition of any building within the Building 776/777 Closure Project, a survey will be conducted to ensure the planned demolition activities will not impact migratory birds or their nests. This inspection is for nesting birds in and around facilities prepared for demolition. The Building 776/777 project will comply with the substantive portions of the Migratory Bird Treaty Act, which can include establishment of alternative nesting habitats away from building demolition.

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[4] Soil disturbance requirements are contained in Chapter 45 of the RFETS OS&IH Program Manual, entitled "Excavation and Trenching."

6.5 Surface Water Management

During facility demolition, surface water run on/run off will be controlled using standard construction methods, including silt fences, hay bales, and diversion ditches per the Site Storm Water Pollution Prevention Plan[5]. Water from dust control and/or cutting activities will be managed as incidental waters in accordance with the Site National Pollutant Discharge Elimination System (NPDES) Permit[6] and procedure for the control and disposition of incidental waters.[7] The planning of surface water controls will consider the area to ensure that the run-off is controlled adequately, and a process will be established to inspect the run-off controls during precipitation events during non-routine hours. Surface water monitoring will be conducted in accordance with the Site IMP. Additional performance monitoring stations will be installed, as necessary, based on activity-specific assessments performed by Site water quality Subject Matter Experts. Enhanced controls may be implemented in the immediate work area where demolition is occurring to prevent release of dust control water.

6.6 Groundwater Management

The Sampling and Analysis Plan (SAP) for the D&D Groundwater Monitoring of Buildings 707, 776/6777, 371/374, 865, and 883[8] describes the well installation, well development, and initial groundwater sampling activities planned for the Building 776/777 Closure Project during decommissioning.

The levels of contamination in groundwater surrounding and beneath the footprint of the Building 776/777 Closure Project vary significantly among the sample points. The principal region of higher levels of groundwater contamination in this area is known as the "Industrial Area (IA) Plume."[9] The IA Plume is believed to result from contamination migrating from multiple Individual Hazardous Substance Sites (IHSSs). Its principal constituents are three volatile organic compounds (VOCs): trichloroethene, tetrachloroethene, and carbon tetrachloride. IHSS 118.1, located immediately north of the building, is the likely source of carbon tetrachloride contamination that exceeds RFCA Tier I Action Levels in groundwater at the northwest portion of the building. Sources of the IA plume are not well known, and the effort to determine the sources is underway[10].

In the event groundwater is encountered during facility demolition, it will be removed, as necessary to characterize and remediate the interior surfaces of the building, specifically the basement, sumps and buried equipment pits. Samples will be collected as necessary to determine the disposition pathway for the pumped groundwater. If the water is contaminated, but there is no threat to surface water protection standards, the groundwater may be left in the subsurface structure with controls sufficient to protect the health and safety of workers and the public until remediation during ER. If the water is contaminated and is a threat to surface water protection standards, the water will be pumped to a treatment facility until remediated during ER. Project-specific controls will be detailed in the Contractor Demolition Plan and work package(s) for the demolition activity.

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5 *RFETS Storm Water Pollution Prevention Plan* (Rev 1), April 2003.

6 NPDES Permit No. CO-0001333, October 2000.

7 Control and Disposition of Incidental Waters (1-C91-EPR-SW.01), (latest revision).

8 Sampling and Analysis Plan (SAP) for the D&D Groundwater Monitoring of Buildings 707, 776/777, 371/374, 865, and 883 (latest revision).

9 Integrated Monitoring Plan Background Document, FY 2000, September 1999; and the 1999 Annual RFCA Groundwater Monitoring Report, Figure 8-1, Monitoring Well Locations, East Industrial Area VOC Plume.

10 Sampling and Analysis Plan for Groundwater Monitoring of Industrial Area Plume, Rev. 1, 01-RF-00907, PADC-2001-00576.

7.0 Transition to Environmental Restoration

Demolition activities performed within the scope of the Building 776/777 DOP will be coordinated with activities performed within the scope of the ER RSOP or other ER decision document. The goal is to achieve an integrated process that minimizes risk to workers and the environment, minimizes the generation of remediation wastes, streamlines technical processes, and reduces Building 776/777 Closure Project costs. During decommissioning:

- Electrical and water lines will be removed. Underground water lines located outside the facility footprint will be plugged or capped. A map showing the locations and sources of these utility lines will be maintained in the Building 776/777 Closure Project files and provided to the ER Program.
- Process waste lines, tanks, and other lines associated with the process waste transfer system (i.e., the "new" process waste lines) and any "old" process waste lines within the facility will be removed and/or isolated at the facility perimeter. A map, showing the locations and sources of the process waste lines will be maintained in the Building 776/777 Closure Project Files and provided to the ER Program.
- The Building 730 underground plenum deluge tanks will be emptied of liquids and sludges, and contamination will be fixed. Mechanical and electrical equipment in Building 730 will be removed. Two underground process waste tanks in Building 730 were cleaned and filled with foam in 1996[11]. These tanks will be handed off to ER following completion of these activities.
- Sanitary sewer lines, tanks, and ancillary equipment will be flushed with clean water and capped or removed to the nearest isolation valve.
- Structural material within three feet of the final grade will be removed, including building slabs and foundations.
- Structures below three feet of the final grade will be characterized and removed if the structure does not meet the unrestricted release criteria. Buried metal and concrete from the buried equipment pits (Set 84) will also be removed if they do not meet the unrestricted release criteria.

Footing drains will be dispositioned based on input and guidance from the Environmental Restoration (ER) team, taking into account the post-closure water balance and movement of groundwater and contaminants. If the decision is made to obstruct flow through the footing drains, several areas of the drain will be excavated and backfilled.

In the event there is a gap between decommissioning and remediation activities, the Site Services Project will be responsible for interim surveillance and maintenance activities. The hand-off from decommissioning to the landlord organization will be documented in writing, by the Decommissioning Project, RISS Project, and ER Program.

ER will characterize and remediate as necessary the soils under the building and associated with exterior IHSSs and potential areas of concern (PACs), following the established RFCA soil action levels. Remediation of the under building contamination is expected to follow slab removal. Therefore, the Building 776/777 project is not planning for backfill. ER will also characterize (and remove if necessary) the process waste lines beneath the floor slabs and the underground tanks and pipelines outside the footprint of the building per the ER RSOP.

[11] Completion Report for the Underground Storage Tanks Source Removal Project, RF/ER-96-0050, September 23, 1996

Appendix J
Comment Response Summary for Building 776/777 Demolition Plan

City of Westminster, Al Nelson, May 20, 2003		
Cmt. #	**Comment**	**Response**
1	As part of our review we looked at the *Building 776/777 Closure Project Decommissioning Operations Plan (DOP)*. There are several things discussed in the DOP that refer to a major modification of the DOP that will detail the demolition process. Since your Appendix I is serving the purpose of the major modification, there are discrepancies between the DOP and your appendix that need clarification. These are listed below. In addition, because of these discrepancies, the original *Building 776/777 Closure Project Decommissioning Operations Plan (DOP)* should be totally revised and brought up to date.	The original DOP was revised to eliminate the inconsistencies between the original DOP and Appendix I; this revision was completed through a minor modification, approved June 10, 2003. A RFCA decision document is not generally revised to reflect status, but only revised to reflect modifications in process or the decision. The Project Close-out Report and Final Characterization Report will be used to document how the decommissioning process was conducted. The ER/D&D meeting is used to convey progress and status on a more routine basis. In addition, the site is always open to answering and addressing progress and status questions from the public.
2	We looked at the alternatives by first reviewing only the "Capital Cost", and arrived at the conclusion that Alternative 4 would be your choice based on cost alone. After coming to this conclusion, we read the particulars for each alternative.	The alternative was not selected based solely on cost. As indicated in Section 2.5 of Appendix I, Alternative 4 was the only alternative that passed the initial screen for effectiveness, implementability, and cost.
3	The plan is not very specific. That is, it lacks details as to how the work will be performed, controlled, evaluated, etc. It defers these details to other plans, work packages, etc. The presentation of the alternatives and the justifications used in each are lacking detail. A more detailed alternatives analysis needs to be performed for all four alternatives.	The level of detail in the DOP modification is consistent with other RFCA decision documents, and the requirements of the Implementation Guidance Document (IGD). The alternatives analysis was completed in accordance with the guidance in the IGD, and is consistent with the analysis completed in other Site decommissioning and environmental restoration RFCA decision documents. As indicated in Section 1.3 of Appendix I and the response to comment 1, the public will be kept informed and involved in the Building 776 decommissioning process.
4	It appears that a combination of Alternatives 3 and 4 would be more desirable.	Alternatives 3 and 4 cannot be combined. Once the demolition is initiated, the facility will be unstable and no one will have access to the facility. As a result, selective containment during demolition is not feasible. Alternative 4 does involve the removal of portions of the facility (when feasible) during preparation of the building for demolition.
5	Alternative 3 gives a more detailed discussion of the demolition techniques to be used under this alternative. Apply this detail to the other three alternatives.	Additional detail was added to the alternative description in Appendix I prior to initiating the public comment period.

City of Westminster, Al Nelson, May 20, 2003		
Cmt. #	**Comment**	**Response**
6	Under all sections pertaining to "Administrative Feasibility." "There may be an impact to adjoining property..." Based on what and what type of impact(s)?	All demolition activities at RFETS could result in some adverse impacts off-site; however, the possibility is remote. Air modeling has been completed to evaluate releases to the public, which indicates there is no anticipated adverse impacts from the B776 demolition.
7	Add a section that discusses how lessons learned from other buildings (i.e., B771, B883 and B865) will be applied to the demolition of B776/777.	Lessons learned are always incorporated at RFETS; it is a requirement of the Integrated Safety Management Program. Since this is an internal program and contractual requirement, it is not included in the DOP modification, which is a RFCA decision document and subject to different requirements. ISMS is not optional and is included in the Kaiser-Hill contract with penalties for noncompliance.
8	Independent Verification and Validation is not discussed. It is imperative that an IVV be performed to determine the quality of characterization of the building, since B776 will not be an unrestricted release building.	The independent verification section is contained in the original DOP, Section 4.7.
9	There is no mention of the B771 to B776 tunnel. The details addressing the tunnel need to be incorporated.	The tunnel is not within the scope of the Building 776 Project; the tunnel will be dispositioned by the Building 771 Project.
10	There is no mention of long-term stewardship requirements. Please add a section on how long-term stewardship requirements will be captured or detailed.	Since all contaminated portions of the building will be removed from the site and appropriately disposed, there are no unique long-term stewardship requirements associated with this project.
11	Section 2.1.2, Technical Feasibility a. Core sampling of cinderblock walls should be done. b. A map should be included that shows areas affected by the fire. c. A map should be included that shows areas that were filled with concrete. d. "The post fire decontamination effort was conducted to the existing radiological exposure and safety standards current at the time." What were they? What is the current characterization?	a. A characterization plan is currently being prepared and that plan will outline the methods and process for determining the nature and extent of contamination prior to demolition. Core sampling will be part of the characterization process. b-d. Maps showing fire-affected areas are provided in the RLCR in Figures 9-11. A map showing areas that were filled with concrete is provided in Figure 7 of the 776/777 DOP. All current characterization information is preliminary, and the measurements are biased by the equipment that is still in the facility. Since the characterization information is preliminary and the characterization effort will be addressed by a different plan, maps of potential contamination will not be included in the DOP. The results of this "in process" characterization will be detailed in the final characterization report, which is consistent with the requirements of the D&D Characterization Protocol.

