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Rockwell International

Energy Systems Group
Rocky Flats Plant

000024435

WASTE OPERATIONS

WASTE OPERATIONS

RADIOACTIVE HAZARDOUS TREAT STORE DISPOSE SOLID LIQUID TECHNOLOGY

ADMIN RECORD

SW-A-003937

1/76

RADIOACTIVE WASTE

IMPLEMENTATION PLAN

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SECTION I

GENERAL INFORMATION

1.0 Information

The Rocky Flats Plant is located in Jefferson County, Colorado, at the foot of the Rocky Mountains, approximately 16 miles northwest of Downtown Denver. The Plant is operated by Rockwell International, North American Space Operations, for the United States Department of Energy under Contract E-29-2-3533 and is the responsibility of the Department of Energy (DOE), Rocky Flats Area Office (RFAO) and Albuquerque Operations Office (AL). All waste generation and waste management activities are controlled by the contractor and are funded by the OMA GB Weapons Program.

2.0 Organization

The Rockwell department responsible for waste management at Rocky Flats is Waste Operations. The organizational structure of Waste Operations is illustrated in Figure 1. The Manager of Waste Operations reports to the Director of Plutonium Operations and is responsible for the overall management of radioactive, mixed (radioactive and hazardous), and hazardous wastes generated at Rocky Flats. Managers of three subgroups, Liquid Waste Operations, Solid Waste Operations and Waste Technology & Compliance, report to the Manager of Waste Operations.

3.0 Applicability

This implementation plan has been prepared to meet the requirements of DOE/AL 5820.2. The format used was prepared and provided by the Waste Management and Transportation Development Division, U. S. Department of Energy, Albuquerque Operations Office.

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Rockwell International
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Rocky Flats Plant

WASTE OPERATIONS

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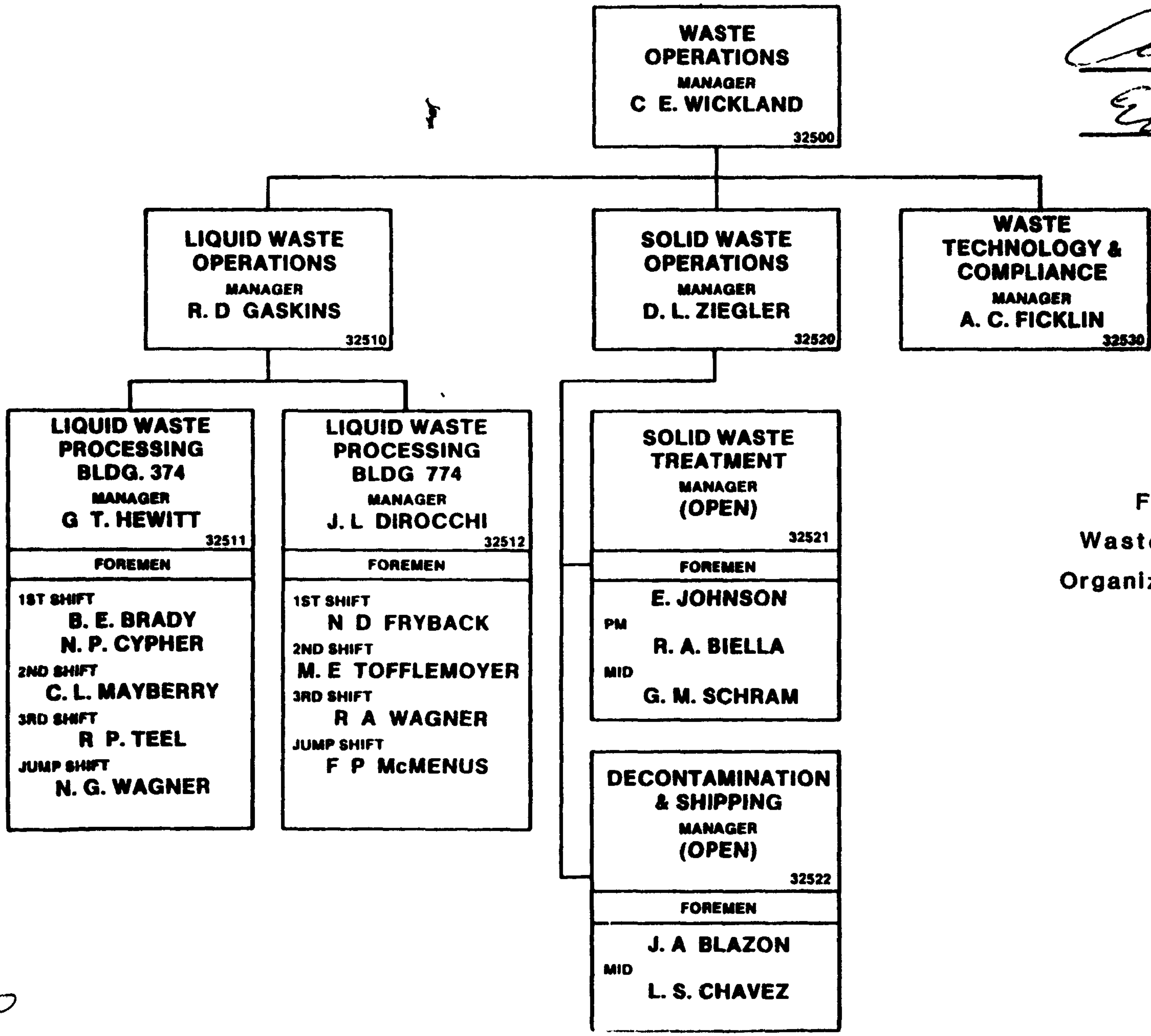

FIGURE 1
Waste Operations
Organizational Chart

32500	3
32510	6
32511	35
32512	23
32520	2
32521	36
32522	27
32530	13
	145

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4.0 General Plant Mission

The Plant's primary mission is to produce components for nuclear weapons. The Plant's secondary mission is to provide support to the fabricating mission by operating facilities for the recovery of plutonium, for waste treatment and disposal, for chemical laboratories, for research and development, and for special support operations for other DOE facilities. In performing these operations, waste materials are generated that may be radioactive, mixed, or hazardous waste.

