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DOE ORDER #5480.21
99-RF-01735

DIST.	LT	N
Crawford, A. C.	X	
Hamrick, J. C.	X	
Hickman, M. E.	X	X
Hoovler, G. S.		
Guthrie, C. L.		
Korenko, M. K.		
Dieter, T. J.	X	X
Jenkins, Ken		
Raish, S. C.		
Fitz, R. C.		
Hughes, F.	X	
Trice, K.	X	
Conilogue, M	X	X
Wolf, K. Z.		
Zbryk, K. O.	X	X
Whiting, J.		
Bracken, G.	X	
Reynolds, R.		
Schommer, R.	X	X
Mills, S.		
Zachary, M		
Grube, M.		
Schweinsberg	X	
CORRES.CON	X	X
Adm Rcrd/080	X	X
TRAFFIC		
PATS/T130G		

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IN REPLY TO RFP

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LTR APPROVALS:
Manager

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RF-46469(Rev.6/94)

May 24, 1999 99-RF-02061

John W. Whiting
779 Cluster PBS Manager
Kaiser-Hill
Rocky Flats Environmental Technology Site

REQUEST FOR MINOR MODIFICATION OF THE DECOMMISSIONING OPERATIONS PLAN (DOP) FOR THE 779 CLUSTER INTERIM MEASURE/INTERIM REMEDIAL ACTION - MEH-051-99

The purpose of this memorandum is to request notification to CDPHE of minor modifications to the 779 Cluster DOP. These minor modifications are as follows:

Eliminate all reference to the use of temporary units. The following statement: "Mixed waste generated from decommissioning operations will be stored in temporary units..." (Section 8.3) has been replaced with the statement: "Mixed waste will be stored in an area in compliance with ARARs for that area."

The statement: "Hazardous waste will be stored in an area in compliance with ARARs for that area." has been added to Section 8.4.

The word "microencapsulation" has been replaced with the word "macroencapsulation" throughout Section 9.1.2, *RCRA Closure Description Document*. Macroencapsulation is the identified UTS for radioactive lead (non-wastewaters).

Section 8.13; *Chemical Compliance Order on Consent*, has been deleted. The Building 776 Facility Group (which includes Building 779) was documented to CDPH&E as complete on October 8, 1999. Building 779 contains no exclusion areas granted under the Order, thereby eliminating the need for management of waste chemicals under said Order and/or all applicable requirements in the Colorado Hazardous Waste Regulations. Building 779 will manage waste chemicals in accordance with the ARARs identified in the 779 Cluster DOP.

The word(s) "excess chemicals" has been replaced with the word(s) "waste chemicals" in Section 8.9, *Waste Characterization*.

The following sentences have been added to Section 9.2.3, *Waste Treatment*: "In addition, hazardous waste fluorescent bulbs may be crushed in support of D&D activities. Remediation waste will be managed in accordance with 779 Cluster DOP ARARs.

Please contact myself or Kathy Zbryk at X6647 if you have any questions.

Mark E. Hickman

Mark E. Hickman
Integration Manager
779 Cluster Closure Project
Rocky Mountain Remediation Services

KZ/ras

Attachments:
Draft Ltr to State
Page Changes
Page Change Index

May 24, 1999

Mr. Steve Tarlton, Rocky Flats Cleanup Agreement Project Coordinator
Hazardous Materials and Waste Management Division
Colorado Department Public Health and Environment
4300 Cherry Creek Drive, South
Denver, Colorado 80222-1530

FROM: DOE

Subject: Notification of Minor Modification of Decommissioning Operations Plan for the 779 Cluster Interim Measure/Interim Remedial Action (IM/IRA) Effective Date: February 6, 1998.

In accordance with the Rocky Flats Cleanup Agreement, Part 10, Changes to Work, Paragraph 127, DOE is providing written notice to CDPHE of its intent to make minor modifications to the approved Decommissioning Operations Plan for the 779 Cluster (779 DOP.) The changes identified in this letter are minor in nature and do not represent a major modification to the 779 DOP.

The first modification will delete the references to temporary units throughout the DOP. Also, the following statement, "*Mixed waste generated from decommissioning operations will be stored in temporary units...*"Section 8.3, has been replaced with the statement, "*Mixed waste will be stored in an area in compliance with ARARs for that area.*"

The second modification amends Section 8.4, by adding the statement, "Hazardous waste will be stored in an area in compliance with ARARs for that area."

The third modification modifies Section 9.1.2, by replacing the word "*microencapsulation*" with the word "*macroencapsulation*" throughout the Section. Macroencapsulation is the identified univeral treatment standard (non-waste water) for radioactive lead.

The fourth modification deletes Section 8.13, Chemical Compliance Order on Consent. The Building 776 Facility Group that includes Building 779, was completed by October 8, 1998 and contains no Exclusion Areas. Building 779 will manage waste chemicals in accordance with the ARARs identified in the 779 Cluster DOP.

The fifth modification modifies Section 8.9 by replacing the term *"excess chemicals"* with *"waste chemicals."*

The final modification adds the following sentences to Section 9.2.3, *"In addition, hazardous waste fluorescent bulbs throughout the 779 Cluster may be crushed in support of D&D activities. Remediation waste will be managed in accordance with the 779 Cluster DOP ARARs."*

If you have any questions in regard to these modifications, please contact Dave Nickless at Extension 5221.

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PAGE CHANGE SUMMARY

PAGE CHANGE	LETTER LOG NO	DATE	SUPERSEDES
PGC-001	MEH-023-98	May 12, 1998	Superseded by 002
PGC-002	MEH-080-98	December 7, 1998	
PGC-003	MEH-080-98	December 7, 1998	
PGC-004	MEH-051-99	May 24, 1999	

8.0 WASTE MANAGEMENT

Waste types that will result from the decommissioning of the 779 Cluster are radioactive, mixed, hazardous, toxic and solid waste. Waste generated as a result of decommissioning activities will be managed in accordance with relevant RFETS waste operations procedures. State and federal regulations and DOE Orders have been incorporated into the RFETS Waste Operations Procedures. The 779 Waste Management Plan provides the details associated with characterization, storage, disposal and overall waste management for the 779 Cluster. Table 8.2, Summary of Waste Management for the 779 Cluster, identifies the estimated volumes, types of waste anticipated, and the final dispositioning for the waste form.

8.1 TRANSURANIC WASTE

Transuranic waste is defined as waste that is contaminated with alpha-emitting transuranic radionuclides having half-lives greater that 20 years and concentrations greater than or equal to 100 nCi/gram at the time of assay. Transuranic waste, as defined, may result from the decommissioning of Building 779. Less than 5% of the radioactive waste resulting from decommissioning is expected to be greater than 100 nCi/gram. Duct and glovebox work activities may result in the production of TRU waste. TRU and TRU Mixed Waste will be generated, characterized and packaged in accordance with the RFETS TRU Waste Management Plan (WMP) and the RFETS WIPP Waste Characterization Quality Assurance (QA) Project Plan. The area located northeast of the Building 779 loading dock may be used to store full TRU waste shipping containers prior to movement to WIPP.

8.2 LOW LEVEL WASTE

Low level waste is defined as radioactive waste that is not classified as TRU waste, spent nuclear fuel, or by-product material as identified in DOE Order 5820.2A, Radioactive Waste Management. Low level waste contains less than 100 nCi/gram TRU radioactivity. Approximately 95% of the contaminated waste produced as a result of the 779 Cluster decommissioning activities are anticipated to be low level in nature. Based on economical and technical constraints, items will be decontaminated to free release conditions. Section 5.0, Building Cleanup Criteria and Appendix B, Decontamination Options, provide additional information regarding cleanup criteria and options available for decontamination of radiologically contaminated materials. Items that have been decontaminated to a free release condition (Reference Radioactive Material Transfer and Unrestricted Release of Property and Waste, 1-P73-HSP-1810) will be transferred for use at a different location within RFETS, for use at a different DOE facility, or sent to the Property Utilization and Disposal (PU&D) organization for appropriate handling. Only materials that meet recycle/reuse criteria identified in the Property Management Manual will be sent to PU&D. As appropriate, low level and low level mixed waste will be generated, characterized, and packaged in accordance with the RFETS Low Level WMP.

8.3 MIXED WASTE

At RFETS, mixed waste is defined as RCRA hazardous waste containing measurable amounts of radioactive isotopes. Mixed waste is characterized as either low level or TRU based upon the amount of radioactivity at the time of assay. The 779 Cluster Decommissioning Project anticipates a minimum amount of mixed waste will be generated. The type of mixed waste that may be generated includes, but is not limited to, radioactively contaminated lead, glovebox gloves, used pump oil, and leaded glovebox windows. Mixed waste generated from decommissioning activities will be stored in an area in compliance with ARARs for that area prior to shipment to an approved off-Site disposal Site. Treatment of mixed waste will be performed in accordance with the Site RCRA permit.