City of Westminster, Al Nelson, May 20, 2003		
Cmt. #	**Comment**	**Response**
12	Section 2.2.2, Availability of Services and Materials a. "...over an active facility." Define active facility.	The word active has been removed from this sentence.
13	Section 2.3.1, Effectiveness a. Describe what the "short-term adverse impacts" are?	"High worker risk due to elevated work activities, more "hands on" activities versus use of heavy equipment, and increased potential for dose to workers. Assembling and dismantling rolling scaffold and building additional containment's increases worker industrial and radiological risk. Removal of the interior structural elements could degrade the structural integrity of portions of the remaining facility possibly causing unplanned collapses." In addition, elevated work, rigging of heavy structural components and the potential instability of the building are activities that have been identified as high hazards; elevated work and rigging have been identified in the top 5 hazards at Rocky Flats.
14	Section 2.3.2, Availability of Services and Materials a. Define "short and long term."	The phrases short-term and long-term have been removed from this sentence.

City of Westminster, Al Nelson, May 20, 2003		
Cmt. #	**Comment**	**Response**
15	Section 2.4, Alternative 4 a. "Hard to characterize areas would be investigated using a variety of measurement and sampling techniques." Describe what these are and how it would be done. b. "Final scan results would be compiled in a Project-Specific Characterization report that is submitted to CDPHE." Change to read, "submitted to CDPHE and local governments." c. "Radiological monitoring to demonstrate protection of workers, co-located workers and the public would be utilized." Describe how this will be done. d. "If contamination is present in an inaccessible area..." How will you know?	a. A characterization plan is currently being prepared and that plan will outline methods to assess hard to characterize areas. The methodology is currently being developed and belongs in the project-specific characterization plan, not the DOP. As indicated in Section 1.3 of Appendix I, it is anticipated that the public will be interested and involved in the characterization plan. b. In accordance with RFCA, this plan is not a document for public review; however, the document will be available to the public and local government for information. As indicated in Section 1.3, it is anticipated that the public will be interested and involved in the characterization plan. c. Immediate and collocated worker monitoring will be conducted in accordance with the RFETS Radiation Protection Program. Public monitoring will be conducted in accordance with the IMP. d. A characterization plan is currently being prepared and that plan will outline methods to evaluate inaccessible areas.
16	Section 2.4.1, Effectiveness a. Justify what this section is saying.	The Air Modeling Technical Document provides a technical basis for this statement. The Air Modeling Technical Document was provided to the public on April 23, 2003.
17	Section 2.5 a. There is not enough detail here to justify why Alternative 4 was chosen other than cost. Table I-1 does not provide enough detail to justify the choice. Arguments can be made that some of the scores can be higher or lower based on the judgment of who is doing the comparison. What were the criteria used for assigning each score? Detail how all the scores assigned were arrived at and justify all the scores assigned	This analysis was prepared in accordance with the IGD, and many of the categories/information require a subjective analysis. The Site contends the analysis does provide enough detail to select an alternative.

City of Westminster, Al Nelson, May 20, 2003		
Cmt. #	**Comment**	**Response**
18	Section 3.0, Pre-Demolition Activities and Methods a. What about beryllium and other contaminants, i.e., chemicals, VOCs? What about the industrial area plume and ground water? Should have some discussion as to how these will or will not be handled. b. "To date, preliminary characterization of the building has been conducted for work planning purposes." What were the results? Should detail what the results were here. c. "The final decision-making will be made at the project level and documented in the work packages." Describe the process that will be used to make the decisions. d. Page 14 of 26. What is "high?" What is "medium?" What is "low?" If a concise number will not be provided, there must be a detailed process described here that will tell how "specific decisions will be made on a case-by-case basis." The If And The And, does not make sense. e. Table I-2 does not provide adequate detail see comment in "7" above.	a. Beryllium controlled and regulated areas will be closed before demolition, per applicable regulations. Containerized chemicals and liquid PCBs will be removed before demolition. RCRA permitted and interim status units will be closed in accordance with the 776/777 DOP before demolition. Asbestos will be removed and certified in accordance with State regulations before demolition. The demolition activity should not impact the industrial area plume and groundwater. b. The results of this "in process" characterization will be detailed in the final characterization report, which is consistent with the requirements of the D&D Characterization Protocol. c. The process used to make these decisions is outlined in the DOP, particularly Tables I-2 and I-3 in Appendix I. d. This section of the DOP was written to give the reader a conceptual, simplified view of the preparation of the facility for demolition. There are no levels or definitions for high, medium, or low. These levels cannot be defined because it is a process decision based on balancing risk to workers and the environment. The subjective nature of the section is predicated on meeting the quantitative commitment of less than $1/100^{th}$ of the regulatory limit at the fenceline. e. The decisions for each action (decontamination, encapsulation, and/or removal) are complex. If the action (decontamination and/or removal) will not substantially reduce the overall source term to the immediate and collocated worker, public and environment, then the area will be fixed or encapsulated. It would be inappropriate to subject the workers to the risks associated with decontamination and removal, if there is no appreciable reduction in source term.

City of Westminster, Al Nelson, May 20, 2003		
Cmt. #	**Comment**	**Response**
19	Section 4.1 a. Please describe when worker dose would trigger an action, and what those actions may include. I still believe the drawing that was shown to us at the meeting in Broomfield and a little detail of what it meant would be invaluable and should be included in this section. b. Discuss groundwater and surface water controls here.	a. Additional discussion of this process has been added to the DOP modification. Worker protection is addressed by several on-site programs and federal regulations. Worker health and safety requirements are not optional and are included in the Kaiser-Hill contract with significant penalties for noncompliance. b. The surface water section has been clarified. Groundwater should not be impacted by this activity.
20	Section 4.2 a. "Non-radiological contaminants such as..." See comment 8.a above.	Beryllium controlled and regulated areas will be closed before demolition, per applicable regulations. Containerized chemicals and liquid PCBs will be removed before demolition. RCRA permitted and interim status units will be closed in accordance with the 776/777 DOP before demolition. Asbestos will be removed and certified in accordance with State regulations before demolition.
21	Section 5.0 a. "The primary demolition steps...will be provided in activity-specific work package(s)." Provide a general description of what these steps will be here.	The primary steps will be similar to commercial practices, which are outlined in the Facility Disposition RSOP.

City of Westminster, Al Nelson, May 20, 2003		
Cmt. #	**Comment**	**Response**
22	Section 5.1 a. Add additional wording on traffic patterns and loading areas for waste management like the language used in the B371 and B771 DOPs. b. Add a section on Mobilization the same as Section 4.7.1.2 from the B771 DOP or Section 4.5.1 of the B371 DOP. c. "...a Colorado qualified structural engineer and certified safety professional will monitor demolition activities..." Change Colorado qualified structural engineer to a Colorado licensed professional structural engineer. d. The CDPHE and performance monitoring personnel should also be monitoring all activities. e. "The demolition contractor will prepare a Contractor Demolition Plan..." Who is the contractor?	a. Section 5.1, sixth paragraph contains the traffic pattern information similar to the other DOPs. The information has been reorganized to flow better in the document and be more concise. b. Section 5.1, third paragraph contains the site mobilization and preparation information similar to the other DOPs. The information has been reorganized to flow better in the document and be more concise. c. The OSHA requirement does not specify that the engineer must be "licensed," but qualified. The language in Appendix I is more consistent with the actual OSHA requirement; however, the language in Appendix I has been changed as requested. d. The Integrated Monitoring Plan (IMP) specifies the performance monitoring requirements and IMP personnel are part of the B776 project team. CDPHE provides constant oversight for RFETS activities. e. This work has not been subcontracted, and cannot be subcontracted until the decision document is approved.

City of Westminster, Al Nelson, May 20, 2003		
Cmt. #	**Comment**	**Response**
23	Section 5.2.1 a. How will the run-off from water spray be controlled? b. (typically, overnight) Remove the word typically. c. "Limitations on waste piles..." What will these limitations be? Describe them here. Address emergency actions that may need to be taken. Perform a cost-benefit analysis of conducting demolition the first half of a work day and then packaging the waste generated the second half of a work day in order to not have waste piles to contend with. d. Wind speeds seem excessive. Justify why these speeds are used.	a. With standard best management techniques, "using standard construction methods, including silt fences, hay bales, and diversion ditches." b. The word typically is accurate. c. Maximum volume and storage times cannot be included in the DOP. However, these stockpiles will be controlled throughout the demolition to ensure that the Radiation Protection Standards for the immediate and collocated worker, public and environment are maintained. Waste pile criteria will be finalized and documented in work packages. CDPHE will have the opportunity to participate in work package review per the consultative process outlined in RFCA and in Section 11 of the DOP. d. These are the standard site wind restrictions, which are based on industrial safety requirements. If the dust cannot be controlled, project operations will cease, regardless of the wind speed. As indicated in Section 5.2.1 of Appendix I, "Dust control measures will be applied and evaluated for effectiveness throughout the demolition activity." Dust control (including wind speed) will be finalized and documented in work packages. CDPHE will have the opportunity to participate in work package review per the consultative process outlined in RFCA and in Section 11 of the DOP.
24	Section 5.2.2 a. "...to DOE-added radioactive materials." What does "DOE-added radioactive materials" mean?	"DOE-added radioactive materials" differentiates between the plutonium, americium, and enriched and depleted uranium processed at the Site and the abundant, naturally occurring uranium in local soils and bedrock. Any incidental resuspension of naturally-occurring radioactive materials, due to soil disturbance, heavy equipment traffic, etc., will have minimal dose effect but will still be captured by Site air monitors.
25	Section 6.0 a. "through a minor modification..." What is minor?	As defined by RFCA, a minor modification "means a modification that achieves a substantially equivalent level of protection to workers and the environment and does not constitute a significant departure from the approved decision document or the basis by which a decision was previously made or approved, but may alter techniques or procedures by which the work is completed, e.g., a change in an RSOP that does not change. The final result of the activity (e.g., alteration to a tank closure procedure that still results in a clean closure), or a change in operation or capacity of a treatment system that does not cause the system to exceed effluent limit."

City of Westminster, Al Nelson, May 20, 2003		
Cmt. #	**Comment**	**Response**
26	Section 6.1, page 22, second paragraph a. What are the IMP actions levels? Should detail them here.	The levels are detailed in Appendix I, Section 6.1.
27	Section 6.2 a. "...the demolition contractor will complete a Soil Disturbance Evaluation Plan." Why is this the demolition contractor's responsibility? It seems that site personnel should do this evaluation, as they will have a better knowledge of where underground utilities, etc. are located.	This is a Site requirement and procurement decision.
28	Section 6.3 Add a sentence that says, "The Demolition Notification will be forwarded to local communities after review and approval from CDPHE."	The demolition notification will be available for public information.

RFCLoG, David M. Abelson, June 3, 2003		
Cmt. #	**Comment**	**Response**
1	At the February 24, 2003 Coalition Board meeting, Mark Ferri committed to performing close-in monitoring during the B776 demolition. At the April 29, 2003 B776 meeting, Kaiser-Hill personnel told local government and Coalition staff that close-in monitoring would be performed during the B776 demolition in two zones. The inner zone around B776 would be designed to protect B776 workers, and the outer zone would be used to establish work boundaries for collocated workers near the demolition area. The DOP Modification includes language regarding the use of performance monitors on the Industrial Area perimeter, as well as ambient air monitors at the Site boundary, but does not identify the use of close-in monitors. Please include language in the DOP Modification that describes the close-in monitoring to which Kaiser-Hill committed, including the purpose, location, and timeframe for the monitoring.	The Coalition's understanding of the monitoring that will be conducted to evaluate and protect the workers and collocated workers is accurate. Worker protection is addressed by several on-site programs and federal regulations. These worker protection requirements are not optional and are included in the Kaiser-Hill contract with significant penalties for noncompliance. Section 4.1 of Appendix I contains the following, "Based on these results, work area boundaries and personnel protection equipment will be established in the health and safety plan, radiological work permits (RWPs), and job hazard analysis. Project area air sampling and personnel monitoring will be used to verify these protection factors/controls are effective. Based on the results of this monitoring and the ambient conditions, the controls may be increased or decreased, as necessary throughout the demolition project." This language outlines the process that will be used during worker monitoring. The requirements for worker monitoring are documented in the site Radiation Protection Program, which is referenced in Appendix I.
2	In addition, the Coalition understands that CDPHE has committed to performing additional air quality monitoring for the B776 demolition. This commitment is not identified in the DOP Modification. While we know the particulars of their monitoring program cannot be determined at this point, we think general language must be added to the DOP Modification that clearly identifies the purpose and scope of their air monitoring.	State air monitoring has never been included in a DOP and is usually included in the annual revisions to the IMP. The following will be added to the IMP during the next revision cycle, "CDPHE or EPA will perform air monitoring during the B776/777 demolition. The type of monitoring will be planned and included in the IMP when the B776/777 demolition plan is complete and the Site monitoring is finalized."
3	The Coalition understands that B776 is contaminated with beryllium, but that specific beryllium air quality standards do not apply to the B776 demolition. We also understand Kaiser-Hill has committed to applying lessons learned from the demolition of other beryllium buildings (such as B883 and B865) to determine if beryllium sampling and/or monitoring are warranted for the B776 demolition. This process is not documented in the DOP Modification. Please add language to this effect.	Beryllium controlled and regulated areas will be closed before demolition. Lessons learned are always incorporated at RFETS; it is a requirement of the Integrated Safety Management Program. The lessons learned with respect to beryllium monitoring will be captured during the annual revision to the IMP.