5.0 Site Description

The Rocky Flats Plant covers almost 11 square miles, occupying Sections 1 through 4 and 9 through 15 of R 70W, T 2S of Jefferson County, Colorado. It is located 16 miles northwest of Denver, Colorado, and 9 to 12 miles from the communities of Boulder, Golden and Arvada.

The climate at Rocky Flats is characterized by dry, cool winters and warm, somewhat moist summers. There is considerable clear-sky sunshine, and the average precipitation and relative humidity are low. The elevation of the Plant and the major topographical features of the area significantly influence the climate and meteorological dispersion characteristics of the site.

Winds at Rocky Flats, although variable, are predominately northwesterly, with stronger winds occuring in the winter. Localized hurricane-force chinook winds, gusting to velocities of approximately 105 mph, have been recorded on several occasions.

Wind gusts of up to 150 mph have been recorded at the National Center for Atmospheric Research (NCAR), approximately 7 miles north-northwest of the Plant.

Annual average precipitation at the Rocky Flats Plant is slightly over 15 inches (38.1 centimeters). Typically, more than 80 percent of the precipitation falls as rain between April and September. Most of the remaining precipitation is in the form of snow.

The depth to groundwater at Rocky Flats ranges from 2 to 37 feet (0.6 to 11 meters), with an average depth of approximately 20 feet (6 meters). There are no drinking water wells or hazardous waste injection wells on the plantsite.

Additional information regarding the site can be obtained from the Final Environmental Impact Statement for the Rocky Flats Plant Site, Golden, Jefferson County, Colorado, U. S. Department of Energy, April 1980, Volume 1 of 3.

6.0 Site Safety Assessment

The Rocky Flats Plant Final Environmental Impact Statement (DOE/EIS-0064) assesses the potential cumulative environmental impacts associated with current, known future, and continuing activities at the Rocky Flats Plant site. Operations at the Rocky Flats Plant necessarily involve radioactive contamination of various liquids, solids, and gases. Radioactive wastes are handled in accordance with stringent procedures and within multiple containments (physical barriers) designed to minimize

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the release of contaminants to the environment. Specific information regarding Waste Operations can be found in Chapter 2.7, "Radioactive Waste Systems", of Volume 1 of the Rocky Flats Plant Final Environmental Impact Statement.

7.0 Notifications and Permit Applications

7.1 Incineration

1) Permit C-12, 931 - Building 123 Incinerator
2) Permit C-12, 932 - Building 771 Incinerator
3) Permit C-12, 930-1;2 - Building 371 Incinerators
4) Permit C-13, 002 - Building 776 Fluid Bed Incinerator
5) Application C-12, 896-Building 701 Fluidized Bed Reactor
6) Initial Approval C-12, 115 - Building 701 Rotary Kiln

7.2 NPDES

Rocky Flats Plant NPDES Permit CO-0001333

7.3 RCRA

Interim Status, ID Number COD 078343407

8.0 Environmental Sampling and Monitoring

The Environmental Analysis Section is responsible for monitoring facilities at Rocky Flats. A complete listing of the Rocky Flats monitoring program is contained in the "Catalogue of Monitoring Activities at Rocky Flats" provided in Appendix A. The monitoring program is reviewed and updated annually and summary monitoring and sampling results are provided to RFAO for annual transmittal to AL.

The Building locations for stationary air effluent monitors and monitoring parameters are listed in pages 5 through 9 of Appendix

A. Each exhaust system is identified by a prefix that gives the building identification. Figure 2 shows an area plot plan of the building locations.

A mobile ambient air monitoring (MAAM) van is utilized for air quality monitoring. A description of the ambient air monitoring activities at the MAAM van is given on pages 16 through 17 of Appendix A. The MAAM van is currently located northeast of the east guard station that is identified on Figure 2 as Gate 9.

A complete list of parameters sampled and monitored in ground water, surface water and air are catalogued on pages 10 through 50 in Appendix A. Water use at Rocky Flats is diagramed in Figure 3. The locations of the ground water monitoring wells are shown in Figure 4. Figure 5 shows the locations of surface water ponds that are monitored. The Rocky Flats Plant holding pond schematic is shown in Figure 6. The location of onsite and perimeter ambient air samplers are shown in Figure 7. These air samplers are routinely used to monitor radioactive effluent. They are also used to monitor for beryllium after a fire or accident and would be available for monitoring spills of other hazardous materials.

9.0 Health and Safety

Rocky Flats has in effect an Industrial and Operational Safety program to reduce occupational hazards and alleviate property losses. The primary objective is to eliminate or reduce to a