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8.4 HAZARDOUS WASTE

Hazardous waste is defined as waste that is listed or exhibits the characteristics of corrosivity, ignitability, reactivity, toxicity or that is listed in 6 CCR 1007-3, Section 261, or 40 CFR 261, Subpart D. The 779 Cluster Decommissioning Project anticipates some amount of hazardous waste in addition to the mixed waste mentioned in Section 8.3. Hazardous waste will be stored in an area in compliance with ARARs for that area.

8.5 INDUSTRIAL WASTE

Industrial waste is characterized as that waste which meets RCRA Subtitle D requirements. Industrial waste will be generated as a result of the 779 Cluster Decommissioning Project. This waste will be managed in accordance with applicable rules and regulations.

8.6 TOXIC SUBSTANCES CONTROL ACT WASTE AND MIXED WASTE

The Toxic Substances Control Act addresses all chemical substances manufactured or processed in or for the United States. A chemical substance is defined in broad terms as any organic or inorganic substance of a particular identity including those substances identified in 15 CFR, Paragraph 2602(2)(A)(I-vi.) and which may present unreasonable risk of injury to health and the environment. Of particular significance to the 779 Cluster are PCBs as regulated under 40 CFR Part 761. The project estimates that 101 ft^3 of potential PCB containing ballasts exist within the 779 Cluster. This estimate assumes that all of the ballasts are non-radioactive PCB containing until the ballasts are removed, radiologically surveyed, and examined. Further segregation may occur as in-process characterization is performed in support of the waste determination.

In addition, other suspect PCB containing materials include oils, paints, adhesives and roofing tars. Characterization of suspect materials will be performed in suspect areas prior to decommissioning of that area. Materials characterized as TSCA regulated will be managed in accordance with 40 CFR Part 761 if determined to contain $\geq$ 50 ppm PCBs.

8.7 WASTE MINIMIZATION

Waste minimization, as committed to in the FY97 Waste Minimization Program Plan, will be integrated into the planning and management of the 779 Cluster decommissioning wastes. Project Management and Decommissioning workers will incorporate waste minimization practices into work procedures. Unnecessary generation of radioactive and mixed waste will be controlled by utilizing work techniques that prevent the unnecessary contamination of areas and equipment, preventing unnecessary packaging, tools and equipment from entering radiologically contaminated areas and reusing contaminated tools and equipment when practical. Waste minimization will be accomplished using a waste life cycle cost approach. If the cost to demonstrate that the item is not contaminated exceeds the cost for waste disposal, the item will be disposed of as waste in accordance with the Property Management Manual, 1-MAN-009-PMM. The evaluation may include disassembly, decontamination, and survey costs. Elimination and reduction of waste generated as a result of decommissioning is high priority. Standard decontamination operations and processes will be evaluated for waste minimization potential and suitable minimization techniques will be implemented. Most of the bulk building structural material is expected to be free released and will be removed from the Site for recycle or disposal as appropriate. Table 8-1 identifies the amount and types of waste which are expected to be generated.

8.8 WASTE MANAGEMENT STRATEGY

The overall strategy for managing waste resulting from the decommissioning of the 779 Cluster is to evaluate the generation and waste management on a room-by-room basis. In general, waste materials will be sorted at the time of removal and prepared for further decontamination, survey, recycle, processing and packaging in another area of the 779 Cluster, away from the point of

generation. The existing RFETS Waste Management Program and procedures will be used to ensure the waste has been generated, packaged, and surveyed to meet the final disposal Sites Waste Acceptance Criteria (WAC). See Section 3 and the project schedule (Reference Attachment 1) for a general discussion of the expected work sequence. The estimated volumes over time (generation) can be calculated using the project schedule and Table 8-1.

Materials identified for transferral to PU&D include, but are not limited to, office equipment such as desks, chairs, tables, carts, bookshelves, equipment and instruments which are located in non-contaminated areas or have been located in contaminated areas but confirmed as non-contaminated through radiological survey. Utilizing waste minimization, (Section 8.6), the maximum amount of materials (economically feasible) will be released and sent to PU&D for disposition. The estimated volume of materials designated for PU&D is 73,900 ft^3.

The waste generation estimates anticipated as a result of the 779 Cluster Decommissioning Project are summarized in Table 8-1. A summary of how waste will be managed is included in Table 8-2. The types and volumes of waste have been estimated based on the following assumptions:

- If a room was not posted as a radiological hazard, all materials contained in the room were considered non-contaminated and therefore suitable for dispositioning through PU&D.
- Materials contained in rooms identified as Radiological Buffer Areas (RBAs), that were not suspected of being contaminated and can be confirmed as non-contaminated through smear surveys, were considered suitable for reuse or recycle. Examples of such materials are desks, cabinets, and chairs.
- Any materials that were located in a RBA and were not suitable for smear surveys were considered low level waste. Examples of such material are electronic equipment that cannot be surveyed sufficiently to confirm non-contamination.
- Material and waste segregation was considered appropriate in Contaminated Areas (CAs) providing an item could be surveyed.
- Office equipment, excluding computers, located in a CA were deemed suitable for dispositioning to PU&D. Survey data will be used to confirm this assumption.
- Gloveboxes containing plutonium residuals are anticipated to produce TRU waste through the decontamination process, such as STRIPCOAT™ application. Additional volumes of TRU waste may result from decommissioning activities such as ducting removal will be estimated in future revisions to the 779 Cluster Decommissioning WMP.
- All other materials that were located in a CA were considered low-level waste although materials may require decontamination to achieve low level status.

An estimate of the waste in each room was calculated by summing the cubic feet of materials inventoried in a room (see Table 8-1). The low-level waste volume was determined by subtracting the PU&D volume. The resulting LL volume was then multiplied by 125% to compensate for container size limitations. (Not all of the volume of a waste crate can be utilized.) The LLM waste volume waste was determined by estimating the volume of lead affixed to a glovebox and final volume which would result from size reduction.

The TRU waste volumes estimated in Table 8-1 are primarily derived from plutonium contaminated gloveboxes. Approximately, 66 gloveboxes have been identified for decontamination using STRIPCOAT™ (or equivalent). Each glovebox is anticipated to generate 1.5 drums of TRU waste, resulting in 100 drums of TRU waste.

The quantity of crates and drums were estimated using the following information. On average, 7.8 cubic feet of material can be contained in a 55 gallon drum while 112 cubic feet can be contained in a standard waste crate. Lead and waste resulting from decontamination (such as dry combustibles) will be placed into 55 gallon drums. All other materials will be placed into standard waste containers except those materials designated for PU&D which will be shipped directly to PU&D. The number of standard waste containers (crates) was calculated by dividing the volume by 112 cubic feet and rounding up to the nearest whole number. The number of 55 gallon drums was calculated by dividing the volume of waste designated for containment in drums by 7.8 cubic feet then rounding up to the nearest whole number.

8.9 WASTE CHARACTERIZATION

The characterization process discussed in Section 4.0 was used to estimate the type and volume of waste to be generated by the project. The Building 779 WSRIC book is used to describe each of the processes which are performed in Building 779. The process descriptions identify the different types of chemicals used and wastes which are generated in completing the various processes. The WSRIC is being used to assist in characterization of the residual materials left in Building 779 (Reference Section 4.0).

The Building 779 WSRIC has been revised to include anticipated decommissioning waste streams. The WMP for the 779 Cluster was developed using the WSRIC information to forecast waste types which will be generated during the decommissioning effort.

In general, waste generated from decommissioning includes contaminated and uncontaminated equipment, tools, electrical conduit systems, piping systems, gloveboxes and facility structural materials. Decontamination will be performed to remove radiological contamination and hazardous constituents as appropriate. Hazardous materials and waste chemicals will be managed in accordance with the ARARS identified in this DOP. Mixed waste will be stored on-Site, in accordance with the Hazardous Waste Requirements Manual until the material can be shipped for final disposal. Initial Waste Volume Estimates are identified in Table 8-1.

The 779 Cluster contains many pieces of equipment which will be released to PU&D for redistribution, disbursement or recycle as scrap material.

8.10 RCRA UNITS

Presently, there are three RCRA units located in Building 779. They are: Units 90.37, Room 131, GB-131A, 131B, 131C, 131D; 90.39, Room 137, GB-106-3, 106-4, 106-5; and 90.43, Room 160, GB-860. The 779 Cluster Decommissioning Project will close these units in accordance with requirements identified in the Part B RCRA Permit, Part X.

The project will not establish any RCRA permitted waste storage units within the 779 Cluster. Hazardous remediation waste will be managed in accordance with ARARs until final dispositioning.

8.11 IDLE EQUIPMENT

Presently, hazardous materials contained in idle equipment are processed by building operations personnel in compliance with the Management Plan for Material Contained In Idle Equipment, 94-MP/IE-0017. Hazardous materials contained in idle equipment in the 779 Cluster have been identified for dispositioning during deactivation. Remaining idle equipment will be managed in accordance with the Idle Equipment Consent Order during decommissioning and residual wastes will be considered remediation wastes.