RFCLoG, David M. Abelson, June 3, 2003		
Cmt. #	**Comment**	**Response**
4	The original B776 DOP (Section 4.7) states that "an independent party, selected by DOE, will perform a verification assessment of the final survey methodology." This commitment was made assuming B776 would be an unrestricted release building. The Coalition understands the Site is reassessing the value of IVV for B776, given that Kaiser-Hill has said decontamination to unrestricted release standards does not appear to be technically feasible for many areas of the building. At a minimum, the Coalition believes IVV should be performed for those areas that can be free released. A decision on whether or not to perform IVV on areas that cannot be free released should be based on a comprehensive analysis that will determine how much value IVV will add. This analysis should be identified and outlined in the DOP Modification.	A minor modification of the original DOP was approved on June 10, 2003. The independent verification section was not modified with respect to conducting independent verification. Independent verification will be conducted under a separate plan that will detail the process to be used. Just as characterization details are not provided in the DOP, the independent verification details cannot be included in the DOP because it will depend on the characterization process used (which is being developed), and the final status of the facility.
5	Section 3.0, Pre-Demolition Activities and Methods The Coalition understands that contamination levels are described subjectively as "low", "medium", and "high" in this section of the DOP Modification to give a general idea of how decontamination decisions will be made. Nevertheless, without any guidance for what constitutes "low" versus "high", we are concerned the decision to decontaminate, encapsulate, or remove will be largely subjective. Who will decide whether contamination levels are low, medium, or high? On what are these levels based? Gross contamination levels? Potential health impacts? Other? What will be the general framework for determining how contamination levels, and thus decontamination strategies, will be decided?	This section of the DOP was written to give the reader a conceptual, simplified view of the preparation of the facility for demolition. There are no levels or definitions for high, medium, or low. These levels cannot be defined because it is a process decision based on balancing risk to workers and the environment. The subjective nature of the section is predicated on meeting the quantitative commitment of less than $1/100^{th}$ of the regulatory limit at the fenceline. The decisions for each action (decontamination, encapsulation, and/or removal) are complex. If the action (decontamination and/or removal) will not substantially reduce the overall source term to the immediate and collocated worker, public and environment, then the area will be fixed or encapsulated. It would be inappropriate to subject the workers to the risks associated with decontamination and removal, if there is no appreciable reduction in source term. The decisions will be made by D&D management with radiological engineering and air quality input.

RFCLoG, David M. Abelson, June 3, 2003		
Cmt. #	**Comment**	**Response**
6	Section 4.1, Regulatory Framework and Assessment "*If the modeling indicates that a level of 0.1mrem will be exceeded at the Rocky Flats fenceline because of demolition of Building 776/777, additional decontamination and/or removal will be performed.*" The Coalition understands the DOP Modification primarily addresses fenceline protection because the DOP addresses compliance with RFCA, which is predominantly based on public and environmental protection. Worker protection, we understand, is addressed by other onsite programs and federal regulations. When Melissa asked in a prior discussion with you whether worker dose would trigger any such action, or just the fenceline dose, your response was that worker protection requirements will trigger actions in addition to the fenceline dose. Please describe when worker dose would trigger an action, and what those actions may include.	Yes, worker protection requirements will trigger actions in addition to the fence line dose. It is anticipated that such actions could include modification of PPE, changes in worker boundaries, changes in dust control methods, modifications in equipment... Worker protection is addressed by several on-site programs and federal regulations.
7	Section 4.2, Building 776/777 Project Specific Final Characterization "*The measurements that will be performed during final characterization will be total surface contamination.*" As written above, it is clear that Kaiser-Hill plans to characterize the surface of B776 prior to demolition. It is not clear that characterization efforts will also take into account embedded contamination (such as in cinder blocks). The total amount of contamination remaining in B776 before demolition is obviously a key input into air modeling and subsequent worker and public protections, and as such, must account for both surface and embedded contamination. Based on Melissa's prior discussion with you, the Coalition understands the final characterization plan for B776 will in fact address both surface and embedded contamination. This commitment should be clearly identified in the DOP Modification. As the document reads now, embedded contamination will not be taken into account when determining final contamination levels.	A characterization plan is currently being prepared and that plan will outline methods to assess embedded contamination. It is anticipated that embedded contamination will be addressed during in-process characterization and detailed in the final characterization report. The instruments that have been used and will continue to be used are gamma radiation detection instruments. If there is embedded contamination, it will be detected by the instrumentation. In addition, the history of the building and samples taken to date indicate that the contamination comes from the surface inward, and the highest levels are on the surface. Therefore, using conservative estimates of total contamination (surface plus embedded) based on the survey results and assuming all of the contamination is on the surface provides a more conservative result in the air model.

RFCLoG, David M. Abelson, June 3, 2003		
Cmt. #	**Comment**	**Response**
8	Section 7.0, Transition to Environmental Restoration (1) "*Sanitary sewer lines, tanks, and ancillary equipment will be removed, including building slabs and foundations.*" Footing drains are not addressed in this section of the DOP Modification. The Coalition understands, however, that footing drains will be dispositioned based on input and guidance from the Environmental Restoration (ER) team, taking into account the post-closure water balance and movement of groundwater and contaminants. Given the importance of water quality to our communities, we believe footing drains should be acknowledged in the DOP Modification. Please add language identifying that the decision to remove or retain footing drains will be made based on input from ER, describe on what the decision will be based, and identify who will then carry out the chosen action (removal vs. retention).	The following language has been added to Section 7.0, "Footing drains will be dispositioned based on input and guidance from the Environmental Restoration (ER) team, taking into account the post-closure water balance and movement of groundwater and contaminants. If the decision is made to obstruct flow through the footing drains, several areas of the drain will be excavated and backfilled."
9	(2) "*Structural material within three feet of the final grade will be removed, including building slabs and foundations. Structures below three feet of the final grade will be characterized and removed if necessary per site requirements.*" At the February 24, 2003 Coalition Board meeting, Mark Ferri stated that the B776 D&D team would take out the thirty foot pits (from buried metal and stairwells) in the building during demolition. The commitment to remove these pits is not made clear in the DOP Modification, as most of the pits are likely more than three feet below grade and may not qualify for removal as per the quote above. The Coalition believes the decision to remove the pits should be clearly outlined in the DOP Modification so that anyone who works with this document will be aware of Kaiser-Hill's commitment.	The bullet has been clarified with the following language, "Structures below three feet of the final grade will be characterized and removed if the structure does not meet the unrestricted release criteria. Buried metal and concrete from the buried equipment pits (Set 84) will also be removed if they do not meet the unrestricted release criteria."

RFCLoG, David M. Abelson, June 3, 2003		
Cmt. #	**Comment**	**Response**
10	(3) "*Before making the decision to leave any unrestricted-release slabs in place, Building 776/777 project management will coordinate with ER on their soil sampling and remediation plans.... Remediation of the under building contamination is expected to follow slab removal.*" Is the implication of this sentence that unrestricted release slabs will be left in place if the levels of under building contamination do not warrant soil remediation? If so, does this statement apply only to slabs deeper than three feet below grade? If not, what are the decision criteria for leaving an unrestricted release slab in place? Are there instances when a non-unrestricted release slab would be left in place? If so, what are the decision criteria for removing or leaving them?	No, this sentence is simply trying to convey that if there is going to be a time gap between decommissioning and ER activities, the projects will coordinate. Decommissioning does not want to remove a slab before ER is ready to perform the necessary characterization and remediation. This language is identical to the language in the Facility Disposition RSOP and other decommissioning decision documents. No slabs will remain in place for the B776/777 project. The basement or portions of the basement and/or footings that meet the unrestricted release criteria and are 3 feet below the final proposed grade may remain in place.

City of Broomfield, Shirley Garcia, June 3, 2003		
Cmt. #	**Comment**	**Response**
1	Major/minor Revisions to the B776/777 DOP The City and County of Broomfield is concerned with the release of a partially revised document that is not inclusive of all the changes that will be made at a later date to the original B776/777 DOP. Broomfield has been given the opportunity to comment on Appendix I, which discusses a dirty demolition, which constitutes a significant departure from the approved decision document. We preferred to have reviewed the entire revised document to ensure there were no contradictions within the document and provided an opportunity to comment on the remaining minor and/or major modifications. Key sections, which Broomfield considers major modification of the DOP, will need to be revised. Broomfield considers revisions pertaining to sections of the DOP such as ARARs, revised actions pertaining to the equipment buried under building 776/777, cleanup levels, waste pile management, and modified objectives for the pre-demolition surveys to be major modifications to the DOP, not minor modifications. We recommend you work with us during the modification to the original DOP and allow us the opportunity to comment on the remaining revisions.	The original DOP was revised to eliminate the inconsistencies between the original DOP and Appendix I; this revision was completed through a minor modification, approved June 10, 2003. A draft of the minor modification was distributed to the stakeholders on May 20, 2003 at the ER/D&D meeting. As defined by RFCA, a minor modification "means a modification that achieves a substantially equivalent level of protection to workers and the environment and does not constitute a significant departure from the approved decision document or the basis by which a decision was previously made or approved, but may alter techniques or procedures by which the work is completed, e.g., a change in an RSOP that does not change, the final result of the activity (e.g., alteration to a tank closure procedure that still results in a clean closure), or a change in operation or capacity of a treatment system that does not cause the system to exceed effluent limit." All of the changes made to the original DOP were within this definition.

City of Broomfield, Shirley Garcia, June 3, 2003		
Cmt. #	**Comment**	**Response**
2	In-Process/Final Characterization During final decontamination and prior to encapsulation of contaminated material, Broomfield recommends additional core sampling is performed on areas not being removed to establish the extent of internal contamination that may be released during demolition of the contaminated area. The additional analytical data will assist with modeling and predicting the impact to air quality along with the risk to workers and collocated workers. Any area in which it is not feasible to extricate a contaminated wall, ceiling, or column should have additional core sampling performed for contaminates of concerns such as radionuclides, beryllium, asbestos (ACM), or any other constituent of concern. ACM was used extensively in building materials during the time the facility was built and the City wants to ensure adequate air monitoring is performed based on the characterization data.	A characterization plan is currently being prepared and that plan will outline methods to assess embedded contamination. It is anticipated that embedded contamination will be addressed during in-process characterization and detailed in the final characterization report. The instruments that have been used and will continue to be used are gamma radiation detection instruments. If there is embedded contamination, it will be detected by the instrumentation. In addition, the history of the building and samples taken to date indicate that the contamination comes from the surface inward, and the highest levels are on the surface. Therefore, using conservative estimates of total contamination (surface plus embedded) based on the survey results and assuming all of the contamination is on the surface provides a more conservative result in the air model. Beryllium controlled and regulated areas will be closed before demolition. Containerized chemicals and liquid PCBs will be removed before demolition. RCRA permitted and interim status units will be closed in accordance with the 776/777 DOP before demolition. Asbestos will be removed and certified in accordance with State regulations before demolition.
3	Data quality objectives are not clearly defined within the document to determine the goals for in-process characterization and final characterization. Please incorporate the data quality objectives into the DOP. Without clearly defined revised objectives, it will be difficult for DOE and an independent third party to verify and/or validate if the characterization has been adequately performed.	Data quality objectives for characterization do not belong in the RFCA decision document for decommissioning. The DQOs will be addressed in the project-specific characterization plan, and the basis for these DQOs will be the quantitative commitment of less than $1/100^{th}$ of the regulatory limit at the fence line. As indicated in Section 1.3 of Appendix I, it is anticipated that the public will be interested and involved in the project-specific characterization plan.