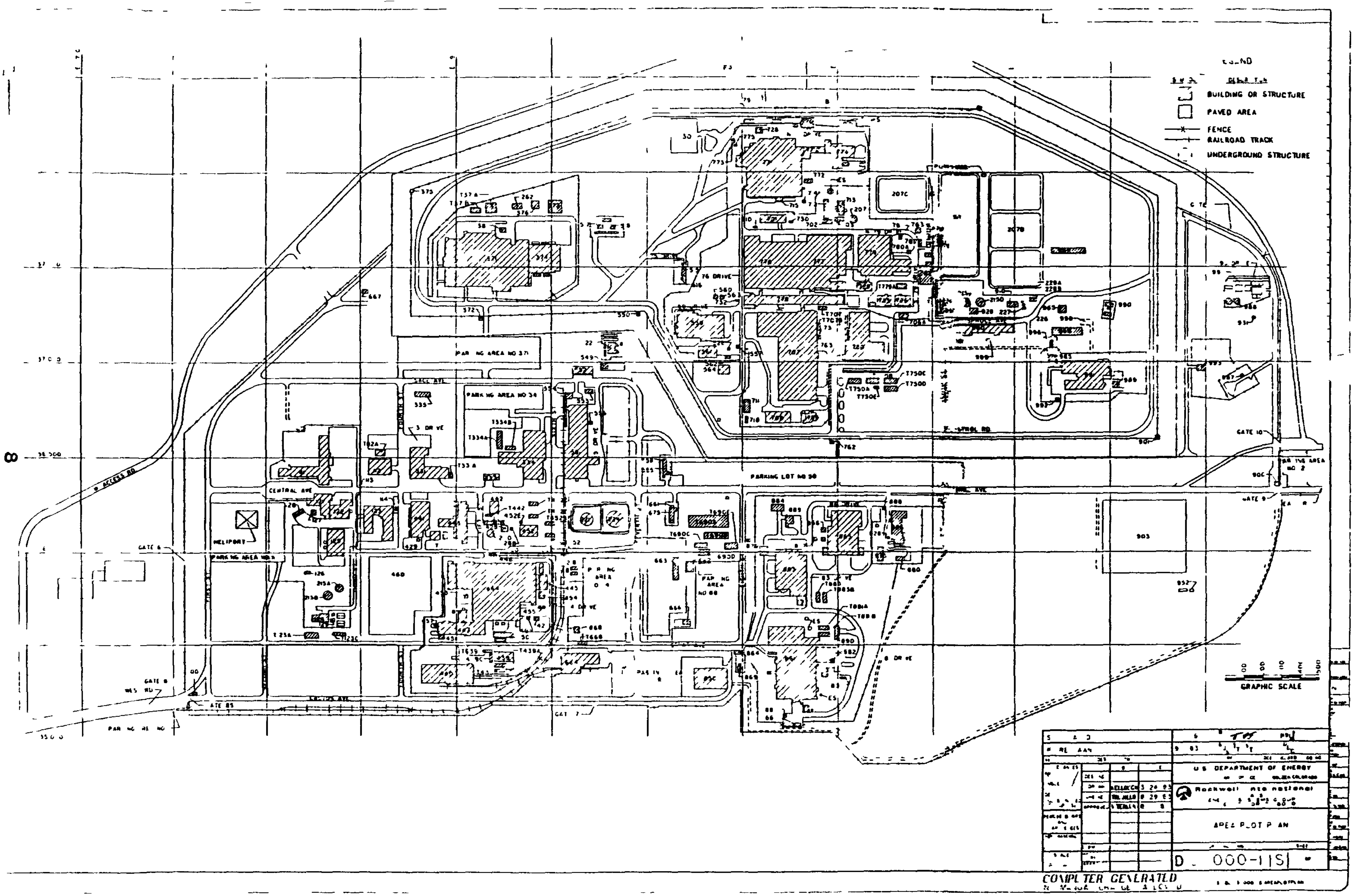

FIGURE 2 Area Plot Plan of Building Locations

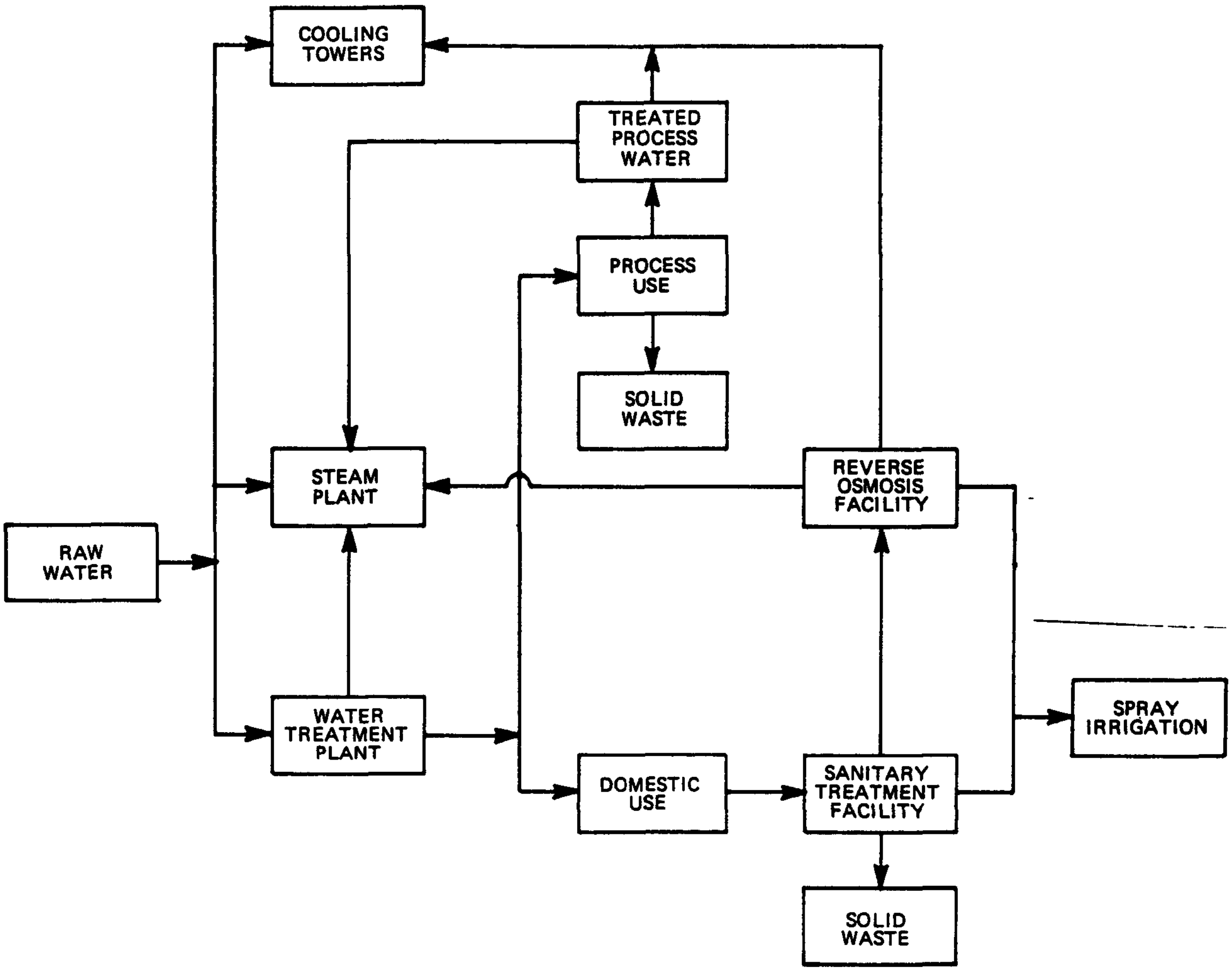

FIGURE 3 Water Use at Rocky Flats

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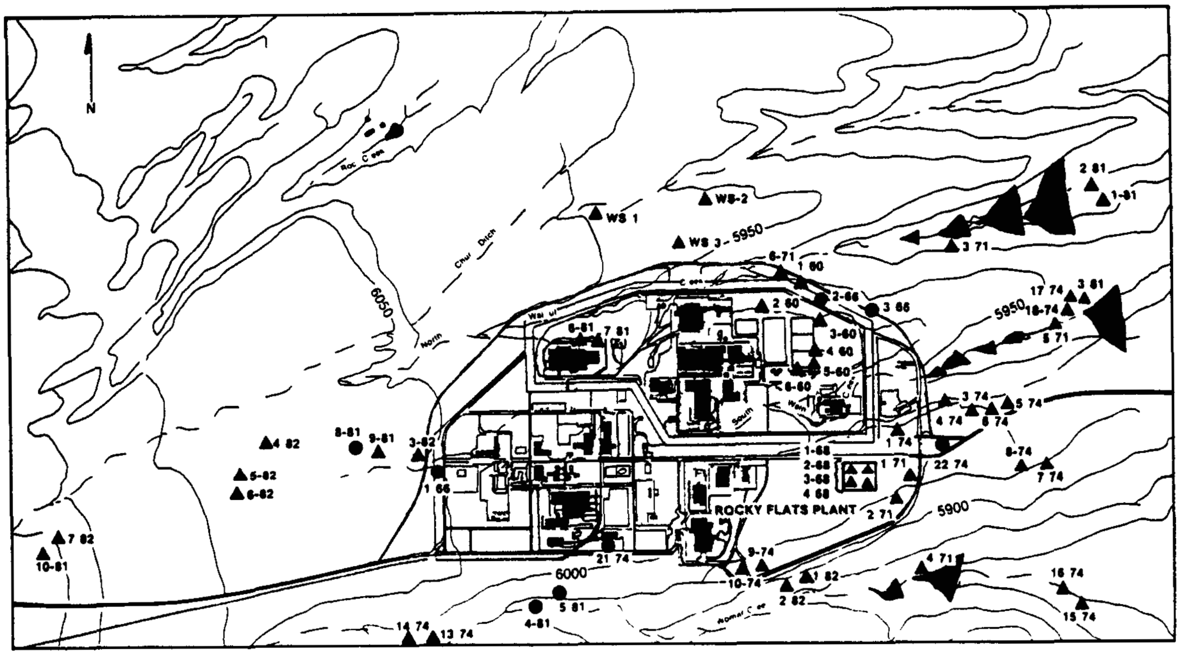