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8.12 OFF-SITE RELEASE OF WASTES AND APPLICABILITY

CERCLA wastes that are managed on-site are excluded from the land disposal restriction (LDR) standards. However, CERCLA wastes are not exempt from the LDR standards when they are transferred off-site for management. These wastes must meet all applicable LDR standards prior to land disposal.

In addition, the facility accepting CERCLA wastes must meet the requirements of the final Off-Site Rule (58 CFR 49200). The primary purpose of the Off-site Rule is to clarify and codify CERCLA's requirement to prevent wastes generated from remediation activities conducted under CERCLA from contributing to present or future environmental problems at off-site waste management facilities. Only facilities that meet EPA's acceptability criteria can be used for off-site management of CERCLA waste. The Off-Site Rule applies to both hazardous and non-hazardous wastes generated from remedial and removal actions funded or authorized, at least in part, by CERCLA.

Release of non-contaminated material, debris, and equipment from a site contaminated with hazardous materials is accomplished by:

- demonstrating the materials or wastes do not exhibit any of the characteristics of hazardous waste, and are not listed hazardous waste, as identified in Subpart C of 6 CCR 1007-3 SS261,
- or are excluded under the provision in 40 CFR 268,Subpart D, and
- the off-site waste management facility meets requirements of the CERCLA Off-Site Rule.

Process knowledge and operating history related to the facilities can also be used to segregate hazardous contaminant areas from unaffected areas. Further sampling and analysis of wastes may be required during the project to determine if the wastes are regulated as LDR, or if the wastes can be exempted under the "hazardous debris rule." LDR requirements are integrated into RFETS waste and characterization procedures to ensure compliance with designated TSD facilities and on-Site WAC.

The release of hazardous and/or mixed hazardous waste from the Site to an off-site waste management facility is accomplished by:

- all applicable LDR standards are met;
- meeting all DOT requirements;
- ensuring that the off-site waste management facility meets the requirements of the CERCLA Off-Site Rule;
- using approved waste management vendors; and
- meeting the receiving facility's waste acceptance criteria.

Under the "hazardous debris rule" provision, and in accordance with the debris treatment standards defined in 6 CCR 1007-3 §268.45, treated hazardous debris is exempted from the definition of hazardous waste, provided that the debris is treated to the performance or design and operation standards by an extraction or destruction technology, and the treated debris does not exhibit the characteristic of a hazardous waste. The exempted debris can be disposed in an industrial landfill (6 CCR 1007-3, Section 268, Subpart D) rather than a RCRA permitted landfill (6 CCR 1007-3, Section 268, Subtitle C). Note that these exemptions apply to disposal of certain LL radioactive mixed wastes if they meet the receiving Sites WAC for hazardous debris.

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TRU and TRU Mixed Waste destined for disposal at WIPP are not subject to the LDR standards since the facility received approval of its No Migration Petition. These wastes must meet the following standards prior to shipment to WIPP:

- all applicable DOT requirements;
- WIPP WAC; and
- that off-site waste management facility meets requirements of the CERCLA Off-Site Rule.

8.13 CHEMICAL COMPLIANCE ORDER ON CONSENT

Waste chemicals located within the 779 Cluster will be managed in accordance *with ARARs identified in the DOP.*

8.14 INDIVIDUAL HAZARDOUS SUBSTANCE SITES

There are Individual Hazardous Substance Sites (IHSSs) within the boundaries of the 779 Cluster. The IHSSs that fall within the 779 Cluster boundaries are:

- Unit 121, Operable Unit 9, the original process waste lines
- Unit 138, Operable Unit 8, Cooling Tower Blowdown Building 779
- Unit 144, Operable Unit 8, Sewer Line Overflow
- Unit 150.6, Operable Unit 8, Radioactive Site South of Building 779
- Unit 150.8, Operable Unit 8, Radioactive Site Northeast of Building 779.

In addition, Building 779 was erected over the Site of one of the original solar evaporation ponds; uranium contamination (11 to 150 dpm/l) was detected during construction of the building. Demolition of the 779 Cluster will not include the basement of Building 779 which will be left intact. The basement will be addressed during environmental restoration of the IHSSs associated with the 779 Cluster.

PCB contaminated soil exists north of Building 779 as the result of two transformers leaking in June 1986. One of the transformers was subsequently drained and remains in its original location. The other transformer was drained and removed. The cement pad which housed one of the transformers and the surrounding grounds have been posted as PCB contaminated.

Appropriate precautions will be taken by the project to ensure minimum disturbance of these areas. These areas will be remediated by following D&D of the 779 Cluster.

9.0 REGULATORY AND ENVIRONMENTAL CONSIDERATIONS

Decommissioning the 779 Cluster will require the closure of three RCRA permitted units. This section identifies the process for completing the closure activities.

Decommissioning at RFETS is conducted under CERCLA removal action authorities. (See RFCA ¶70). Pursuant to the CERCLA removal authorities embodied in RFCA, decommissioning performed under a DOP must attain, to the maximum extent practicable, federal and state ARARs. (See RFCA ¶5 and 40 CFR §300.415(i)). As a result, this second part of this section will identify the substantive attributes of the federal and state ARARs.

Decommissioning activities conducted in the RFETS Industrial Area are subject to the terms of the Interim Measures/Interim Remedial Action Decision Document (IA IM/IRA, DOE, 1994x). The applicability of performance monitoring requirements in the IA IM/IRA are discussed in the third part of this section.

Finally, RFCA requires that NEPA values be incorporated into RFETS decision documents. (See RFCA¶ 95). In recognition of that requirement, the final part of this section provides an alternative analysis, including no action, and a description of potential environmental impacts which may be associated with the decommissioning of buildings, facilities, and equipment.

9.1 RCRA CLOSURES

Paragraph 97 of RFCA and Part X, Section A, of the RFETS RCRA Permit provide that the closure of RCRA permitted or interim status units may be accomplished using either a separate closure plan or a decision document. Consistent with Paragraph 97, the closure requirements for the three permitted RCRA units present in the 779 Cluster will be addressed in this DOP. The Rocky Flats Technology Site RCRA Permit stipulates that the DOP must also contain the Closure Description Document information specified in Part X, Section B (2), Content of the Closure Plan and Closure Description Document. Section 9.1 of this document incorporates the Closure Description Document requirements. Because the closure is being conducted consistent with the closure requirements presented in Section X of the RCRA permit, no modification of the RCRA permit will be required.

9.1.1 BACKGROUND

There are three RCRA permitted container storage units (glovebox units) that are included as part of this RCRA Closure Description Document. These units are identified as: 90.37, 90.39, and 90.43. (See Table 9-1 for a detailed description of the units.)

Initial RCRA closure of these units commenced under the original Rocky Flats RCRA permit in 1996. However, final closure was not achieved because the units did not meet final closure performance standards for the following reasons:

- Units 90.37 and 90.39 have discoloration of the glovebox surfaces; the closure performance standards for a clean surface debris could not be reasonably attained due to the stained surfaces;

- Unit 90.43 previously contained listed waste and would require rinsing and sampling to meet closure performance standards. Due to the configuration of fixed equipment in the glovebox, and the extent of radiological contamination present, it was not cost effective to perform closure of this glovebox until D&D operations commence.

Since these units did not meet RCRA closure standards in accordance with Part X of the RFETS RCRA permit, the following actions were taken to brings these units into RCRA compliance:

- All RCRA regulated waste was removed from these units;
- The units were rendered RCRA Stable as defined in the Site RCRA permit;
- DOE sent the State a request for deferral from the RCRA closure requirements until decontamination and decommissioning of Building 779 commences.

9.1.2 RCRA CLOSURE DESCRIPTION DOCUMENT

Final closure of these units will be conducted in accordance with the substantive requirements of the RFETS RCRA permit dated June 30, 1997 and the RFCA decision document for this facility, the Decommissioning Operations Plan for the 779 Cluster. Because there has never been a documented release from any of these units, it is expected that RCRA Closure can be achieved using one or more of the three Closure Options outlined below. The following discussion is not intended to modify the RCRA permit language.

Option #1, Management of TRU Mixed Waste

If the concentration of plutonium associated with the RCRA unit exceeds the 100 nci/g standard, the glovebox will be designated a TRM. Waste DOE plans on disposing of all TRU and TRM waste at WIPP. EPA has approved WIPP's "No Migration Petition"; therefore, the disposal of hazardous wastes in this unit does not trigger LDR requirements. Rocky Flats will still have to meet WIPP's Waste Acceptance Criteria.

Note: None of the EPA waste codes associated with these glovebox units are precluded from disposal at WIPP. However, to meet the plutonium gram loading limitations, some of these gloveboxes may have to undergo decontamination to remove plutonium, and or be size reduced to fit into DOT/WIPP approved packaging.

Gloveboxes that meet both the TRM waste category and the WIPP WAC will be packaged in DOT approved containers and placed in an on-site waste management area for storage until final shipment and disposal at WIPP can be arranged. Since an entire unit is being removed and there are no recorded releases from these units to the environment, the following are the RCRA closure performance standards identified for units closed under Option #1:

- Characterize wastes sufficient to meet WIPP WAC; and
- Package the waste in containers meeting National Regulatory Commission (NRC), Department of Transportation (DOT) and WIPP standards.