City of Broomfield, Shirley Garcia, June 3, 2003		
Cmt. #	**Comment**	**Response**
4	*"The measurements that will be performed during final characterization will be total surface contamination".* Broomfield does not agree with the previous statement of utilizing total surface contamination to determine the final characterization of the building. Clarify how internal and surface contamination will be factored into the air model to determine the extent of release of contaminants into the air and the risk to the worker and the collocated worker.	A characterization plan is currently being prepared and that plan will outline methods to assess embedded contamination. It is anticipated that embedded contamination will be addressed during in-process characterization and detailed in the final characterization report. The instruments that have been used and will continue to be used are gamma radiation detection instruments. If there is embedded contamination, it will be detected by the instrumentation. In addition, the history of the building and samples taken to date indicate that the contamination comes from the surface inward, and the highest levels are on the surface. Therefore, using conservative estimates of total contamination (surface plus embedded) based on the survey results and assuming all of the contamination is on the surface provides a more conservative result in the air model.
5	Assessment of soil surrounding the project is not clearly defined within Appendix I of the Demolition Plan. The revision only addresses an assessment of the soils to ensure the project contribution to soil contamination is a low as reasonable achievable. Identify the objectives to assess the impact to surrounding soils. The document should identify the objectives and thresholds for the assessment of the soils along with the corrective actions if potential triggers in the soil are reached. ACM, beryllium, or any other potentially remaining contaminants in the facility or remaining sections of the facility should also be evaluated in the soils. If surrounding soils are contaminated, identify the corrective actions to remediate the contaminated soils or to ensure particulate matter is not re-suspended by wind to pose a risk to workers, collocated workers, or to the environment.	The soil surrounding the project will not specifically be addressed by this document, except with respect to the project's potential in impact the surrounding soils. The final air dispersion model evaluation will be used to evaluate the Project's potential to impact the surrounding soils. Some preliminary soil sampling will be conducted in accordance with the Industrial Area Sampling Analysis Plan to establish a baseline prior to initiating demolition. The objective of this sampling and air modeling is to ensure that the surrounding soils are minimally impacted by the demolition activities. Once the demolition is complete, ER will evaluate the Individual Hazardous Substance Sites and complete the necessary remediation in accordance with the ER RSOP. Beryllium controlled and regulated areas will be closed before demolition. Containerized chemicals and liquid PCBs will be removed before demolition. RCRA permitted and interim status units will be closed in accordance with the 776/777 DOP before demolition. Asbestos will be removed and certified in accordance with State regulations before demolition.

City of Broomfield, Shirley Garcia, June 3, 2003		
Cmt. #	**Comment**	**Response**
6	Independent Verification and Validation (IVV) Section 4.7 of the B776/777 DOP states "An independent party, selected by DOE, will perform a verification assessment of the final survey methodology. This assessment will include a review of survey procedures, survey instrument calibration and operation procedures, and the Pre-Demolition Survey Plan. Also, the independent party may obtain additional survey measurements for comparison with the RFETS measurements to ensure proper correlation of survey data." Broomfield understands the facility will not be free-released, but is convinced of the importance of having a third party independently review the final characterization of the building. The independent verification and validation should included assessment of the methodology and procedures of the characterization, review the of demolition survey plan to include both external and internal contamination, and additional survey measurements. The review can compare Rocky Flats Environmental Technology Site (RFETS) measurements and survey data for proper verification and validation of the building characterization. The IVV will ensure RFETS calculations are correct therefore ensuring input into the air quality modeling is sufficient to protect surrounding communities, air quality, and risk to workers and collocated workers.	A minor modification of the original DOP was approved on June 10, 2003. The independent verification section was not modified with respect to conducting independent verification. Independent verification will be conducted under a separate plan that will detail the process to be used. Just as characterization details are not provided in the DOP, the independent verification details cannot be included in the DOP because it will depend on the characterization process used (which is being developed), and the final status of the facility.
7	Broomfield has voiced its concerns pertaining to the need to have an IVV performed for B776/777 to ensure the accuracy of the decontamination and characterization of the facility. Revise the B776/777 DOP to include modified IVV objectives. The IVV should also include an independent review for all the constituents of concern, not just radionuclides. Broomfield committed to work with the Site during the development of the IVV for Type II or Type III buildings. We received a final IVV Plan from the Site and we were not provided the opportunity to comment on the plan. We once again commit to work with the DOE to draft objectives for an IVV for B776/777.	A minor modification of the original DOP was approved on June 10, 2003. The independent verification section was not modified with respect to conducting independent verification. Independent verification will be conducted under a separate plan that will detail the process to be used. Just as characterization details are not provided in the DOP, the independent verification details cannot be included in the DOP because it will depend on the characterization process used (which is being developed), and the final status of the facility.

City of Broomfield, Shirley Garcia, June 3, 2003		
Cmt. #	**Comment**	**Response**
8	Demolition Methodology Per Appendix I, there are three potential demolition scenarios. The methodology identifies decontamination, removal, and a situation where decontamination/removal is not feasible, therefore encapsulants are applied and the area is delineated with paint prior to demolition. Broomfield is concerned with 3.0 of Appendix I, page 14 which identifies the general decision-making process to determine removal or use of fixatives and encapsulants for contaminated areas. The document states: *In balancing the worker safety, environmental and human health protection, and cost/schedule, it is currently conceived that removal....* • *The lower half of walls with low contamination will be encapsulated.* Clarify when any contaminated area will be allowed to remain during the building demolition if it does not jeopardize the integrity of the facility. We understand it is not feasible to decontaminate some areas within the facility due to the physical nature of the contaminated material, such as cinder block. We also understand it is not feasible to remove contaminated areas if they are integral sections of the building that maintain the integrity of the facility. Broomfield does not support the above rational for allowing contaminated sections to remain if they can be decontaminated or removed prior to demolition. We do not oppose the rational to have a dirty demolition, but what we are asking is that contaminated areas be minimal during the demolition to prevent potential increased impacts to the environment, workers, and collocated workers.	The decisions for each action (decontamination, encapsulation, and/or removal) are complex. If the action (decontamination and/or removal) will not substantially reduce the overall source term to the immediate and collocated worker, public and environment, then the area will be fixed or encapsulated. It would be inappropriate to subject the workers to the risks associated with decontamination and removal, if there was no appreciable reduction in source term.

City of Broomfield, Shirley Garcia, June 3, 2003		
Cmt. #	**Comment**	**Response**
9	Please clarify the following items: • Identify thresholds for "high", "medium", and "low" contamination; • Identify the regulatory guidance or DOE guidance that defines the terms high, medium, and low; • Justify why floors with any level of contamination can not be decontaminated or removed; • Justify why walls are evaluated differently from the upper half and the lower half; • Justify why walls, if they are not load bearing walls, or constructed of cinder block, can not be decontaminated or removed.	This section of the DOP was written to give the reader a conceptual, simplified view of the preparation of the facility for demolition. There are no levels or definitions for high, medium, or low. These levels cannot be defined because it is a process decision based on balancing risk to workers and the environment. The subjective nature of the section is predicated on meeting the quantitative commitment of less than $1/100^{th}$ of the regulatory limit at the fenceline. The decisions for each action (decontamination, encapsulation, and/or removal) are complex. If the action (decontamination and/or removal) will not substantially reduce the overall source term to the immediate and collocated worker, public and environment, then the area will be fixed or encapsulated. It would be inappropriate to subject the workers to the risks associated with decontamination and removal, if there is no appreciable reduction in source term. The decisions will be made by D&D management with radiological engineering and air quality input. The walls are divided into to upper and lower because decontamination of the upper portion of a wall has more hazards due to the elevated work than decontamination of the lower part of a wall.
10	The contact record determining the decision to allow contaminated material to remain during demolition should be included in the close-out report along with the justification to not perform additional decontamination or removal. Broomfield does understand the need for a dirty demolition, but the contamination should be held to a minimal during demolition. Any contaminated material allowed to remain during the dirty demolition approach will contribute to additional contaminated waste piles being stored at the project, potential increased degradation of air and water quality, and increased risk to the general public and workers at the site.	Contact records may be used throughout the preparation of the facility for demolition. However, it is anticipated that Final Characterization Report will contain the bulk of the information with respect to final status of the facility prior to demolition and the nature and extent of the remaining contamination. The decisions for each action (decontamination, encapsulation, and/or removal) are complex. If the action (decontamination and/or removal) will not substantially reduce the overall source term to the immediate and collocated worker, public and environment, then the area will be fixed or encapsulated. It would be inappropriate to subject the workers to the risks associated with decontamination and removal, if there is no appreciable reduction in source term. The decisions will be made by D&D management with radiological engineering and air quality input.

City of Broomfield, Shirley Garcia, June 3, 2003		
Cmt. #	**Comment**	**Response**
11	Waste Pile Management • Section 5.2.1, of Appendix I states: *Limitations on waste piles will be established to ensure that building rubble is containerized in a timely manner. Fixatives or covers will be applied to waste piles when unattended and/or not in use to minimize dust (typically overnight).* Revise the document to include the criteria for selecting the location and management of the stockpile area for the contaminated waste. Revise the document to include the maximum volume to be stored in the stockpile along with the maximum storage time limit for waste storage. In addition, add language to state clean rubble should be transferred to the recycled concrete waste pile immediately so as not to commingle contaminated concrete and free-release concrete.	These demolition details will be included in the project-specific demolition plan prepared by the demolition contractor. Direct-loading of waste into the containers will generally not be possible due to the size of the waste containers and requirements for size reduction; however, direct-loading will be conducted when possible. Preliminary decontamination and demolition planning is based on shipping the structure as low level waste, which requires 400 to 500 cubic feet waste containers that are approximately 6 feet high and 8 feet by 10 feet. In addition, there are limitations with respect to the size of the waste piles due to the availability of space, and the need for open areas for equipment movement. Including such detailed information in the DOP would limit the demolition subcontractor ability to plan the work and utilize the work area. However, having the debris in waste piles that can be controlled through covering, fixatives, and surfactants is preferable to leaving the facility in an unstable configuration by stopping demolition activities to place the waste in containers. It is anticipated that none of the facility will be free-released. Waste pile criteria will be finalized and documented in work packages. CDPHE will have the opportunity to participate in work package review per the consultative process outlined in RFCA and in Section 11 of the DOP. A sentence was added to the DOP in Section 6.5 which says, "The planning of surface water controls will consider the area to ensure that the run-off is controlled adequately, and a process will be established to inspect the run-off controls during precipitation events during non-routine hours."