LEGEND

● MONITORING WELL GREATER THAN 30 METERS
▲ MONITORING WELL LESS THAN 15 METERS

FIGURE 4 Location of Monitoring Wells at Rocky Flats

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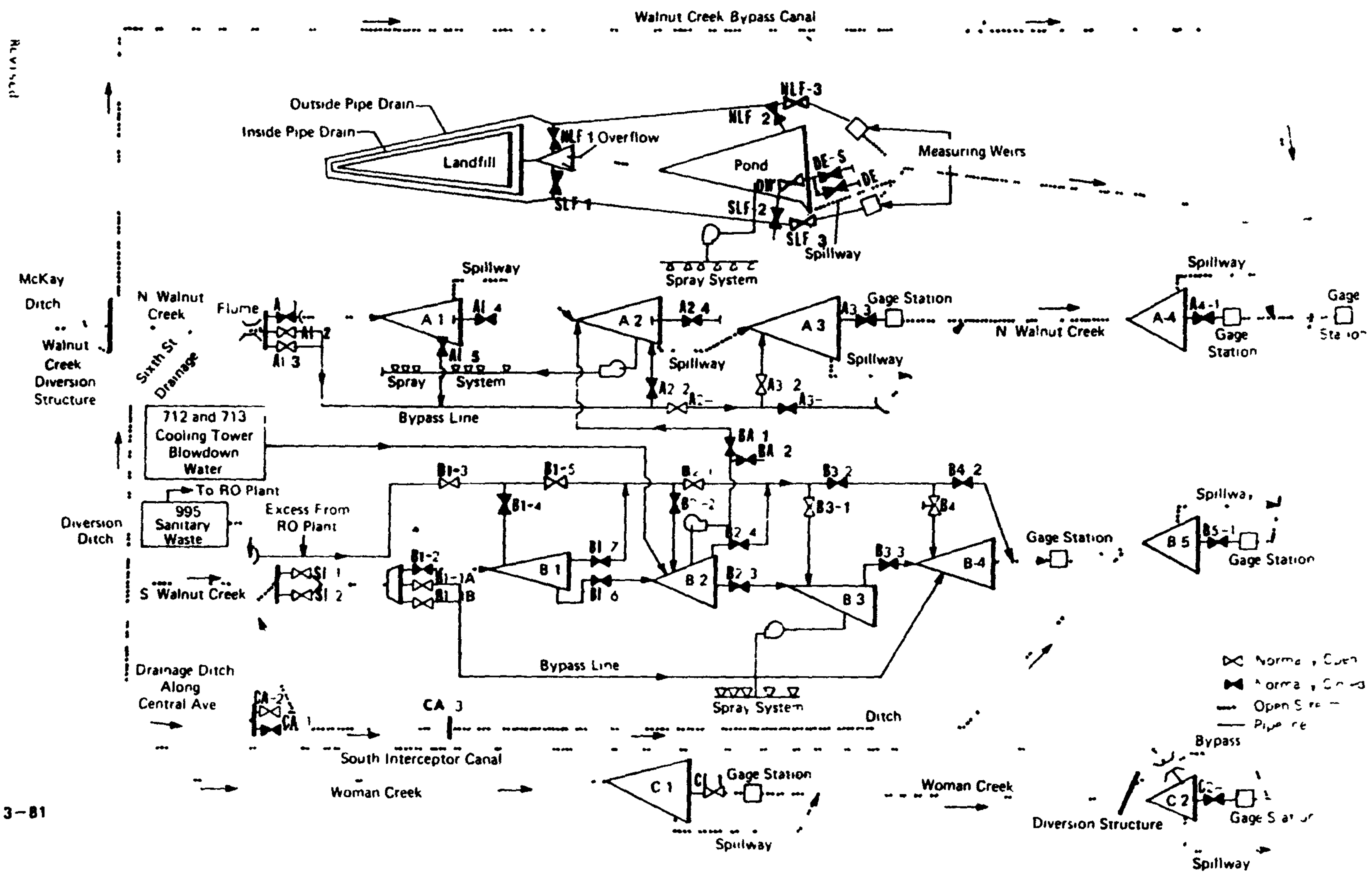