Any residuals from size reduction or radioactive decontamination will carry the same EPA waste codes as the unit being treated. These residuals will be characterized for their radioactive isotope content to ensure the gram loading requirements for WIPP can be met before the residuals are placed back into containers destined for disposal at WIPP.

If any LLM waste is generated, these wastes will be containerized and placed in storage pending disposal at an off-Site approved TSD facility. If any Low Level Waste are generated, these wastes will be containerized and placed in storage pending disposal at an approved disposal facility (e.g., Nevada Test Site).

Gloveboxes characterized as TRM Waste will either be packaged in a single container in one piece or size reduced to fit into DOT/WIPP containers.

Decontaminate to the Point the Waste Meets the LLW Criteria

Closure Options #2 and #3 are dependent upon the waste stream being classified as a LLM Waste. To make use of any of the following options, the gloveboxes must either be classified as LLM waste or be decontaminated to meet the LLM waste categorization. For those gloveboxes that do not meet the LLM Waste categorization, an evaluation must be conducted to determine the feasibility and benefits of reducing the plutonium content by strip coating or other decontamination methods. For a waste stream to

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be eligible for decontamination, the generator would have to answer "Yes" to each of the following questions:

- Does decontamination ensure that the LL waste criteria are achievable?;
- Can the decontamination process be conducted in accordance with ALARA?;
- Does the decontamination process make economic sense?

If the answer to all of these questions is "Yes," then Option #2 and Option #3 may be viable.

Option #2, Use of Rinsate as an Indicator of Clean Closure

Removal of Inherently Hazardous Waste and Macroencapsulation of Radioactive Lead Solids

All "inherently hazardous waste" (e.g., lead shielding and lead glass) must be removed from the gloveboxes prior to packaging and final disposal. Where feasible, the lead shielding will be recycled as scrap metal. If reclamation is not practicable, these materials will be handled as LLM waste (D008). Since radioactive lead solids are specifically excluded from being "debris", there is no alternative treatment standard for radioactive lead solids. The specific treatment technology identified in 40 CFR 268.40 (Macroencapsulaton) must be followed if the waste is to be land disposed. Macroencapsulation of radioactive lead solids may be conducted on-Site to meet LDR standards or shipped off-Site for treatment and disposal. Macroencapsulation of radioactive lead solids will be conducted in accordance with the following definition (40 CFR 268.42):

> *Macroencapsulation with surface coating materials such as polymeric organics (e.g., resins and plastics) or with a jacket of inert inorganic materials to substantially reduce surface exposure to potential leaching media. Macroencapsulation specifically does not include any material that would be classified as a tank or container according to 40 CFR 260.10. A Waste Analysis Plan will be prepared prior to any on-Site treatment and submitted to the LRA for review and approval.*

Decontamination and Performance Standards

If Option #2 is selected, the gloveboxes must be decontaminated in accordance with the RFETS RCRA Permit, Part X, Closures, Section C, Clean Closure by Decontamination. Requirements identified in that section of the Permit include selection of an appropriate solution for decontamination. Selection of this solution will be based on the types of wastes previously managed in the unit and the contaminants that are present. Water containing sodium carbonate and trisodium phosphate or other solutions capable of solubilizing the contaminants of concern will be used as the decontamination solution. The final rinsate volume for the internal surfaces of the glovebox will not exceed two gallons per 100 square feet of surface area rinsed.

A glovebox will be considered successfully decontaminated and meeting final performance closure standards when:

- All visible residuals are removed; and

- The final rinsate contains concentrations of priority pollutants [identified as being managed in the Unit, and heavy metals (268.48 UHC listing)] are below the standards identified in RFCA, Attachment 5, Table 2, Tier 2; and

- The pH of the rinsate is between 6 and 9.

If the rinsate meets the final performance standards, the entire glovebox (minus the lead shielding and leaded glass) will be considered successfully decontaminated and no longer RCRA regulated regardless if listed hazardous waste was handled in the unit or not. The glovebox will then be handled as LL waste.

Residues and Rinsate Management

Residues and rinsate from the decontamination of glovebox(es) will be regulated as follows:

1. Residues and rinsate above RCRA characteristic levels will be managed as mixed hazardous waste. This waste is subject to LDR. These wastes will be containerized and either:

   - Put into storage as LLM waste; or
   - Shipped to a Waste Water Treatment Unit; or
   - Solidified on-Site. Waste treated on-Site will be sampled and analyzed to ensure compliance with LDR standards. A Waste Analysis Plan will be submitted to the State for review and approval prior to treatment of characteristic waste(s) in the 779 Cluster.

2. Characteristic rinsate above RFCA Tier 2 levels but below RCRA TCLP from Unit 90.37. Since this unit handled only characteristic wastes, if the rinsate is not characteristic, then the waste is not RCRA regulated. It will be handled as a LL waste and be sent to Building 374 for treatment as a waste water. If the rinsate does not meet the Building 374 WAC, (exceeds radioactive levels), the rinsate will be solidified on-Site in Building 779 and managed as LL waste.

3. Residues and rinsate from Units 90.39 and 90.43 that contain listed contaminants above Tier 2 levels must be managed as RCRA hazardous wastes (Derived from Rule). If the rinsate meets the Building 374 WAC, the rinsate will be treated in this wastewater treatment unit. If the rinsate does not meet the Building 374 WAC, the waste will be containerized and placed in storage unit until it can be shipped off-Site for treatment and disposal at an approved TSD facility. If residues are generated, these wastes will be managed as LLM waste. The residues will be containerized and placed in storage pending shipment to an off-Site TSDF for treatment and disposal. Both residues and rinsate may be treated on-Site using stabilization/ solidification to meet LDR standards prior to shipment off-Site as LLM waste. Waste treated on-Site will be tested to demonstrate compliance with LDR standards. A Waste Analysis Plan will be submitted to the State for review and approval prior to treatment of any listed waste(s) in the 779 Cluster.

4. Residues and rinsate from Units 90.39 and 90.43 that contain listed waste contaminants below Tier 2 standards are not RCRA regulated hazardous wastes. If the rinsate meets the Building 374 WAC, the rinsate will be treated in this unit. If the waste does not meet the Building 374 WAC, the waste will be containerized. Rinsates that do not meet the Building 374 WAC may be solidified on-Site to meet the final disposal facility WAC. (e.g., no liquids). Both rinsates and treated rinsate will be placed in an on-Site storage unit until shipment to an off-Site disposal facility (e.g., Nevada Test Site). If residues are generated, these wastes will be managed as LL waste. The residues will be containerized and placed in storage pending shipment to an approved disposal Site (e.g., Nevada Test Site).

If the rinsate is above the RFCA Table 2, Tier 2 standards and the operator determines that it is unlikely that additional rinsing will achieve the closure performance standards, this Unit will be closed using Option #3, Treatment and Management as Debris.

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Option #3, Treatment and/or Management as Debris

If the gloveboxes are characterized as LLM waste, the gloveboxes may be considered hazardous debris. Debris treatment of the gloveboxes will be conducted in accordance with Part X of the Rocky Flats RCRA Permit, Section D, "Debris Rule" Decontamination and all substantive requirements of 6 CCR 1007-3, Part 268.45. In general, materials that are treated using a destruction or extraction technology and meet the Debris Treatment performance standards identified in Part X of the RFETS RCRA Permit, are no longer RCRA regulated and are managed as Low Level Waste. This generality does not apply to "inherently hazardous waste" such as lead shielding and lead glass that fails TCLP or materials specifically excluded from the definition of "debris" such as radioactive lead solids, cadmium batteries and lead acid batteries.

Performance Standards

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

- All inherently hazardous waste (lead shielding, lead glass, etc.) will be removed from the gloveboxes using previously tested techniques prior to disposal. As feasible, the lead shielding will be recycled as scrap metal. If reclamation is not practicable, these materials will be handled as LLM waste (D008). Macroencapsulation of radioactive lead solids may occur on-Site. (Note: Radioactive lead solids are not debris, see discussion of macroencapsulation of radioactive lead solids, that follows.)

- Material must meet the definition of debris as identified in 40 CFR 268.45; and

- An extraction or destruction technology (as identified in 40 CFR 268.45) will be selected for decontamination of the gloveboxes (e.g., acid/base washing; solvent extraction; abrasive blasting; scarification; spalling; high pressure steam; or water spray); and

- Clean debris surface is attained as specified in 40 CFR 268.45; and

- All debris treatment residuals generated from the use of extraction and/or destruction technologies and/or size reduction, and/or radioactive decontamination will be characterized and managed and treated in compliance with the ARARs listed in this document. These treatment residuals are not RCRA Debris.

Macroencapsulation of Radioactive Lead Solids

Radioactive lead solids are specifically excluded from the "debris" definition. The specific treatment technology identified for radioactive lead solids in 40 CFR 268.40 is macroencapsulation. This specified technology is required if the waste is to be land disposed.