City of Broomfield, Shirley Garcia, June 3, 2003		
Cmt. #	**Comment**	**Response**
12	As a minimum the criteria identified for the selection of the waste storage area and the management of the stockpile area should be included within the document. Revise the document to include the following items: • Identify the drainage and how other means of discharge are controlled; • Identify that sufficient space is available for silt fences and berms to contain the waste piles; • Identify that the area needs to have a relatively level ground surface and an average slope less than 4 percent; • Identify that the area should be on an impervious pad; • Identify the storage area location in the B776/777 DOP and the inspection criteria for the waste storage area, both physical surveillance of the area and monitoring of accumulated liquids within the berms; • Identify the maximum amount of liquid allowed to be accumulated in the bermed area; • Identify the maximum volume to be stored in the waste/stockpile; • Identify the maximum time limit for waste to be stored in the waste/stockpile and how and when the time limit will begin for the debris; • Identify the maximum level of radionuclide activity to be stored outside in a waste/stockpile; • Identify the criteria for how soon surfactant will be applied to the stockpile; • Identify the required posting for the stockpiles; • Identify the Contingency Plan in the event of a major storm event and include holidays and weekends.	These demolition details will be included in the project-specific demolition plan prepared by the demolition contractor. Direct-loading of waste into the containers will generally not be possible due to the size of the waste containers and requirements for size reduction; however, direct-loading will be conducted when possible. Preliminary decontamination and demolition planning is based on shipping the structure as low level waste, which requires 400 to 500 cubic feet waste containers that are approximately 6 feet high and 8 feet by 10 feet. In addition, there are limitations with respect to the size of the waste piles due to the availability of space, and the need for open areas for equipment movement. Including such detailed information in the DOP would limit the demolition subcontractor ability to plan the work and utilize the work area. However, having the debris in waste piles that can be controlled through covering, fixatives, and surfactants is preferable to leaving the facility in an unstable configuration by stopping demolition activities to place the waste in containers. Waste pile criteria will be finalized and documented in work packages. CDPHE will have the opportunity to participate in work package review per the consultative process outlined in RFCA and in Section 11 of the DOP. In accordance with the Site Stormwater Pollution Prevention Plan and National Pollutant Discharge Elimination System Permit, the run-off associated with the project will be controlled. As indicated in Section 6.5 of Appendix I, "Enhanced controls may be implemented in the immediate work area where demolition is occurring to prevent release of dust control water." These controls will be established in conjunction with the surface water group during work planning, specifically completion of the environmental checklist.
13	Air Emissions Dust Control Plan Provide the data quality objectives for evaluating dust control during the demolition activities and storage of waste piles. Who will evaluate dust control activities and their effectiveness throughout the demolition activity? Will opacity criteria be utilized to evaluate the controls?	The use of opacity is being evaluated. However, due to the size of the project and the small amount of dust anticipated, it will most likely not be an effective method. The work area sampling will be used to evaluate the effectiveness of the dust controls. As indicated in Section 5.2.1 of Appendix I, "Dust control measures will be applied and evaluated for effectiveness throughout the demolition activity."

City of Broomfield, Shirley Garcia, June 3, 2003		
Cmt. #	**Comment**	**Response**
14	Air Monitoring The City of Broomfield requests enhanced air monitoring be performed during demolition of B776/777 to ensure there are no elevated releases of contaminants to the environment. During the February 24, 2003 Rocky Flats Coalition of Local Governments (RFCLoG) meeting, Mark Ferri committed to performing close-in monitoring to determine the impact to air quality. The revised language does not include close-in air monitoring. Appendix I discusses the present system currently in place at the site. The language in the document discusses performance monitors around the Industrial Area perimeter and the ambient air monitoring at the site boundaries. Clarify if close-in monitoring as Mark Ferri committed to perform will be implemented during the dirty demolition. Add an Air Monitoring section to the document to include the close-in monitoring. The Colorado Department of Public Health and the Environment (CDPH&E) also committed to perform additional air monitoring for the B776/777 demolition project. Add language to include CDPH&E's air monitoring sampling and analysis plan along with the corresponding data quality objectives.	Worker protection is addressed by several on-site programs and federal regulations. These worker protection requirements are not optional and are included in the Kaiser-Hill contract with significant penalties for noncompliance. Once the building decontamination and characterization are complete, a final air dispersion model run will be used to develop the final work area boundaries and worker protection requirements. The work area boundaries for the immediate worker and collocated work area will be established. These boundaries will be developed based on the regulatory protection factors for determining airborne postings (currently, 0.3 DAC for the collocated worker) and personal protection requirements. If the air model suggests the 0.3 DAC boundary is at 50 meters, then radiological engineering will place the work boundary greater than 50 meters. This level of conservatism will ensure that collocated workers will not exceed their administrative control level for site dose received. These work boundaries will continue to be evaluated throughout the demolition and adjusted as required, based on the results of the worker health and safety monitoring (including work area and lapel samplers). Project area air sampling and personnel monitoring will be used to verify that the project protection factors/controls are effective for the work area and environment. Based on the results of the work area and worker monitoring and the ambient conditions, the project controls may be increased or decreased, as necessary throughout the demolition project. State air monitoring has never been included in a DOP and is usually included in the annual revisions to the IMP. The following will be added to the IMP during the next revision cycle, "CDPHE or EPA will perform air monitoring during the B776/777 demolition. The type of monitoring will be planned and included in the IMP when the B776/777 demolition plan is complete and the Site monitoring is finalized."
15	Asbestos monitoring should also be included in the Air Monitoring section. Identify the sampling and monitoring plan for areas that contain ACM, which are in load-bearing walls or columns or joints and can not be removed prior to demolition.	As indicated in Sections 1.2 and 3.0 of Appendix I, asbestos will be abated prior to initiating demolition.

413

City of Broomfield, Shirley Garcia, June 3, 2003		
Cmt. #	**Comment**	**Response**
16	Beryllium monitoring should also be addressed within the Air Monitoring section of the B776/777 DOP. Per previous discussions with DOE and CDPH&E, demolition activities associated with other buildings containing beryllium contamination such as B865 and B883 will monitor the beryllium impacts to air quality. An evaluation of the impact to air quality from the two beryllium buildings will determine the need to monitor for beryllium during the B776/777 demolition. Please add language to the revised document to include the evaluation process and the data quality objectives to determine if sampling and monitoring for beryllium will be included in the sampling and analysis plan for B776/777.	As indicated in Sections 1.2 and 3.0 of Appendix I, beryllium areas will be closed prior to initiating demolition.
17	If the sampling and analysis activities and objectives are not included in the revision to the B776/777 DOP, Broomfield requests the Integrated Monitoring Plan be revised as soon as possible to reflect the requirements of additional project-specific air monitoring during the demolition activities. Broomfield would like to participate in the development of the Sampling and Analysis Plan (SAP), just as we have in the past for other building demolitions. We encourage the Site to meet with local governments and the regulators to finalize a B776/777 SAP.	This recommendation will be forwarded to the group responsible for the maintenance of the Integrated Monitoring Plan.

City of Broomfield, Shirley Garcia, June 3, 2003		
Cmt. #	**Comment**	**Response**
18	Radiological Protection and Control Please revise section 5.2.2, Radiological Protection and Control, to include language consistent with other site documents pertaining to the same protection of collocated workers. Broomfield appreciates the revisions made to clarify the controls to protect the worker and the collocated worker, but would like to see the following language included in the radiological protection and control section.	Worker protection is addressed by several on-site programs and federal regulations. These worker protection requirements are not optional and are included in the Kaiser-Hill contract with significant penalties for noncompliance. Once the building decontamination and characterization are complete, a final air dispersion model run will be used to develop the final work area boundaries and worker protection requirements. The work area boundaries for the immediate worker and collocated work area will be established. These boundaries will be developed based on the regulatory protection factors for determining airborne postings (currently, 0.3 DAC for the collocated worker) and personal protection requirements. If the air model suggests the 0.3 DAC boundary is at 50 meters, then radiological engineering will place the work boundary greater than 50 meters. This level of conservatism will ensure that collocated workers will not exceed their administrative control level for site dose received. These work boundaries will continue to be evaluated throughout the demolition and adjusted as required, based on the results of the worker health and safety monitoring (including work area and lapel samplers). Additional language was added to Appendix I in Section 4.1 to outline this process prior to the formal comment period.

City of Broomfield, Shirley Garcia, June 3, 2003		
Cmt. #	**Comment**	**Response**
19	To protect collocated workers in the Contaminant Reduction Zone/Radiological Buffer Zone (CRZ/RBZ) and project support zone, project perimeter, or work area, high- and low- volume air samples will be collected. A portable alpha analyzer will be used to determine whether an elevated sample result is due to naturally occurring radioactive material or radioactive COCs. If real-time results are required, a continuous air monitor will be used. If a confirmed sample result is greater than 30 percent of the derived air concentration (DAC), the following actions will be taken: • All activities will be immediately suspended, and the Project Manager or Field Supervisor, Project H&S Officer, Project Environmental Manager, and Radiological Safety will be notified. • Access to downwind areas will be restricted. • All personnel in the CRZ/RBZ and support zone will be moved to a safe upwind assembly area. • Based on sample and monitoring results, potential personal radiological exposure will be reviewed. • Based on the sample results, the area radiological postings, RWP, controls, and work practices will be reviewed and modified as necessary. Upon approval from the K-H Project Manager and the lead regulator (CDPH&E) or their designee, work activities will resume.	There is currently no instrumentation able to conduct real time air monitoring outdoors to accurately measure airborne concentrations required for protection of collocated workers. Worker protection is addressed by several on-site programs and federal regulations. These worker protection requirements are not optional and are included in the Kaiser-Hill contract with significant penalties for noncompliance.

City of Broomfield, Shirley Garcia, June 3, 2003		
Cmt. #	**Comment**	**Response**
20	Incidental Spill Response and Equipment Decontamination Add a section to the DOP to include actions to be taken in the event demolition equipment is contaminated. Clarify how often equipment will be surveyed, threshold limits for equipment, and where the equipment will be decontaminated. If contamination levels are greater than unrestricted release limits, the following actions should be taken: • All activities will be immediately suspended, and the Project Manager, Field Supervisor, Project H&S Officer, Project Environmental Manager, and Radiological Safety will be notified; • The source of the contamination will be identified and controlled; • The contaminated material or equipment will be contained, handled, and transferred in accordance with the RFETS Radiological Control Manual; • Based on the survey results, the area radiological postings, RWP, controls, and work practices will be reviewed and modified as necessary; Upon approval from the K-H Project Manager and the lead regulator (CDPH&E) or their designee, work activities will resume.	Demolition equipment will be surveyed in accordance with site procedures, Unrestricted Release of Property Material, Equipment, and Waste, PRO-141-RSP-09.01. It is not anticipated that work activities will cease if contamination gets on the equipment; it will depend on the amount and location of the contamination.