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FIGURE 6 Rocky Flats Plant Holding Pond Schematic

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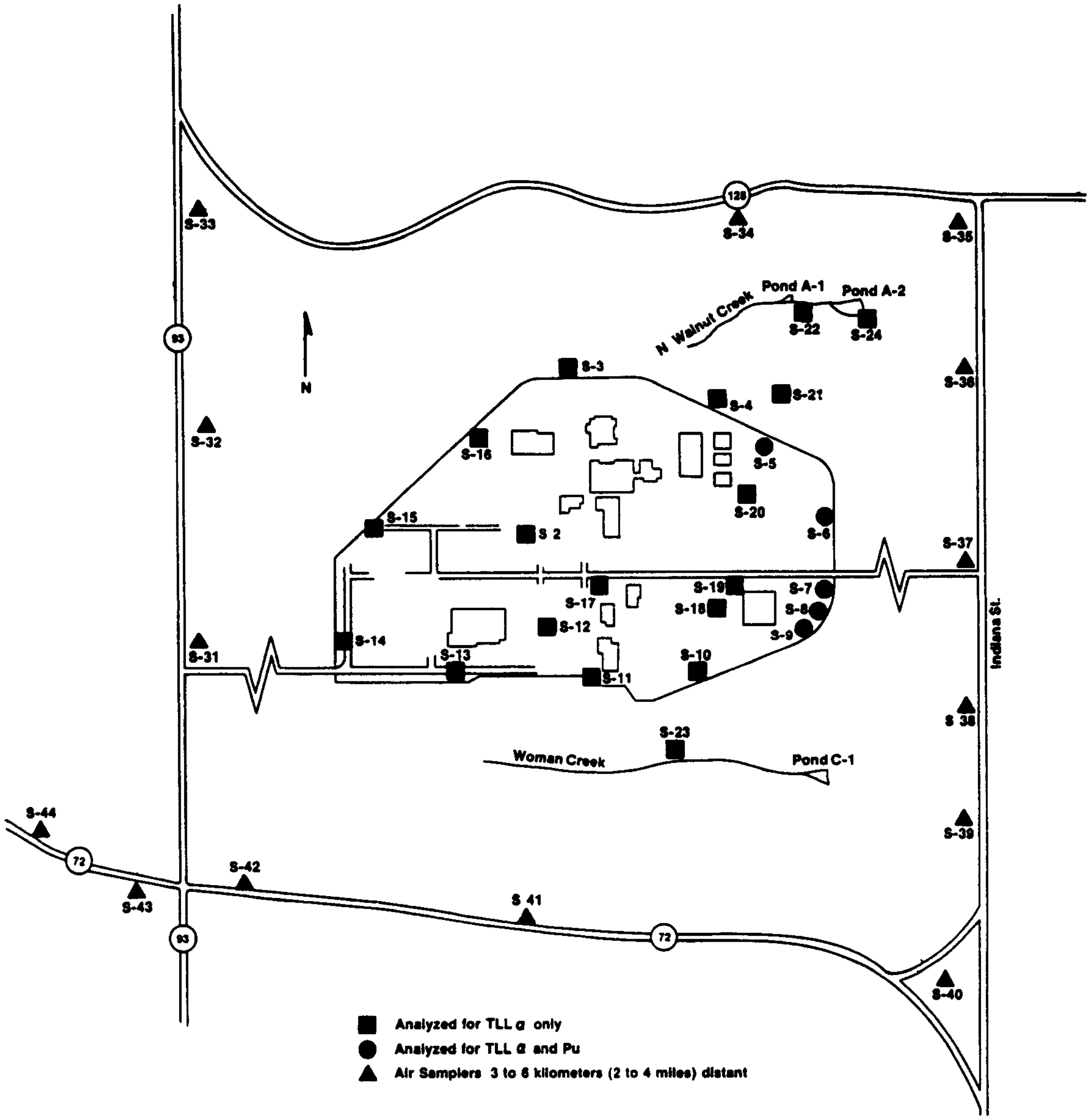

FIGURE 7 Locations of Onsite and Perimeter Air Samplers

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minimum, hazards which could result in industrial injuries, occupational illnesses, or property losses.