Macroencapsulation of radioactive lead solids may be conducted on-Site in Building 779 or shipped off-Site for treatment and disposal. Macroencapsulation of radioactive lead solids will be conducted in compliance with the following definition: (40 CFR 268.42), "Macroencapsulation with surface coating materials such as polymeric organics (e.g., resins and plastics) or with a jacket of inert inorganic materials to substantially reduce surface exposure to potential leaching media. Macroencapsulation specifically does not include any material that would be classified as a tank or container according to 40 CFR 260.10"

Residues and Rinsate Management From Debris Treatment

Residues and rinsate from the debris treatment of the gloveboxes will be managed in the same manner as described in the above mentioned section.

Table 9-1: Decommissioning the 779 Cluster, will require the closure of three RCRA permitted units. The Unit Information Sheets are contained in Attachment 2.

TRU MIXED WASTE

If the concentration of plutonium associated with the RCRA unit exceeds the 100nci/g standard, the glovebox will be designated a TRU Mixed Waste. The feasibility of decontaminating the TRU Mixed glovebox would then be evaluated. If determined:

- Not achievable; or
- Likely to result in an unacceptable radioactive dose to the employees (ALARA); or
- Too costly,

The glovebox will be handled as TRU Mixed Waste and either packaged in one piece in a DOT/WIPP approved container or size-reduced to fit into standard DOT packaging (containers/boxes). In either event, TRU Mixed Waste generated from this unit will be stored on-Site for subsequent shipment to WIPP for final disposal.

Decontamination to the Low Level or Mixed Waste Category

The gloveboxes may be decontaminated in accordance with the Rocky Flats Environmental Technology Site RCRA Permit, Part 10 Closure, including Section C, Clean Closure by Decontamination. Requirements identified in that section of the Permit include selection of an appropriate solution for decontamination. Selection of this solution will be based on the types of wastes previously managed in the unit and the contaminants that are present. Water with sodium carbonate and trisodium phosphate or other solutions capable of solubilizing the contaminants of concern will be used as the decontamination solution. The final rinsate volume for the internal surfaces of the glovebox will not exceed two gallons per 100 square feet of surface area rinsed.

A glovebox will be considered decontaminated and meeting final performance standards when:

- All visible waste residuals are removed; and
- The final rinsate contains concentrations of priority pollutants (identified as being managed in the Unit, and heavy metals (268.48 UHC listing)) below the standards found in RFCA, Attachment 5, Table 2, Tier 2; and
- The pH of the rinsate is between 6 and 9.

If the rinsate is above the RFCA, Table 2, Tier 2 standards and it is unlikely that additional rinsing will achieve the closure performance standard, the glovebox will be closed using the treatment and/or management as debris, described below.

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Treatment and/or Management as Debris

If the gloveboxes are classified as low level mixed waste, the gloveboxes may be handled as hazardous debris. Debris treatment of the gloveboxes would be conducted in accordance with Section 10 of the Rocky Flats RCRA Permit, Section D, "Debris Rule" Decontamination and all substantive requirements of 6 CCR 1007-3, Part 268.45. All inherently hazardous waste (lead shielding, lead glass, etc.) will be removed from the gloveboxes using previously tested techniques prior to disposal. Lead shielding and lead glass (that fails TCLP) will be handled as mixed waste and appropriately treated and disposed.

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

- Material must meet the definition of debris found in 40 CFR 268.45; and
- An extraction or destruction technologies will be selected for decontamination from the 268.45 listing, such as: acid/base washing; solvent extraction; abrasive blasting; scarification; spalling; high pressure steam; or water spray;
- Clean debris surface is attained as specified in 40 CFR 268.45; and
- All debris treatment residuals generated from extraction and/or destruction technologies used in the closure are managed and treated in compliance with ARARs listed in this document. These treatment residuals are not RCRA debris.

As an alternative to treatment or if the 268.45 standards are not achieved (i.e., clean debris surface) following treatment, representative sampling may be used to demonstrate that the debris meets the treatment standards for the associated hazardous waste. In this circumstance, the debris may be disposed as low level mixed waste because the debris would no longer be prohibited from land disposal.

9.2 APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS

As noted earlier, decommissioning actions at RFETS must attain, to the maximum extent practicable, compliance with Federal and State ARARs. The general ARARs, relating to this proposed action are identified in this section and summarized in Table 9-1. In addition, Table 9-1 identifies whether the requirement is applicable, relevant and appropriate, or To Be Considered (TBC).

Pursuant to RFCA¶ 16.6., the procedural requirements to obtain federal, state, or local permits are waived as long as the substantive requirements that would have been imposed in the permit process are identified (RFCA ¶17). Furthermore, the method used to attain the substantive permit requirements must be explained (RFCA ¶17c). The following discussion is intended to compliment other descriptions provided in this DOP in a manner that satisfies the RFCA permit waiver requirements.

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9.2.1 Air

Decommissioning has the potential to generate particulate, radionuclide, fugitive dust, and Hazardous Air Pollutant (HAP) emissions. 5 CCR 1001-3, Regulation No. 1, governs opacity and particulate emissions. Regulation No. 1, Section II addresses opacity and require that stack emissions from fuel-fired equipment must not exceed 20% opacity. Regulation No. 1, Section III addresses the control of particulate emissions. Fugitive particulate emissions will be generated from demolition and transport activities. Control methods for fugitive particulate emission should be practical, economically reasonable, and technologically feasible. During demolition activities, dust minimization techniques such as water sprays, will 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 which defines the level of air monitoring and particulate control for the project.

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

The Kaiser-Hill Air Quality Management organization provides monitoring support for the Rocky Flats Environmental Technology Site (Site) specifically directed toward compliance with all state and federal environmental laws originating from the Clean Air Act and its amendments. The existing Radioactive Ambient Air Monitoring Program (RAAMP) continuously monitors for potential airborne dispersion of radioactive materials from the Site into the surrounding environment. Thirty-one samplers compose the RAAMP network. Twelve of these samplers are deployed at the Site perimeter and are used for confirmatory measurements of off-Site impacts. The others are used for backup, should there be a need for determining local impacts. The others are used for backup, should there be a need for determining local impacts from decommissioning or clean-up projects. During the demolition of the 779 cluster additional monitors within the existing ambient network located in the immediate area of Building 779 will be identified, and the frequency of filter collection and filter analysis at those locations will be adjusted, if necessary, to provide timely information of potential project emissions. Air emissions from Building 779 strip-out activities will be monitored through the existing effluent air monitoring system currently in place in the 779 cluster plenum facilities.

Additionally, the National Emission Standards For Hazardous Air Pollutants (NESHAP) (5 CCR 1001-10; 40 CFR 61 Subpart H) have been identified as a chemical-specific ARAR to evaluate potential radionuclide emissions. The EDE will be calculated for those emissions anticipated from the operations associated with facility demolition. Estimated controlled radionuclide emissions are not expected to exceed the EPA notification and approval threshold of 0.1 millirem per year EDE (40 CFR 61, Subpart H). Radionuclide emission from the project will be included in the Site radionuclide annual report.

9.2.2 Waste Storage

The waste generated during the closure and decommissioning activities governed by this DOP are remediation wastes. (See RFCA ¶25bf. and RFCA Appendix 3, the Implementation Guidance Document, section 3.1.10). Remediation waste generated during this removal action will be evaluated consistent with the requirements of RCRA Part 261, Identification and Listing of Hazardous Waste, specifically Subparts A through C. Solid remediation waste will be generated and managed in accordance with the Colorado Solid Waste Disposal requirements, 6 CCR 1007-2. In addition, sections of Part 268, Land Disposal Restrictions, applicable to off-Site shipment and disposal of hazardous waste are ARAR.

Remediation waste will be managed in accordance with ARARs identified in the DOP. Incompatible wastes, if encountered, will be segregated within the *779 Cluster*. An assessment will be performed to determine the need for secondary containment. Secondary containment will be provided, as appropriate,

when liquid wastes are stored or treated in tanks or containers. Waste characterization will be provided, as appropriate, in accordance with the RLCR and the 779 Cluster WMP. Inspections, at a minimum of once a week, will be provided during operations in accordance with the Waste Management Plan. Training for individuals generating and handling waste will be implemented using the framework identified in the RFETS Part B permit.

9.2.3 Waste Treatment

Any waste, soil/waste mixture, debris, liquid, or remediation wastes that is identified as a hazardous waste requires treatment to the LDR treatment to levels for wastewater or non-wastewaters, as appropriate. (See 40 CFR §268.40, Treatment Standards for Hazardous Wastes).

Solidification of characteristic hazardous remediation wastes may be conducted in areas within the 779 Cluster. For example, scabbling of low level, RCRA characteristic lead-based paint may result in a remediation waste form amenable to solidification. The solidification would be conducted within competent tanks or containers and subject to waste analysis conditions imposed in the waste management plan. In addition, hazardous waste fluorescent bulbs throughout the 779 Cluster may be crushed in support of D&D Activities. The resulting remediation waste will be managed in accordance with ARARs identified in the DOP. The information in this paragraph is being provided to satisfy the permit waiver conditions in RFCA ¶16.