City of Broomfield, Shirley Garcia, June 3, 2003		
Cmt. #	**Comment**	**Response**
21	Add a section to the document to include incidental spill response. The potential for spills or leaks from heavy equipment should be addressed within the revised document. The potential types of spills should be identified along with the criteria that must be met prior to release response actions and post-incidental spill response.	B776/777 Project manages all spills in accordance with the Chemical Management Manual, 1-MAN-019-CMM-001, which requires spill notification within 24 hours and cleanup (See Chapter 10.3.2). This is an ARAR and response and notification are required actions.
22	Water Management Broomfield continues to be concerned with the work planning and execution of protecting surface water from contaminated groundwater or erosion from contaminated soils in the area. The B776/777 DOP states Environmental Restoration (ER) will begin remediation of soils, groundwater, and surface water contaminated as a result of building operations. The document does not address the potential to encounter contaminated groundwater in this area, nor does it identify the contaminants of concern. The B776/777 DOP is not specific enough to address the potential degradation of surface water. The "Surface Water Management Practices" section is generic to the site and not explicit to the B776/777 project. If the specific constituents of concern and groundwater plumes are known, they should be addressed in the plan. In addition, the plan does not address how run-on and run-off will be controlled during the storage of contaminated stock piles for an undefined amount of time. Revise the document to identify the criteria for controlling run-on and run-off during the project.	Section 6.6 in Appendix I indicates, "The levels of contamination in groundwater surrounding and beneath the footprint of the Building 776/777 Closure Project vary significantly among the sample points. The principal region of higher levels of groundwater contamination in this area is known as the "Industrial Area (IA) Plume." [1] The IA Plume is believed to result from contamination migrating from multiple Individual Hazardous Substance Sites (IHSSs). Its principal constituents are three volatile organic compounds (VOCs): trichloroethene, tetrachloroethene, and carbon tetrachloride. IHSS 118.1, located immediately north of the building, is the likely source of carbon tetrachloride contamination that exceeds RFCA Tier I Action Levels in groundwater at the northwest portion of the building. Sources of the IA plume are not well known, and the effort to determine the sources is underway[2]. In the event groundwater is encountered during facility demolition, it will be removed, as necessary to characterize and remediate the interior surfaces of the building, specifically the basement, sumps and buried equipment pits. Samples will be collected as necessary to determine the disposition pathway for the pumped groundwater. If the water is contaminated, but there is no threat to surface water protection standards, the groundwater may be left in the subsurface structure with controls sufficient to protect the health and safety of workers and the public until remediation during ER. If the water is contaminated and is a threat to surface water protection standards, the water will be pumped to a treatment facility until remediated during ER. Project-specific controls will be detailed in the Contractor Demolition Plan and work package(s) for the demolition activity."

[1] Integrated Monitoring Plan Background Document, FY 2000, September 1999; and the 1999 Annual RFCA Groundwater Monitoring Report, Figure 8-1, Monitoring Well Locations, East Industrial Area VOC Plume.

[2] Sampling and Analysis Plan for Groundwater Monitoring of Industrial Area Plume, Rev. 1, 01-RF-00907, PADC-2001-00576.

City of Broomfield, Shirley Garcia, June 3, 2003		
Cmt. #	**Comment**	**Response**
23	Surface water and groundwater information such as depth to groundwater, contaminants of concerns, and plume migration should be added to the surface water and groundwater sections. A map should be included to identify the location of the B776/777 D&D groundwater wells or any additional surface water points of evaluation	Surface water and groundwater monitoring will be conducted in accordance with the Integrated Monitoring Plan, which the communities are involved in on a quarterly basis. As indicated in Appendix I, Section 6.5, "Surface water monitoring will be conducted in accordance with the Site IMP. Additional performance monitoring stations will be installed, as necessary, based on activity-specific assessments performed by Site water quality Subject Matter Experts." Section 6.6 indicates "The Sampling and Analysis Plan (SAP) for the D&D Groundwater Monitoring of Buildings 707, 776/6777, 371/374, 865, and 883[3] describes the well installation, well development, and initial groundwater sampling activities planned for the Building 776/777 Closure Project during decommissioning." Appendix I has addressed the appropriate information through reference.
24	Add an appendix to the B776/777 DOP to include surface water management practices. The information can be used to develop activity-specific surface water management controls for the Building 776/777 demolition project. Broomfield believes the potential surface water management controls should be identified in the document due to the high potential for release of incidental water from the stored contaminated debris waste piles. Criteria for interceptor swales, diversion dikes or berms, and use of silt fences or straw bale dikes should be identified. The primary use, applications, design criteria, limitation and maintenance requirement of the different controls should be identified. Corrective actions for erosion or sediment build-up should also be included in the newly added appendix.	As indicated in Section 6.5, "During facility demolition, surface water run on/run off will be controlled using standard construction methods, including silt fences, hay bales, and diversion ditches per the Site Storm Water Pollution Prevention Plan." The criteria for these features is contained within that plan and incorporated into Appendix I through reference.
25	Applicable Or Relevant And Appropriate Requirements (ARARS) Revise the ARARs to reflect the CDPHE regulations that were adopted after 1999. Include an appendix to include the appropriate ARARs and identify the regulations and citations pertaining to the B776/777 project.	The original DOP was revised to add the CDPHE radiological regulations; this revision was completed through a minor modification, approved June 10, 2003. A draft of the minor modification was distributed to the stakeholders on May 20, 2003 at the ER/D&D meeting.

[3] Sampling and Analysis Plan (SAP) for the D&D Groundwater Monitoring of Buildings 707, 776/777, 371/374, 865, and 883 (latest revision).

718

City of Broomfield, Shirley Garcia, June 3, 2003		
Cmt. #	**Comment**	**Response**
26	Ecological Impacts Broomfield appreciates the revision, section 6.4, Migratory Bird Clearance to address removal of nests. Revise the document to include language stating that a NEPA checklist will be completed prior to demolition of the facility, which will evaluate the impact to migratory birds and to the preble's meadow jumping mouse. Also identify the criteria for short term re-vegetation to prevent erosion in the B776/777 area until Environmental Restoration remediates the surrounding area.	A NEPA checklist is being prepared, which will ensure that these issues are addressed.
27	Project Mobilization, Site Preparation, and Demobilization Broomfield would like to commend Kaiser-Hill on the specific methodologies and plans for mobilization, site preparation, and demobilization that were included in 371 DOP. To provide consistency with other DOPs, revise the B776/777 DOP to incorporated mobilization, site preparation, demolition, removal of the structure and tanks, and demobilization. Include a map to identify the location of the areas, specifically the stockpiles.	The same information contained in the 371 DOP has been incorporated in Appendix I; however, the information has been streamlined to facilitate readability and eliminate redundancies. Section 5.1, sixth paragraph contains the traffic pattern information similar to the other DOPs. Section 5.1, third paragraph contains the site mobilization and preparation information similar to the other DOPs.
28	Long-term Environmental Stewardship The Building 730 underground plenum deluge tanks will be emptied of liquids and sludges and the contamination will be fixed per the plan. The tanks contain solvents, therefore the system should be classified as a RCRA unit. Clarify if the tanks are considered RCRA regulated tanks and identify the closure process for the deluge tanks. Also identify the contamination levels of the tanks and comparison to RFCA standards or action levels.	The original DOP was revised to indicate that Building 730 would be transferred to ER for disposition once the mechanical and electrical systems are removed, the sludges and liquids removed, and the contamination fixed. This revision was completed through a minor modification, approved June 10, 2003. A draft of the minor modification was distributed to the stakeholders on May 20, 2003 at the ER/D&D meeting. These tanks are not RCRA and two of the tanks were dispositioned under a previous action.

City of Broomfield, Shirley Garcia, June 3, 2003		
Cmt. #	**Comment**	**Response**
29	Footing drains and sumps are not addressed in section 7.9, Transition to Environmental Restoration. Broomfield is concerned the project is located in the vicinity of the Industrial Area Plume and the Carbon Tetrachloride Plume and the stewardship implications have not been evaluated. This document does not address the environmental long-term stewardship implications if the footing drains, sumps, tanks, or foundation slabs are left in place. Broomfield has always voiced a concern about performing an adequate short-term and long-term stewardship evaluation to determine impacts to water quality if structural material or tanks remain in place. Without a final water balance report or final land configuration plan, we do not understand how an adequate long-term stewardship evaluation can be made regarding the footing drains, sumps, tanks, or slabs. We recommend an environmental section be included in the document to discuss the stewardship implications of the project, the stewardship evaluations, and the rational for the evaluations.	The following was added to Section 7.0, "Footing drains will be dispositioned based on input and guidance from the Environmental Restoration (ER) team, taking into account the post-closure water balance and movement of groundwater and contaminants. If the decision is made to obstruct flow through the footing drains, several areas of the drain will be excavated and backfilled."
30	The document states *"Before making the decision to leave any unrestricted-release slabs in place, Building 776/777 project management will coordinate with ER on their soil sampling and remediation plans. ER will characterize and remediate as necessary the soils under the building and associated .....following the established RFCA soil action levels.* Broomfield does not approve of allowing contaminated slabs that are not within deep basements to remain in place. The wording in Appendix I implies unrestricted slabs will remain in place. Clarify the statement pertaining to the actions taken for slabs both within three feet of grade or below three feet of grade. Broomfield requests the stewardship evaluation criteria and data be included in the revised B776/777 DOP to identify the stewardship evaluation of the project. With residual contamination and additional risk associated with this project, the document does not incorporate the inherent long-term stewardship uncertainties associated with its demolition approach.	This sentence was trying to convey that if there is going to be a time gap between decommissioning and ER activities, the projects will coordinate. Decommissioning does not want to remove a slab before ER is ready to perform the necessary characterization and remediation. This language is identical to the language in the Facility Disposition RSOP and other decommissioning decision documents. The sentence was removed from Appendix I. No slabs will remain in place for the B776/777 project. The basement or portions of the basement and/or footings that meet the unrestricted release criteria and are 3 feet below the final proposed grade may remain in place.

02h

City of Broomfield, Shirley Garcia, June 3, 2003		
Cmt. #	**Comment**	**Response**
31	Public Involvement Broomfield appreciates the effort the Site has taken to keep us informed of the 903 Pad activities through the daily activity reports. We would like to request once the project commences, the daily reports for the B776/777 demolition project be forwarded to us, so that we can keep abreast of the activities. B776/777 demolition poses a unique situation in which we all want to ensure protection of the environment, the workers, and the collocated workers. We appreciate the Site's commitment to work with us and keep the doors of communication open so that we can all work towards the same goal of a safe clean-up and closure at Rocky Flats.	The Site is committed to keeping the public stakeholders aware and up-to-date on the projects; however, it is unknown if daily reports will be developed during demolition. The community advisory program, the RFCLoG and RFCAB meetings and the ER/DD status meetings will continue to be opportunities to share and exchange information.

421

RFCAB, Victor Holm, June 5, 2003		
Cmt. #	**Comment**	**Response**
1	Decontamination of Highly Contaminated Interior Walls During the informal comment period, the RFCAB Closure Projects Committee raised the issue of demolishing a highly contaminated interior wall inside localized containment. The purpose would be to demonstrate the effect of such activity on air quality and potential worker exposures. Therefore, we were encouraged to learn on May 1 that the B771 project has already performed this kind of test on an interior wall in that building and that the B776/777 project will be evaluating the results for work planning purposes. RFCAB would like to be informed of how these results will be applied to planning for the demolition of B776. Depending on the outcome of the B771 demonstration, RFCAB believes there may be value in conducting tests of contaminated, non-load-bearing walls inside B776 as well and that this data should be used to evaluate the path forward on highly contaminated load bearing walls.	The 771 Project has recently completed the removal of an interior wall, and the 776 Project is in the process of evaluating demolition of a contaminated interior wall. This information will be used for work planning purposes, but may have limited applicability to the air model. Lessons learned are always incorporated at RFETS; it is a requirement of the Integrated Safety Management Program. It is anticipated that the B771 information as well as information from the B371 and B707 projects and activities within B776 will be used to plan the decommissioning activities. B865 has recently performed a small scale demonstration of slab removal using no dust control. The contaminants (uranium and beryllium) were fixed. Although the contaminants are not the same, the information is being evaluated by the B776 project and incorporated into the planning efforts.
2	Selective Removal under Localized Containment RFCAB understands that the demolition plan mentions removal of high contamination found in ceilings and walls, but RFCAB believes the demolition plan should more clearly state this as a project goal. In principle, RFCAB supports selective removal of high contamination embedded in non-load-bearing walls, both interior and exterior as well as ceiling and roof, prior to demolition, if it can be done safely. The site should also consider doing such work under localized containment, as in the B771 test in number 1 above, if feasible.	The selective removal of highly contaminated portions of floors, walls, and ceiling is an integral part of Alternative 4 and removal will be considered during the preparation of the facility. It is unclear how this point can be made more completely. Appendix I contains 13 references to the removal with respect to Alternative 4. The decisions for each action (decontamination, encapsulation, and/or removal) are complex. If the action (decontamination and/or removal) will not substantially reduce the overall source term to the immediate and collocated worker, public and environment, then the area will be fixed or encapsulated. It would be inappropriate to subject the workers to the risks associated with decontamination and removal, if there is no appreciable reduction in source term. The decisions will be made by D&D management with radiological engineering and air quality input.