This objective is accomplished by the preparation of, and adherence to, written Health, Safety and Environment Manual procedures, prescribed standards listed in DOE Manual Chapters as well as Federal, State and local standards.

The scope of this program includes safety review of: maintenance work orders, special permits for potentially hazardous operations, work methods and processes, equipment handling and operation, and new subcontracts or modification to existing contracts. The program also includes facility inspections, audits, accident and loss reporting, recordkeeping, statistical analysis of data and procedure development.

In addition, Rocky Flats maintains an onsite medical facility. The medical facility consists of a hospital that includes a surgery room, treatment rooms, x-ray facility, five-bed ward, decontamination room and medical laboratory. The hospital is staffed by three doctors, four nurses, one x-ray technician and a medical secretary. Onsite ambulance, rescue, and emergency medical technician (EMT) services are provided by the Rocky Flats Fire Department. The Fire Department provides 24-hour service. Their emergency equipment consists of:

1) Two pumper trucks
2) One water tanker truck
3) One fully equipped ambulance
4) One fully equipped rescue vehicle
5) One "brush" truck, used primarily fo grass fires
6) Two general purpose vehicles

10.0 Quality Assurance

Quality Assurance philosophy and guidelines are addressed for plantwide operations in the Quality Program Manual (QPM). Guidelines provided in the QPM are in accordance with DOE orders dealing with Quality Assurance requirements. One step lower in the Plant Quality Assurance documentation hierarchy is the Quality Program Plan--Waste Processing (QPP-WP). The QPP-WP outlines the responsibilities of groups involved in Waste Operations activities in order to comply with the guidelines specified in the QPM. Additional quality requirements are documented in the Quality Program Plan--Health, Safety and Environment (QPP-HS&E), the Quality Assurance Program for TRU Waste Certification, and DOE Order 5700.6, "Quality Assurance."

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SECTION II

RADIOACTIVE WASTE MANAGEMENT

1.0 Description of Radioactive Waste Generating Processes

The Rocky Flats Plant processes large quantities of plutonium, significant amounts of depleted uranium, small amounts of enriched uranium, and ^{233}U, ^{241}Am, and ^{237}Np. In terms of volume, approximately 95 percent of the wastes generated are the result of processing plutonium with the majority of the remaining 5 percent generated by the processing of depleted uranium. After processing, the waste fractions are changed so that 60 percent of the waste shipped is low-level waste (LLW) and the remaining 40 percent is transuranic (TRU).

Site return metal is extracted in a molten salt media for americium removal. Subsequent aqueous processes separate the americium from the salt. This operation generates the following wastes: chloride effluents, spent ion exchange resins and combustibles.

Considerable ^{241}Am is discarded through the various waste streams to waste treatment. Less than 1 percent of the wastes contain enriched uranium and ^{233}U (which is packaged as TRU waste). In terms of radioactivity, the uranium wastes represent less than 5 percent of the total.

The plutonium metal is melted in tantalum crucibles, cast in graphite molds, and sent to the fabrication area. Oil-based coolants and fluids contact the plutonium in the fabrication process. Scrap plutonium metal from the fabrication and the assembly process is recycled through the foundry for reuse in the casting operation. Intermediate steps required prior to casting include degreasing and briquetting (Figure 8).

Residues which cannot be recycled as metal (such as casting skull, glove box sweepings, and impure metal) are sent to Chemical Operations Plutonium Recovery Plant in either metal or oxide form. The plutonium metal produced is recycled to the foundry.

In the manufacturing, fabrication, recovery processes, and Analytical and R&D Laboratories, additional residues are generated which require pretreatment prior to plutonium recovery by peroxide precipitation. These include casting crucibles and molds, reduction residues, gloves and plastics, paper and other combustible waste, and a variety of miscellaneous residues such as glass, scrap metal, and insulation. These residues are incinerated, leached, dissolved, scraped, and/or hand washed to remove as much plutonium as possible. The treatment used depends upon the type of residue to be processed.

In processing these residues, secondary residues are generated. For example, in the incineration of combustibles, items such as fire brick, soot, and off-gas filters become loaded with plutonium and, in turn, must be processed for plutonium recovery.