9.2.4 Debris Treatment

Where appropriate, the project decontamination pad (located in the Protected Area) or one of the Sitewide Decontamination Facilities (located in the contractors yard) may be configured to perform low level, hazardous or mixed waste debris treatment in accordance with 40 CFR §262.34, §268.7(a)(4) and §268.45. The information in this paragraph is being provided to satisfy the permit waiver conditions in RFCA ¶16.

Solid residues from the treatment of debris containing listed hazardous wastes will be collected and managed in accordance with RCRA hazardous waste management ARARs. Any solid residues from debris treatment that exhibit a hazardous waste characteristic will also be managed in accordance with RCRA hazardous waste management requirements.

Liquid residues from the treatment of debris containing listed hazardous wastes are subject to RCRA hazardous waste management ARARs until they are placed into the Building 891 Wastewater Treatment Unit Headworks. Any Building residues that result from the treatment of listed debris will carry the same listing as the listed debris from which it originated. Any B891 residues that exhibit a hazardous waste characteristic will also be managed in accordance with RCRA hazardous waste management ARARs. Alternatively, liquid residues that meet acceptance criteria may also be treated in Building 374 or the sewage treatment plant in compliance with the RCRA and NPDES permits.

9.2.5 Wastewater Treatment

Remediation wastewaters generated during decommissioning may be transferred to the Consolidated Water Treatment Facility (CWTF, Building 891) for treatment. Remediation wastewaters that contain listed RCRA hazardous wastes or exhibit a RCRA characteristic are not subject to compliance with RCRA hazardous waste requirements because the wastewaters are CERCLA remediation wastes being treated in a CERCLA treatment unit. The CWTF will treat the remediation wastewater to meet applicable surface water quality standards under a National Pollution Discharge Elimination System (NPDES) ARARs framework. Waste generated at Building 891 as the result of treatment of a listed remediation wastewater will be assigned the corresponding listed waste code. All wastes generated at Building 891 will also be

evaluated for hazardous characteristics. The information in this paragraph is being provided to satisfy the permit waiver conditions in RFCA ¶16.

Alternatively, remediation wastewater that is determined acceptable for treatment may also be transferred to Building 374; to the sewage treatment plant (Building 990) or directly discharged in compliance with the administrative and substantive terms of the RFETs NPDES Permit. Because these wastewater management alternatives are authorized in the NPDES Permit no permit waiver is required.

9.2.6 Asbestos

Compliance with asbestos requirements is an applicable ARAR and will be achieved in accordance with Regulation 8. Specifically, Section III, C.7.6, provides maximum allowable asbestos levels, and section C.8.2.(b),(d) and (f) provides requirements for handling asbestos waste materials. In addition, regulatory notification requirements for asbestos abatement mandated in Regulation 8, Part B, Section III B will be adhered to.

Regulation 8 also governs work practices aimed at the protection of the worker/public and are virtually identical to the OSHA requirements in 29 CFR 1926.1101. At RFETS this is controlled through the Industrial Hygiene and Safety group in accordance with HSP 1-62200 HSP-9.09. NESHAP standards for asbestos will be implemented through specific operational directions in IWCPs in accordance with Regulation 8, Part B.

9.2.7 Polychlorinated Biphenyls

Screening for PCBs will be performed on suspect materials prior to demolition. Presently, the painted concrete facility pads are the only areas where special use coatings, which may contain PCBs, are suspect. Any other materials, identified through In-Process Characterization, as suspect of containing PCBs will be managed in accordance with 40 CFR Part 761, Disposal Of Polychlorinated Biphenyls, if determined to contain 50 ppm PCBs.

Fluorescent light ballasts are also a potential source of PCBs in the 779 cluster. Light ballasts marked "No PCBs" or "PCB Free" will be managed as solid waste and disposed at a sanitary landfill. Ballasts marked "PCBs" or not marked and not leaking will be packaged for disposal at an TSCA-permitted facility. Leaking PCB light ballasts and unmarked light ballasts will be managed as fully-regulated PCB articles.

9.2.8 Radiological Contamination

Due to the likelihood for radiological contamination in the 779 Cluster guidelines contained in DOE Order 5400.5 have been identified as TBC. In the event that radiological contamination is identified, DOE Order 5400.5 will be followed to ensure protection of the workers, the public, and the environment. In addition, DOE Order 5420.2A, "Radioactive Waste Management", has been identified as TBC and contains the requirements for the management and packaging of LLW.

9.2.9 Soil Disturbance

Soil excavation is not anticipated as part of this action. The cement pad for each facility will remain in place and will be addressed during environmental restoration.

9.3 INDUSTRIAL AREA PERFORMANCE MONITORING

The Industrial Area (IA) IM/IRA is a decision document designed to ensure that environmental monitoring is sufficient to detect potential releases to the environment during transition activities such as those

actions conducted under this DOP. The objective of the IA IM/IRA is to define a program that proactively addresses monitoring requirements for the RFETS IA.

The IA IM/IRA (DOE, 1994x) provides a methodology for establishing a baseline environmental data set; warning limits and controls; evaluating potential monitoring technologies; outlining the preprogrammed response during verification monitoring; and summarizing the current emergency response procedures. The requirements of IA IM/IRA are applicable to the decommissioning of the 779 Cluster and must be addressed. Prior to demolition of the facility, an evaluation will be made to determine if additional monitoring of air and water is required for the period of demolition.

9.4 ENVIRONMENTAL ISSUES

9.4.1 National Environmental Policy Act

Most of the information in this section is taken from previous Site NEPA documents, including the Rocky Flats Cumulative Impact Document (CID) published by DOE in 1997, which provides examination of the baseline conditions (no action) and Site closure. The closure case addresses activities described in the " Accelerating cleanup: Focus 2006" Planning document. Under Site closure, the CID examines the complete Decontamination, Decommissioning, and Demolition (DD&D) of a generic 100,000 square foot plutonium-contaminated facility. In comparison to the generic facility, Building 779 is an approximately 64,000 square foot structure, 36,409 square feet of which contained process equipment. The support facilities consist of an additional 9000 sq. ft. Glovebox areas in the generic facility were patterned after configurations in Building 779 because this facility contains numerous processing areas and was the subject of detailed time and cost estimates to complete DD&D. The discussion below describes the data collected and impacts analyzed for these two alternatives as they apply to decommissioning of the 779 Cluster to the extent practical and appropriate.

Alternatives Analysis

The NEPA requires that actions conducted at the RFETS consider potential impacts to the environment. The Memorandum for Secretarial Officers and Heads of Field Elements, dated June 13, 1994, issued by the Secretary of Energy, Hazel O' Leary and entitled "The National Environmental Policy Act Policy Statement " defines the DOE policy for integrating the NEPA process into the CERCLA decision making process. While no separate NEPA documentation is required for this effort, RFCA (and DOE policy) requires DOE to consider environmental impacts of the proposed action and of alternatives as part of this document.

9.4.2 PROPOSED ACTION AND ALTERNATIVES

Several alternatives were considered for the near-term management of the 779 Cluster. The preamble to RFCA and the RFCA Vision statement both contain the objective that buildings will be decontaminated as required for future use or demolition. The evaluation of the scope of work for the 779 Cluster considered the following three alternatives:

Alternative 1 - Decommissioning of the 779 Cluster
Alternative 2 - No Action, Maintain Safe Shutdown
Alternative 3 - Reuse of the 779 Cluster Facilities

The alternatives were evaluated for effectiveness, implementability, and relative cost. These are summarized in Table 9-1. Alternative 1 is the selected alternative. It clearly supports the Site's Vision of safe, accelerated, and cost-effective closure. This alternative has the lowest life-cycle costs, achieves risk-reduction fastest, and is integrated with the operations of the Site. This alternative also maintains

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long-term protectiveness of public health and the environment. Short-term impacts to the environment (i.e., impacts during the duration of the action) can be physically and administratively controlled. There are no significant negative aspects to decommissioning the cluster at this time.

Alternative 2 does not immediately achieve the Site's goals. It does not accomplish accelerated closure and only defers decommissioning while increasing the life-cycle cost of closure. Short-term protectiveness of human health and the environment is achieved based on inaction, but only until such time as the cluster is decommissioned. Waste and debris requiring treatment and/or disposal, and the risks associated with managing them are not eliminated from the cluster closure under this alternative.

Alternative 3 is not feasible as evident in evaluations indicating reuse of the 779 Cluster is not required or beneficial. As with Alternative 2, implementation of this action will result in the deferral, not elimination, of eventual decommissioning of the cluster which is necessary to achieve the Site's Vision.