22h

RFCAB, Victor Holm, June 5, 2003		
Cmt. #	**Comment**	**Response**
3	Close-in Air Monitoring RFCAB feels the demolition plan should clarify the site's commitment to do close-in real time air monitoring as well as more sensitive monitoring within and surrounding the B776 project boundary. This would include, but not necessarily be limited to, air sampling performed using work area air samplers, lapel air samplers and portable alpha analyzers. Site managers have stated that worker health and safety monitoring will also provide immediate feedback to the project on whether releases to the environment are being kept as low as reasonably achievable. Therefore, RFCAB believes it is appropriate to include this type of monitoring in a CERCLA decision document.	There is currently no instrumentation able to conduct real time air monitoring outdoors to accurately measure airborne concentrations required for protection of collocated workers. Worker protection is addressed by several on-site programs and federal regulations. These worker protection requirements are not optional and are included in the Kaiser-Hill contract with significant penalties for noncompliance. Section 4.1 of Appendix I contains the following, "Based on these results, work area boundaries and personnel protection equipment will be established in the health and safety plan, radiological work permits (RWPs), and job hazard analysis. Project area air sampling and personnel monitoring will be used to verify these protection factors/controls are effective. Based on the results of this monitoring and the ambient conditions, the controls may be increased or decreased, as necessary throughout the demolition project." This language outlines the process that will be used during worker monitoring. The requirements for worker monitoring are documented in the site Radiation Protection Program, which is referenced in Appendix I.

RFCAB, Victor Holm, June 5, 2003		
Cmt. #	**Comment**	**Response**
4	Protection of Collocated Workers The demolition plan states an objective of limiting project emissions such that a member of the general public receives no more than 1% of the 10 mrem dose allowable for radionuclides under the National Emission Standards for Hazardous Air Pollutants. The plan should also describe: • The emissions objective for protecting collocated workers • The specific measures that will be taken in order to meet this objective, to include a radiological buffer zone established in downwind areas to minimize worker exposures • An early warning system for protecting collocated workers • How the Site plans to achieve ALARA	Worker protection is addressed by several on-site programs and federal regulations. These worker protection requirements are not optional and are included in the Kaiser-Hill contract with significant penalties for noncompliance. Once the building decontamination and characterization are complete, a final air dispersion model run will be used to develop the final work area boundaries and worker protection requirements. The work area boundaries for the immediate worker and collocated work area will be established. These boundaries will be developed based on the regulatory protection factors for determining airborne postings (currently, 0.3 DAC for the collocated worker) and personal protection requirements. If the air model suggests the 0.3 DAC boundary is at 50 meters, then radiological engineering will place the work boundary greater than 50 meters. This level of conservatism will ensure that collocated workers will not exceed their administrative control level for site dose received. These work boundaries will continue to be evaluated throughout the demolition and adjusted as required, based on the results of the worker health and safety monitoring (including work area and lapel samplers). Additional language was added to Appendix I in Section 4.1 to outline this process prior to the formal comment period.
5	Wind Speed Criteria The wind speed criteria in the demolition plan appears to be no different from that used to govern work activities elsewhere on site. Since this project is a special case, the demolition plan should give consideration to using lesser wind speeds as work stoppage criteria for B776. It should be demonstrated that the emissions controls being employed on the project are protective up to the wind speed criteria ultimately chosen.	These are the standard site restrictions, which are based on industrial safety requirements.. If the dust cannot be controlled, project operations will cease, regardless of the wind speed. As indicated in Section 5.2.1, "Dust control measures will be applied and evaluated for effectiveness throughout the demolition activity." Dust control (including wind speed) will be finalized and documented in work packages. CDPHE will have the opportunity to participate in work package review per the consultative process outlined in RFCA and in Section 11 of the DOP.

RFCAB, Victor Holm, June 5, 2003		
Cmt. #	**Comment**	**Response**
6	Explosives At the May 1 RFCAB meeting, project managers stated that they may seek approval from CDPHE for limited use of explosives in B776 for such purposes as concrete footings and thick walls that have been decontaminated to meet unrestricted release criteria, etc. If this is the plan, the public should have a chance to comment on it. RFCAB recommends that the plan add clarifying language stating what the explosives would be used for. The commitment should also be made that no explosives will be used for overhead pipes in this building. Where explosives are being contemplated as a means to soften thick concrete walls, the site should explore alternative approaches such as Cardox, a compressed gas that may be useful for this purpose.	There is a potential to use explosives in the vaults and the footings under the building; however, this is just a possibility that is so conceptual it has not been included in Appendix I. The use of explosives will be predicated on the ability to decontaminate the vaults to unrestricted release and dependent on the potential soil contamination. In both instances, the explosives would be used to "soften" the structures – not destroy the structures – similar to the use of explosives in Building 886. There is no intention to use explosives for overhead pipe removal in Building 776. As indicated above, explosives would only be used in areas that met unrestricted release. If explosives are pursued for any activities in B776 the DOP would have to be modified. The B776 DOP does not currently address the use of explosives or reference either of the RFCA Standard Operating Protocols, which cover the use of explosives.
7	Waste Pile Management The plan states that "limitations on waste piles will be established to ensure that building rubble is containerized in a timely manner." These limitations should be more clearly described in the document, including the maximum number of piles, the maximum volume and specific time limits. The plan should state that the site will use direct-loading of waste into containers to the extent feasible. It must be assured that the waste piles will not exceed a size that can be controlled via the dust control methods being proposed and demonstrated in number 5 above. It must also be assured that the waste piles will not exceed a volume whereby precipitation overland flow can be controlled using secondary containment.	These demolition details will be included in the project-specific demolition plan prepared by the demolition contractor. Direct-loading of waste into the containers will generally not be possible due to the size of the waste containers and requirements for size reduction; however, direct-loading will be conducted when possible. Preliminary decontamination and demolition planning is based on shipping the structure as low level waste, which requires 400 to 500 cubic feet waste containers that are approximately 6 feet high and 8 feet by 10 feet. In addition, there are limitations with respect to the size of the waste piles due to the availability of space, and the need for open areas for equipment movement. Including such detailed information in the DOP would limit the demolition subcontractor ability to plan the work and utilize the work area. However, having the debris in waste piles that can be controlled through covering, fixatives, and surfactants is preferable to leaving the facility in an unstable configuration by stopping demolition activities to place the waste in containers. Waste pile criteria will be finalized and documented in work packages. CDPHE will have the opportunity to participate in work package review per the consultative process outlined in RFCA and in Section 11 of the DOP.

RFCAB, Victor Holm, June 5, 2003		
Cmt. #	**Comment**	**Response**
8	Shutdown Authority The plan should clarify who has project shutdown authority (both entities and personnel) and the criteria by which it would be exercised.	Stop work authority is addressed by an internal site procedure: Stop Work Action, 1-V10-ADM-15.02. This procedure provides instructions for implementing a Stop Work action when unsafe or unacceptable work conditions are identified. As indicated in the procedure, "This procedure applies to all work at Rocky Flats Environmental Technology Site (Site). It is to be used where there is **unsafe or unacceptable work, imminent danger to workers...**" Worker protection is addressed by several on-site programs and federal regulations. Worker health and safety requirements are not optional and are included in the Kaiser-Hill contract with significant penalties for noncompliance. However, a reference to this procedure has been added to Appendix I in Section 5.2.3, which says, "Stop work will be implemented in accordance with the Stop Work Action procedure, 1-V10-ADM-15.02; all employees at RFETS are responsible for stopping work when unsafe conditions are identified."
9	Characterization • There must be independent review (IVV) of the final building characterization. • Although the characterization strategy has yet to be finalized, the demolition plan should at a minimum commit to additional core sampling and investigations of other inaccessible areas. Such sampling needs to include other contaminants besides radionuclides, such as beryllium. All of the above would reduce both uncertainties and public concern associated with unidentified contamination in the building.	A minor modification of the original DOP was approved on June 10, 2003. The independent verification section was not modified with respect to conducting independent verification. Independent verification will be conducted under a separate plan that will detail the process to be used. Just as characterization details are not provided in the DOP, the independent verification details cannot be included in the DOP because it will depend on the characterization process used (which is being developed), and the final status of the facility. A characterization plan is currently being prepared and that plan will outline methods to assess embedded contamination. It is anticipated that embedded contamination will be addressed during in-process characterization and detailed in the final characterization report. The instruments that have been used and will continue to be used are gamma instruments. If there is embedded contamination, it will be detected by the instrumentation. In addition, the history of the building and samples taken to date indicate that the contamination comes from the surface inward, and the highest levels are on the surface. Therefore, using conservative estimates of total contamination (surface plus embedded) based on the survey results and assuming all of the contamination is on the surface provides a more conservative result in the air model.

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Date: 7/31/03 (C)

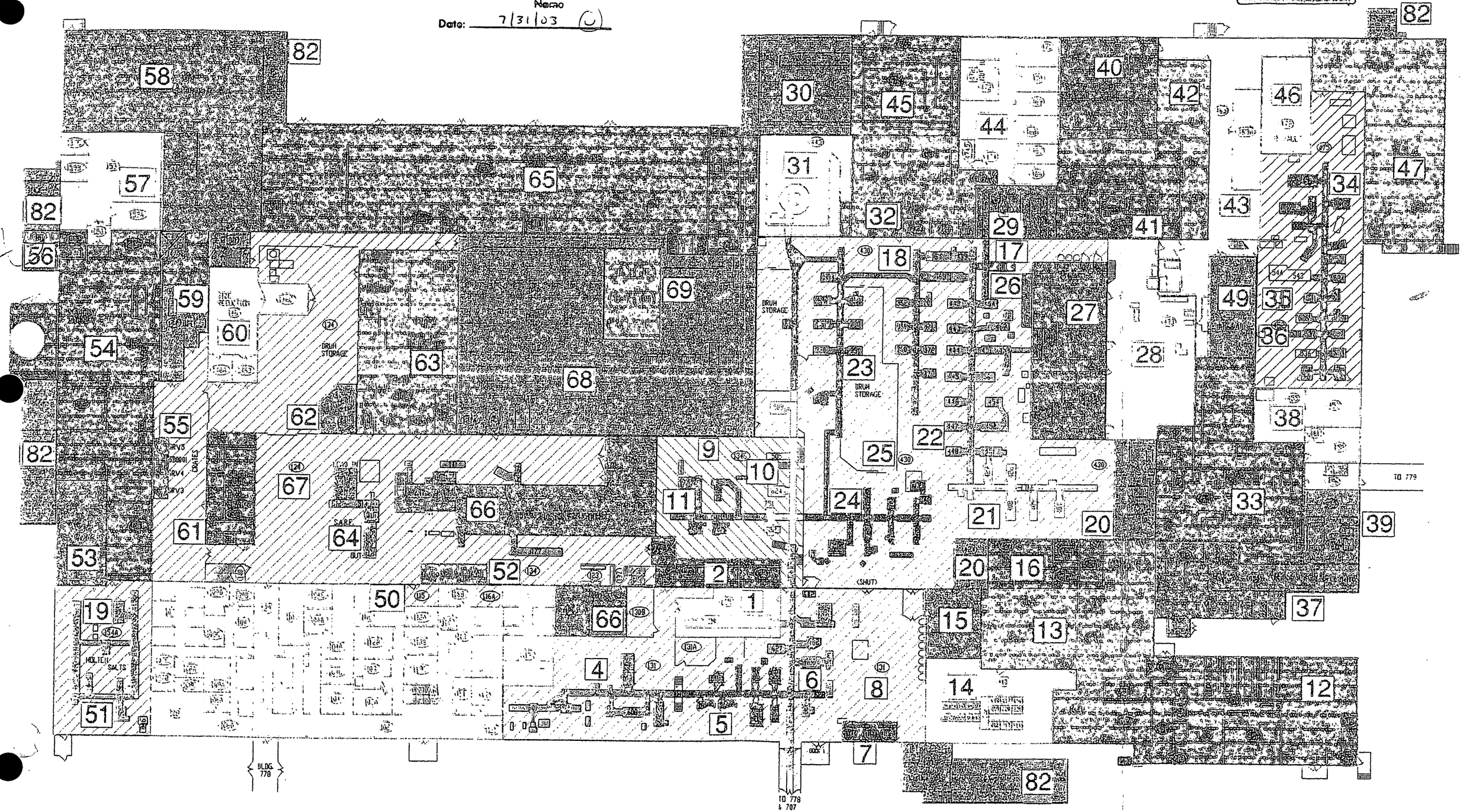


FIGURE 4

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SET 3
SET 48
SET 66
SET 70
SET 71
SET 72
SET 73
SET 80
SET 82
SET 83