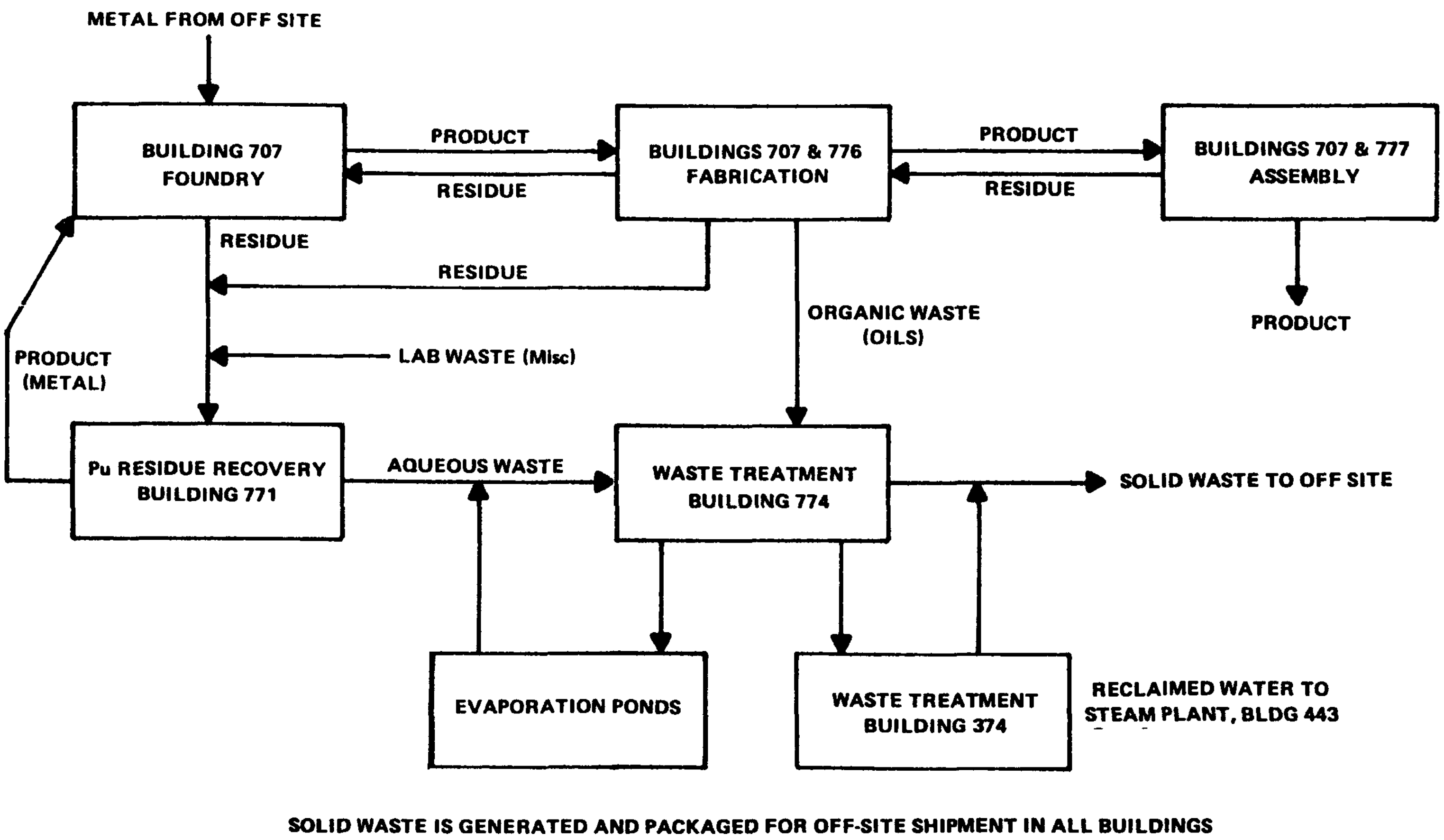

FIGURE 8 Liquid Waste Generation Flow Diagram

2.0 Waste Management Facilities and Operations

The Area Plot Plan shown in Figure 9 and the map of the DOE-owned property surrounding the Rocky Flats Plant (Figure 10) show the location of the Plant's Waste Management Facilities. Physical and functional descriptions, along with process flow diagrams of the Waste Treatment Facilities are as follows:

2.1 Liquid Waste Operations (Figure 11)

2.1.1 Building 774, Liquid Waste Treatment Facility (Figure 12)

The liquid waste treatment operations in Building 774 treat all liquid process wastes from Building 771, Plutonium Recovery Area, Building 883, and organic liquid waste from Buildings 707 and 777. Treatment in Building 774 is for the purpose of liquid waste disposal and includes no plutonium recovery.

The first-stage operation treats the liquid wastes generated in the Building 771 Recovery Area. These wastes can be categorized as follows: ion column nitric acid effluent, americium ion column nitric acid effluent, caustic scrub solution, hydrochloric acid effluents, steam condensates, evaporator distillate, and miscellaneous acidic, basic, and organic solutions.

Acid wastes are first made basic and the resulting solids separated from the liquid by filtration. All waste liquids are then combined and passed through a carrier precipitation process. Ferric sulfate, calcium chloride, magnesium sulfate, and a coagulating agent are used to form a floc that co-precipitates with the radioactive contaminants.