9.4.3 ENVIRONMENTAL CONSEQUENCES OF THE PROPOSED ACTION

Environmental effects associated with the D&D of the 779 Cluster are described in the following:

Environmental Impact Issues

As described in earlier chapters and in Appendix A, the 779 Cluster is located entirely within the (secured) Protected Area of the Site's Industrial Area (see Figure 1-1). Building 779 housed less than 1000 kg (1 ton) of plutonium residues that required treatment (DOE/EA-1120, p. 3-6), and these have since been removed. Initial investigations show that many interior surfaces, process drains, piping, gloveboxes, filters, sumps, and other equipment are radioactively contaminated to various levels (see Section 4.0). Decontamination and decommissioning of Rooms 152 and 154 in Building 779 was one of six pilot projects initiated in 1994 and intended to provide "lessons learned" that could be applied to subsequent projects (Categorical Exclusion RFO/CX23-94). In addition to Building 779, the Cluster consists of two cooling towers and two cooling tower chillers, a cooling tower pump house, a paint and storage facility, a metal storage facility, and a gas bottle storage facility (see Appendix A).

The proposed decommissioning activities for the 779 Cluster involve asbestos abatement, decontamination of interior surfaces and equipment by vacuuming and wiping, disconnection of electrical power, draining of piping systems and equipment, removal of gloveboxes and other equipment, further decontamination by wiping, washing, scabbling, and other methods (see Appendix B), and dismantling and demolition of the facilities. Many of these activities could qualify as categorical exclusions under DOE's NEPA regulations (e.g., removal of asbestos from facilities (B1.16); demolition/disposal of facilities (B1.23); disconnection of utilities (B1.27); and minor activities to place a facility in an environmentally safe condition, no proposed uses (including reducing surface contamination, but not including conditioning, treatment, or processing of spent nuclear fuel, high-level waste, or special nuclear materials) (B1.28).

Given the existing environment and industrial setting, environmental impact issues associated with the proposed decommissioning and decontamination activities for the 779 Cluster are limited in scope. The proposed activities are unlikely to result in discernable 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 facilities to be decommissioned are not located in a floodplain and the proposed activities will not be affected by, or themselves affect, any floodplain. No wild and scenic rivers, prime agricultural soils, parks or conservation areas, or natural resources will be affected. The proposed activities will provide employment for a very small number of people, most of whom are expected to come from the current Site work force; thus, the activities are also unlikely to result in adverse socioeconomic effects. Demolition of the Cluster is not expected to be noticeable off-Site and thus is not expected to result in negative impacts to the visual quality of the Rocky Flats area.

Therefore, the discussion of environmental impact issues focuses more intensely on the following areas of potential impacts:

- Mobilization of radioactive and other contaminants into the environment via soils, air, surface waters, or groundwater;

- Health and safety of workers who may be exposed to radioactive and toxic or hazardous materials (including lead, asbestos, and PCBs), and health and safety of the public, both during normal decommissioning activities as well as accidents;

- Environmental issues associated with waste management, including the contribution of wastes generated by the proposed activities to the decreasing Site-wide capacity for interim storage and transportation of waste;

- The physical removal of Building 779 as 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 at Rocky Flats; and

- This project's contribution to Site-wide cumulative impacts.

Geology and Soils
Decommissioning the 779 Cluster will disturb minor land acreage, most of which has been previously disturbed. Some recontouring of the soils may occur after facilities are removed to restore soil in areas disturbed by demolition equipment. Disturbed soils will be revegetated as necessary any to avoid soil erosion. Contamination of soils from decommissioning activities is not expected because facility structures will be decontaminated or fixed prior to demolition of the structures themselves.

Air Quality

Potential impacts to air quality resulting from the decommissioning of the 779 Cluster facilities include asbestos emissions resulting from asbestos removal, beryllium emissions resulting from the decontamination and removal of equipment and facility materials, radionuclide emissions resulting from the decontamination and removal of equipment, and fugitive dust emissions resulting from transportation activities associated with the decommissioning and demolition activities. Air emissions from these activities will be controlled and monitored in accordance with the RFETS Health and Safety Practices Manual.

Asbestos is present in several areas of Building 779, primarily in the form of pipe insulation. These materials will be removed by a properly certified contractor in accordance with applicable state and federal regulations. Assuming that the removal, transportation, and final disposition is in accordance with applicable regulations, there is minimal risk of an asbestos release to the air.

Some equipment within Building 779 is potentially contaminated with beryllium. The house cleaning action level for beryllium contamination is 25 µg per square foot. Cleanup and removal of materials and equipment contaminated with beryllium has a very small potential to cause a release to the air. Management of the contaminated materials and equipment in accordance with current Site procedures will result in minimal risk to both on- and off-Site personnel. Cleanup of
any building materials to the lowest level practicable will minimize any potential beryllium release during the demolition of Building 779.

Decontamination, size reduction, removal, and ultimate disposal of equipment and materials in Building 779 have the potential to release radionuclides to the air. Decontamination and size reduction activities take place within containment (either glovebox, B-box, or hood) that is equipped with a HEPA filter. In addition, the building room exhaust is equipped with HEPA filters. This essentially eliminates the potential for a radionuclide release short of an accident during the transportation of the contaminated material. Stack monitoring is also conducted to ensure the integrity of the HEPA filtration equipment.

Fugitive dust emissions will result from the transportation of materials and wastes from the 779 Cluster. There is the potential for significant mitigative measures will be taken to minimize dust emission; short term fugitive dust emissions during the demolition of the structure itself without taking mitigation measures. Building 779 is a reinforced concrete and cinder block construction which will require the use of heavy

equipment to reduce. Because of the distance of the Cluster from Site boundaries, impacts will be short-term to personnel working in areas proximate to the 779 Cluster.

Miscellaneous hazardous materials will be removed from several structures within the 779 Cluster. These materials will be managed in accordance with existing Site procedures and there will be little risk for air emissions.

Water Quality
Because the ground floor and basement of Building 779 will remain in place decommissioning of the Cluster is not expected to impact, storm water runoff, storm water percolation, or surface water flow characteristics.

Existing wastes collected in the facility storage tank located in the basement of Building 779 present only a negligible risk if they are managed in accordance with existing Site procedures.

Building demolition can result in particulate runoff in storm water unless preventative measures are taken. For that reason the terms of the Industrial Area IM/IRA must be satisfied.

Because decommissioning of the 779 Cluster will not remove any portions of structures below ground level, no new bare ground is expected to be exposed to wind or water erosion. If appropriate in specific instances, silt fencing or similar protective devices would be installed to prevent or minimize the possibility of water-borne soil leaving the immediate area and entering drainage ways. Demolition activities may, however, deposit small amounts of debris on the surrounding pavement or ground surface which could be carried away by storm water runoff. Quantities of such material are expected to be small.

Among the techniques that may be used for decontamination of the 779 Cluster is the use of water or steam to remove contamination and loose debris (Appendix B). While this technique is effective in removing contamination, it also generates large volumes of potentially contaminated water and may even contribute to the spread of contamination. Surface water samples from the 779 Cluster drainage sub-basin will be collected using an automated station located to pull samples from the entire sub-basin's runoff. Water used for decontamination will be treated prior to release.

Because no work will be done below ground level, ground water should not be affected. The basement of Building 779 will be left intact with the stairway sealed to prevent in flow of storm water.

9.4.4 Human Health Impacts

Decommissioning has the potential to expose involved workers, non-involved workers, and the public to radiological and other contamination because the nature of the work is to remove or fix-in-place contamination. Disruption of contaminants or hazardous materials increases the chance of the contaminant or materials being dislodged, becoming airborne, and being inhaled by or Deposited on humans.

Radiological Impacts

For involved workers, deactivation and decontamination activities at Building 779 are estimated to result in a total dose of 17 person-rem. This exposure would be expected to result in less than 1 (0.07) latent cancer fatalities, assuming the same worker group conducted both deactivation and decontamination activities. Doses to co-located workers from decommissioning operations at Building 779 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 millirem (a millirem 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).

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 23 person-rem, or a total of 23 rem for all of the 2.7 million people projected to be living within 50 miles of the Site in 2006. This annual dose of 23 person-rem would be 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 millirem/year (CID, Section 5.8.2).

Estimated doses from the 779 Cluster Decommissioning Project are expected to be a small fraction of those estimates for Site-wide activities, as described above. For comparison purposes, DOE's annual limit for occupational exposure as a result of all activities and through all exposure pathways is 5,000 millirem (5 rem) per person. The Site standard for annual exposure is 750 millirem per person. Natural background radiation in the Denver area results in an annual exposure of approximately 350 millirem per person.

Exposures to workers and the public will be controlled and monitored in accordance with the RFETS RCM (Section 7.4).

Non-Radiological Impacts

Non-radiological health effects (from exposure to chemicals) is 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 decommissioning of all facilities), a hazard index of 1.2 has been calculated for a co-located worker who is chronically exposed to all chemicals of concern simultaneously during working hours over the entire period of Site closure. The corresponding cancer risk is 5 in 100,000 (CID Section 5.8.3).

For the full suite of Site closure activities (including decommissioning of all facilities), 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 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 3 in 10,000,000 for the maximally exposed off Site individual (CID Section 5.8.4).