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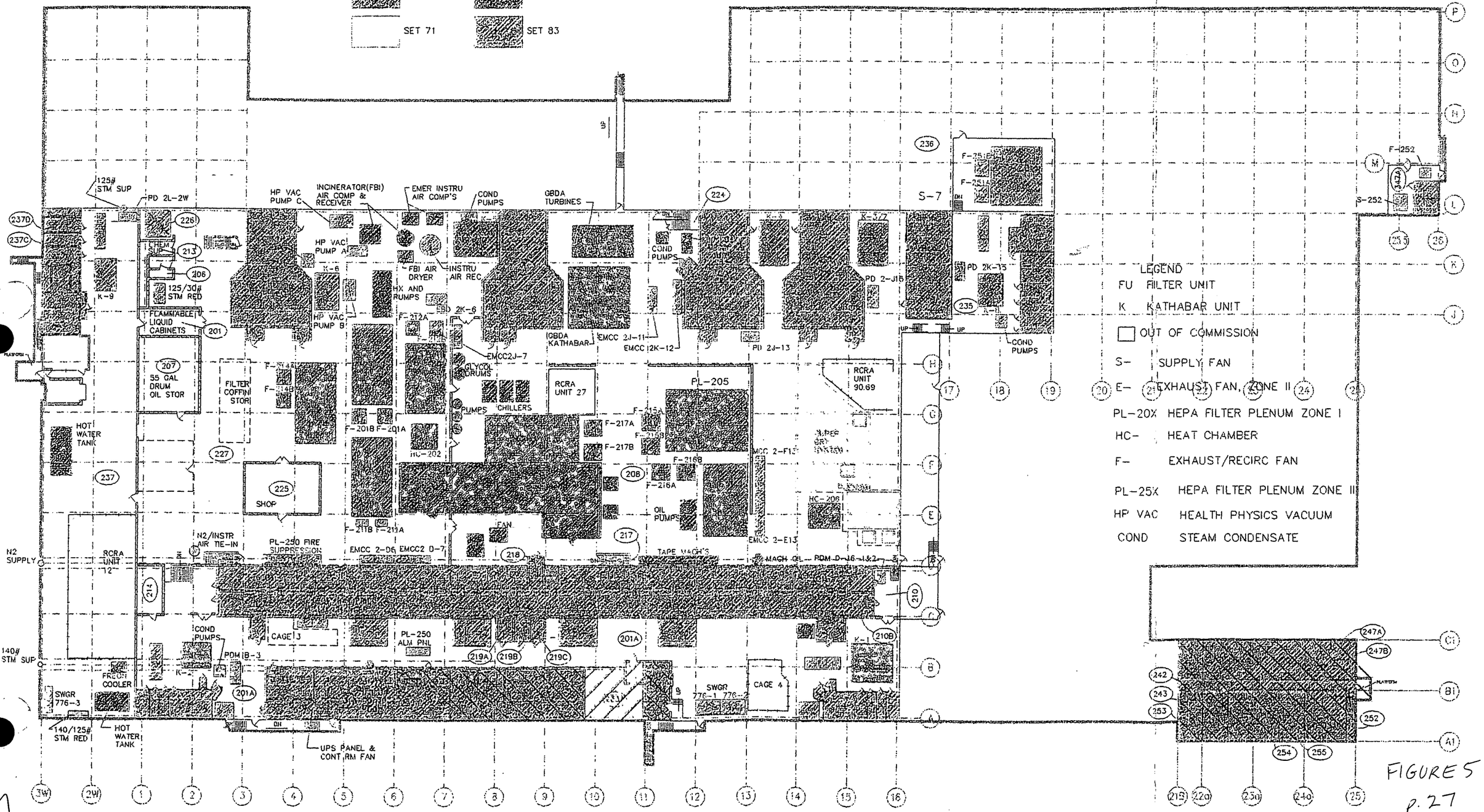
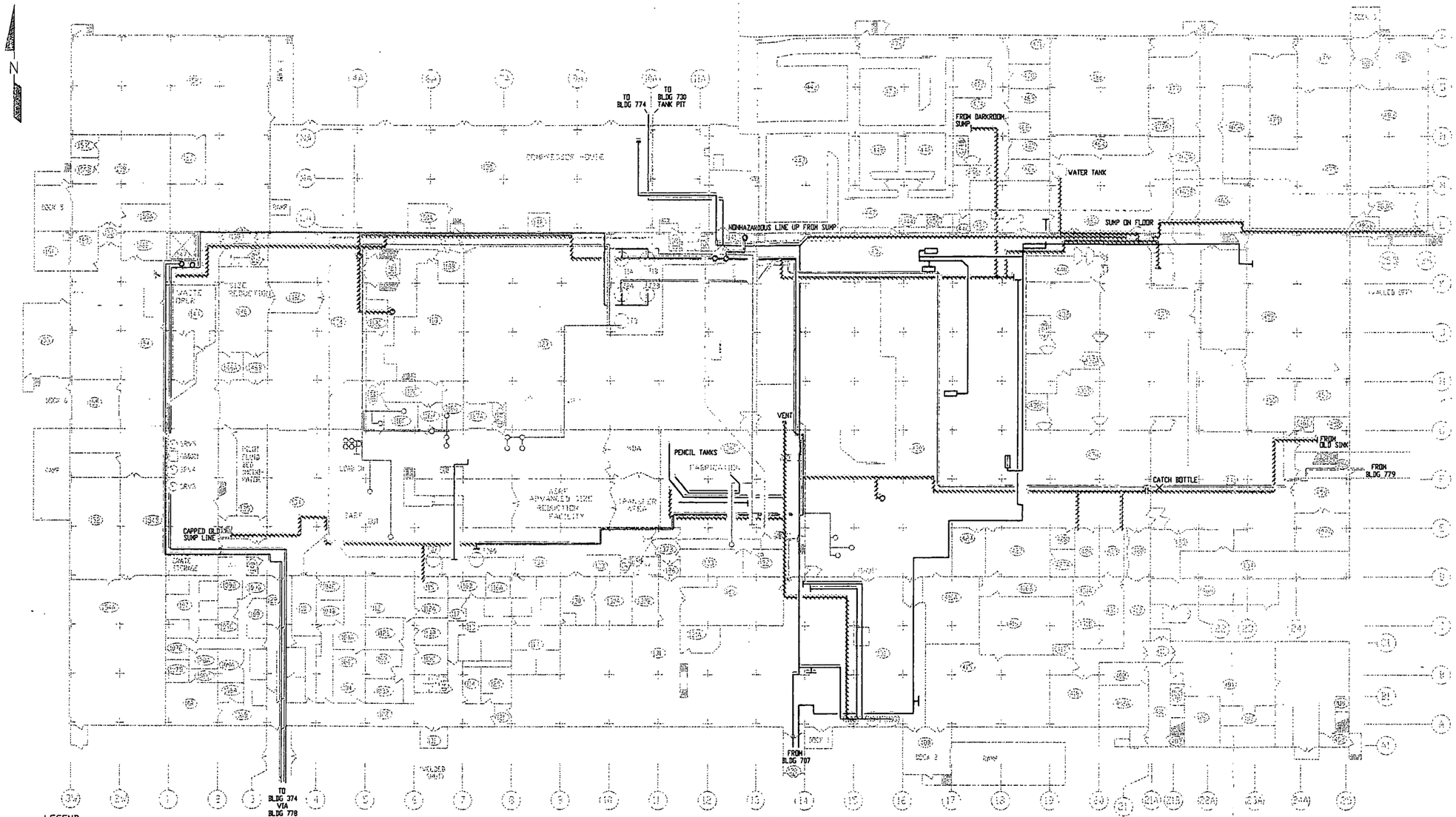


FIGURE 5
p. 27

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COLOR COMPARATOR

LEGEND:

○	(OPEN) INDICATES LINE FROM SECOND FLOOR
⊖	(FILLED) INDICATES LINE IN FROM BASEMENT

LINE COLOR	TANK SYSTEM	PIPE COLOR	PIPE SIZE	PIPE LABEL
	OLD PROCESS WASTE LINES	WHITE W/PINK STRIPE	#6'	'PROCESS WASTE'
	PLENUM DELUGE (NOT RCRA REGULATED)	WHITE OR GRAY W/PINK STRIPE OR ALL GRAY	#6'	'PROCESSVASTE' OR 'FIREDELUGE'
	INLET TO T-1,T-2 TCA SYSTEM	GRAY METAL	#1'	'CONTAMINATED TRICHLORIETHANE' OR 'UNFILTERED TRIKE RETURN'
	OIL/CARBON TETRACHLORIDE SYSTEM (T-7, T-1103, 1104, 1106)	BLACK/BROWN/GRAY, WHITE IN RM 141	#1' AND #2'	RM 150 - 'TRICHLORIETHANE' RM 131, 134E & 430 'MACHINE COOLANT PUMPOUT'

LEGEND: CONTINUED

LINE COLOR	TANK SYSTEM	PIPE COLOR	PIPE SIZE	PIPE LABEL
	INLET TO T TANKS FROM B779	GRAY PLASTIC	#4'	'PROCESS WASTE'
	SRV3, SRV4, SRV5 TO T-TANKS (NONHAZARDOUS)	BLACK METAL	#1 1/2'	'PROCESS WASTE' BY SR5 'TREATABLE WASTE' BY DOCK 'PROCESS WASTE' BY ELEVATOR
	BALL MILL IN SRV TO SRV3, SRV4, SRV5 (NONHAZARDOUS)	BLACK METAL	#1 1/2'	'PROCESS WASTE'

LEGEND: CONTINUED

LINE COLOR	TANK SYSTEM	PIPE COLOR	PIPE SIZE	PIPE LABEL
	T-344 & T-345 TO T-360 & T-370	GRAY PLASTIC	#1 1/2'	'STEAM CLEAN'
	INLET TO T-TANKS	GRAY PLASTIC	#2', RM 134 #4', RM 134E (CHGS TO #4' AT JUNCTION OF LINE FROM RM 430) #6' - NORTH FROM RM 430	'PROCESS WASTE'

LEGEND: CONTINUED

LINE COLOR	TANK SYSTEM	PIPE COLOR	PIPE SIZE	PIPE LABEL
	T-TANKS OUTLET JOINS LINE FROM 771 VIA TUNNEL	GRAY PLASTIC FROM T-TANKS JOINS LINE FROM 771 BY ELEVATOR GRAY W/PINK TAPE	#6'	'PROCESS WASTE' 'TREATABLE WASTE'
	'REVERSE FLOW' LINE FROM 771 VIA TUNNEL	WHITE W/ PINK STRIPE TAPE	#6'	'REVERSE FLOW'
	INDICATES 'NONHAZARDOUS' LINES			

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SIZE		ISSUE
D	PLATE 1. BUILDING 776/777 PIPING, SET 78	

359

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