Estimated non-radiological impacts from the 779 Cluster decommissioning are expected to be a small fraction of those estimates for Site-wide activities, as described above. Exposures to workers and the public will be controlled and monitored in accordance with the RFETS HSP Manual (Section 7.3).

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 -

2006) (CID, Section 5.8.3). The portion of these cases which would be estimated to result from the Building 779 decommissioning 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 HSP Manual (Section 7.2).

9.4.5 Plants and Animals

Because the 779 Cluster 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 associated with increased traffic in order to accommodate the decommissioning equipment. Increased traffic, both vehicular and pedestrian, could result in some vegetation disturbance.

Mammals such as rats, mice, and raccoons are known to be residents of or visitors to the Industrial Area. These mammals would be displaced, and some mortality would occur as a result of decommissioning activities. Bird nests attached to the facilities planned for demolition would be destroyed, although no direct bird mortality is anticipated. The Preble's Meadow Jumping (PMJ) mouse: a species proposed for listing as endangered, is known to exist in downstream areas of the 779 Cluster. Mitigation measures to protect this species are identified in Section 9.4.11. The 779 cluster activities will not be performed in known Preble's habitat.

9.4.6 Waste Management

Environmental impact issues associated with waste management are related to human health issues, storage capacities, and transportation.

In general, waste generated from decommissioning of the 779 Cluster includes contaminated and uncontaminated equipment, tools, electrical conduit systems, piping systems, gloveboxes and facility structural materials. Decommissioning of the 779 Cluster will generate waste as estimated in Section 8.0.

Decontamination will be performed in conjunction with decommissioning to remove radiological contamination and hazardous constituents. Where feasible, items will be decontaminated to free release conditions. Items that have been decontaminated to a free release condition will 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. Mixed waste generated from decommissioning activities will be stored on Site, and where feasible, shipped to an approved off-Site disposal Site. Hazardous wastes and excess chemicals will be managed as waste, where applicable, and disposed of in accordance with established procedures. Materials and waste will be characterized, stored, and disposed of in accordance with 779 Cluster ARARs.

Waste minimization will be utilized in the planning and management of the 779 Cluster decommissioning wastes. Elimination and reduction of waste generated as a result of decommissioning is a high priority. Standard decontamination operations and processes will be evaluated for waste minimization potential and suitable minimization techniques will be implemented (Section 8.7).

With respect to transportation of waste, the 779 Cluster decommissioning project would generate and package materials suitable to meet DOT transportation requirements (Section 8.9).

9.4.7 Historic Resources

The environmental impact issue related to historical resources is the loss of Building 779 as a 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. A related cumulative impact is discussed in Section 9.4.3.

Sixty-four facilities within the Site's Industrial Area, including Building 779, have been identified as important to the historic role of the Site in manufacturing nuclear weapons components during the Cold War. Building 79 was originally constructed in 1965, with additions in 1968 and 1973 (Reference Section 1.2.2 and Appendix A). While this facility, like the others, is less than 50 years old, one of the usual criteria for determining eligibility is that it is considered historically significant as an essential component of the weapons production activities at Rocky Flats.

The agreement between DOE and the State Historic Preservation Officer (SHPO) concerning the appropriate mitigative measures applicable to these facilities has been completed; Building 779 will be subject only to documentation requirements (collection or creation of construction drawings and photographs), rather than preservation. No modification of or damage to the facility will occur prior to completion of documentation accordance to standards accepted by the SHPO.

The demolition of the 779 Cluster is in support of the Site mission and is covered under the Atomic Energy Act.

9.4.8 Noise

Decommissioning and demolition of the 779 Cluster is not expected to significantly increase noise levels in the Rocky Flats area. Most activities will take place inside the associated facility so that noise levels, if elevated over ambient levels, will be confined to the 779 Cluster structures in which they are generated. Other, less common activities such as scabbling (use of a machine to remove layers of concrete), blasting (use of various materials such as sand, dry ices, or other abrasives to remove superficial contamination), and demolition by backhoe ram, hydraulic cutters, wrecking ball, or other devices are expected to generate noise levels higher than ambient noise levels. However, workers involved in those activities will use appropriate hearing protection devices during activities expected to generate high noise levels (Section 7.2). Outdoor activities will take place at a distance from unprotected workers and the public, and thus are not expected to increase noise levels to these populations to an unsafe level.

9.4.9 Socioeconomic Effects

Potential impacts from the decommissioning of the 779 Cluster would contribute to a net overall loss of employment in the long run. The current on-Site work force in the facility would either be drawn into the D&D activities for the facility (and potentially for the entire Site), or voluntarily lose employment. In the short run, the decommissioning activities could actually increase the employment level due to increased work force levels associated with D&D activities. Additionally, a modest increase in purchases (raw materials, etc.) may result due to D&D activities in the short run.

Under the worse case scenario, if the entire work force currently housed in the 779 Cluster all opted for voluntary unemployment, the net overall impact would not have a great adverse effect on the Denver Metropolitan area nor would it adversely affect Boulder and Jefferson Counties, where the majority of the work force reside. Taken as a single facility, the net effects are expected to be minimal.

9.4.10 Cumulative Effects

Impacts associated with the decommissioning of the 779 Cluster would contribute incrementally to potential Site-wide cumulative impacts associated with the overall Site Closure Program.

Some of these cumulative impacts may ultimately prove to be beneficial to the environment, assuming that the activities result, as expected, in the restoration of much of the Site's natural condition prior to construction. Removing human occupation, structures, and paved surfaces and reestablishing 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 population.

As with decommissioning of the 779 Cluster, decontamination and decommissioning of structures Site-wide will generate transuranic, low-level mixed waste, and industrial (landfill) waste. Existing on-Site interim storage for radioactive waste is limited (DOE/EA-1146), and eventually, as Site-wide decommissioning progresses, additional storage capacity may be needed. The same is true for industrial waste; the existing landfill is nearing capacity and is scheduled for closure under the site restoration program in 2006. All sanitary landfill and special waste will be transported to USA's Front Range Landfill in Erie, Colorado.

Also, demolition of the 779 Cluster is part of a potential cumulative effect to historic resources. Demolition will result in the 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. Other historic structures within this district are also proposed for decommissioning and presumed demolition. The cumulative effect of these removals may be significant (see mitigation measures below). The landscape would take on a less industrial and more open, rural appearance, similar to the rangeland that characterized the area before the Plant was constructed.

9.4.11 Mitigation Measures

Mitigation measures are prescribed to reduce or avoid potential adverse effects associated with a proposed activity. For the decontamination and decommissioning of the 779 Cluster, mitigation measures will be considered in the areas of human health, worker safety, release of emissions and mobilization of contaminants, and cultural resources.

Decommissioning will be conducted in accordance with applicable worker and public health and safety programs (Section 7.0); activities will be managed so that emissions and discharges are within applicable regulatory limits (Section 9.0). As required, decommissioning will take place within the containment of existing facilities 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.

A run-off management plan will be developed and implemented to avoid contamination of groundwater or surface water.

If, during demolition activities, groundwater is encountered, the water will be characterized for contaminants and a determination of its acceptability for discharge obtained.

Precautions will be taken to ensure compliance with the Migratory Bird Act that prohibits destruction of birds or their nests, active or inactive, without a permit. Building surveys for such nests in the 779 Cluster will be conducted prior to demolition.

No decommissioning activities will take place in or near habitat of known threatened or endangered species.

Mitigation measures that will be applied, as appropriate, to ensure protection of the Preble's Meadow Jumping mouse are as follows:

- Containment of any potential contamination (chemical and radiological) associated with decommissioning such that this contamination cannot enter waterways;
- Placement of silt fencing downstream/downhill of any excavation or soil disturbance and construction of diversion ditches and sumps to contain contaminated sediment.

No modification of or damage to facilities determined to be eligible for the National Register of Historic Places will occur prior to completion of documentation according to standards set forth in the programmatic agreement between the DOE/Rocky Flats Field Office, the Colorado State Historic Preservation Office, and the Advisory Council on Historic Preservation.

9.4.12 Unavoidable Adverse Effects

The 779 Cluster decommissioning activities, if conducted as proposed, 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 decommissioning activities.

9.4.13 Short-Term Uses and Long-Term Productivity

Unlike most projects which commit a Site to a particular use for a period of time, the effect of decommissioning will be to undo past commitments concerning use of the Site and open up a new and broad range of potential future uses. Decommissioning does not commit the Site to a particular land use, rather, decommissioning of the 779 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.

9.4.14 Irreversible and Irretrievable Commitments of Resources

Decommissioning is essentially a destruction project eliminating existing uses, not a construction project consuming land and building materials. Decommissioning of the 779 Cluster will release land and perhaps some facilities for other uses. Funds, labor, equipment, fuel, tools, personal protective equipment, waste storage drums, and similar items are resources that will be irretrievably committed to the decommissioning project. There are no anticipated irreversible or irretrievable commitments of resources natural as a result of the proposed action.