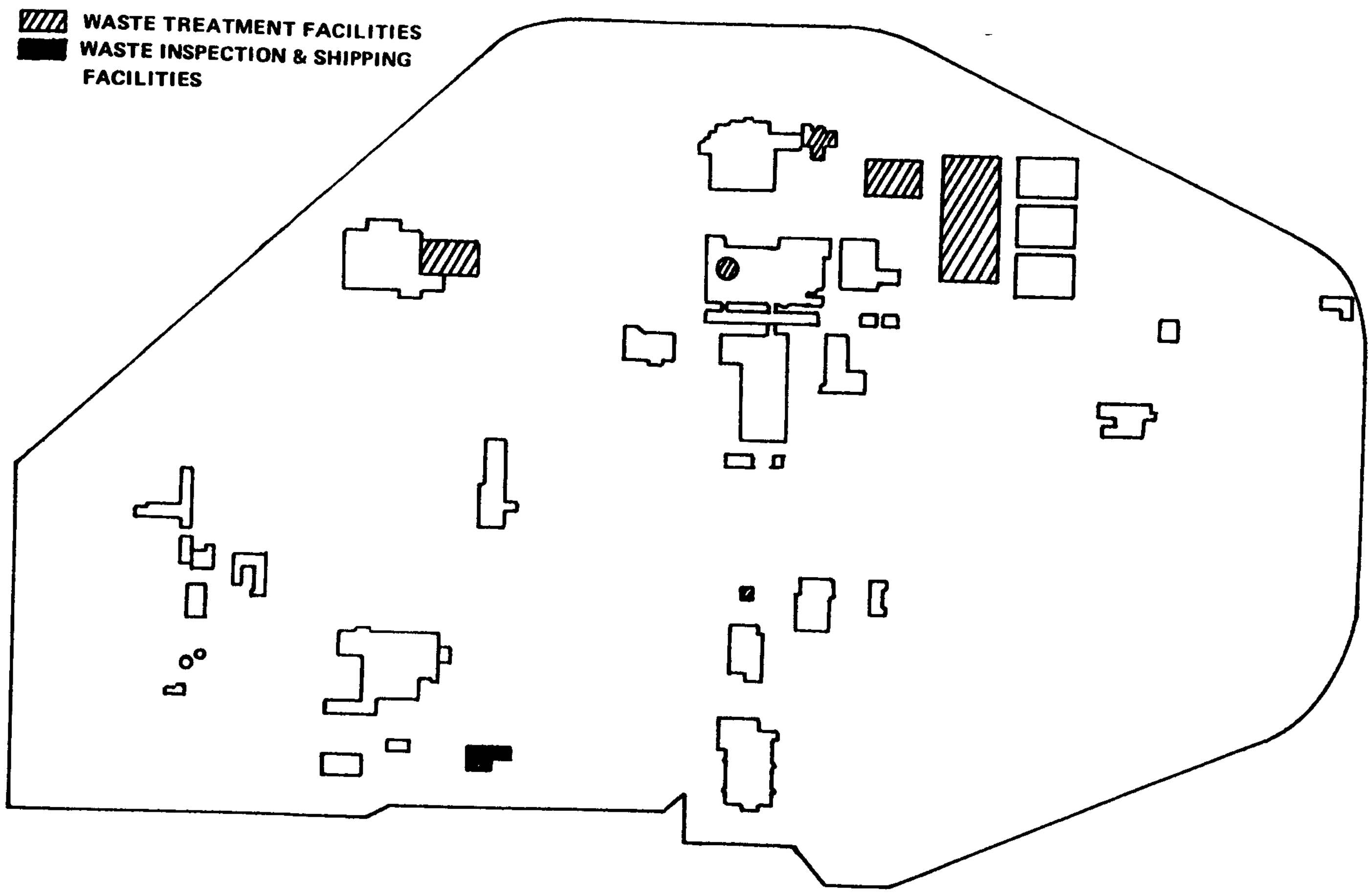

FIGURE 9 Area Plot Plan

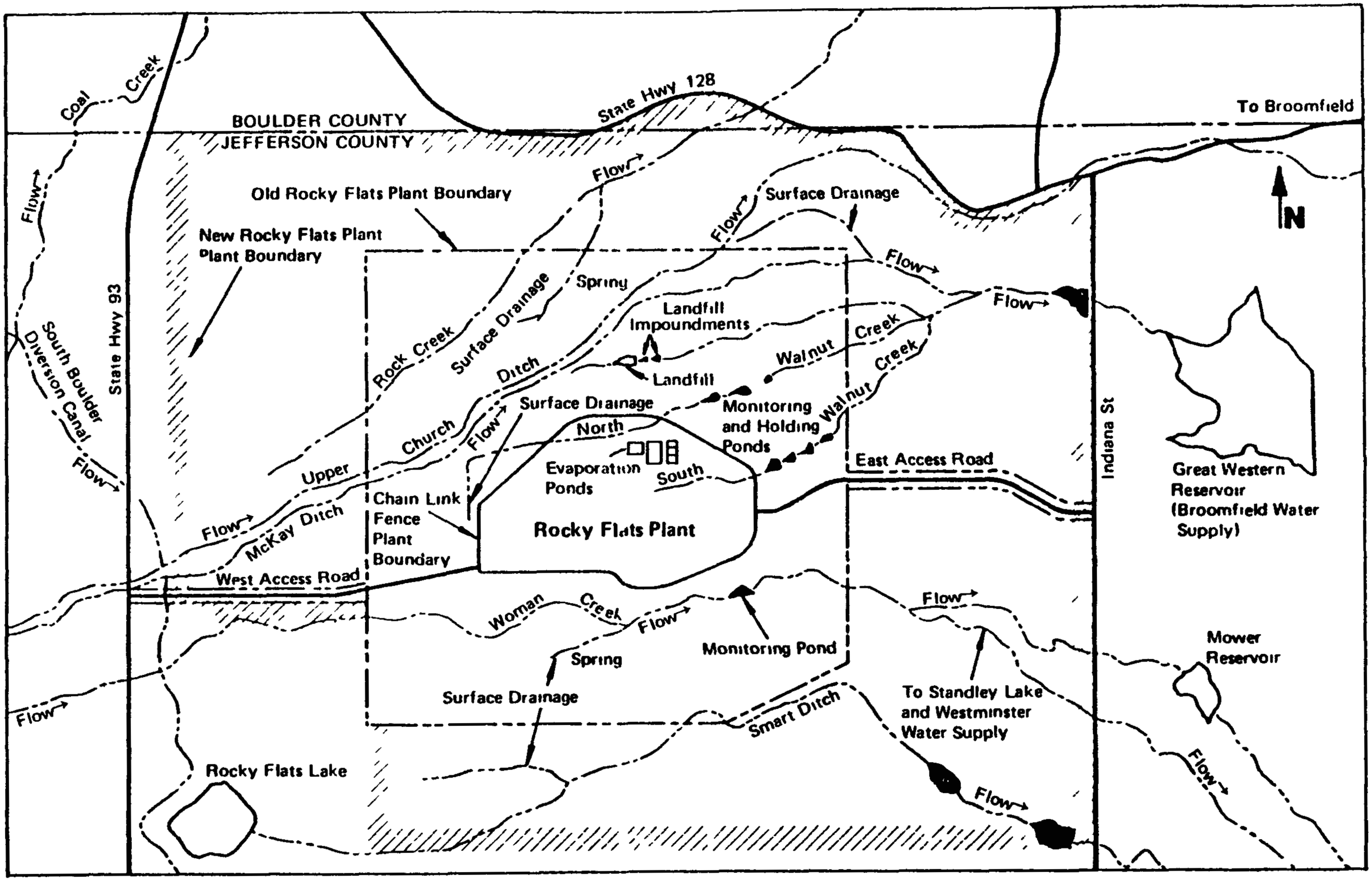

FIGURE 10 Map of U.S. DOE – Owned Property

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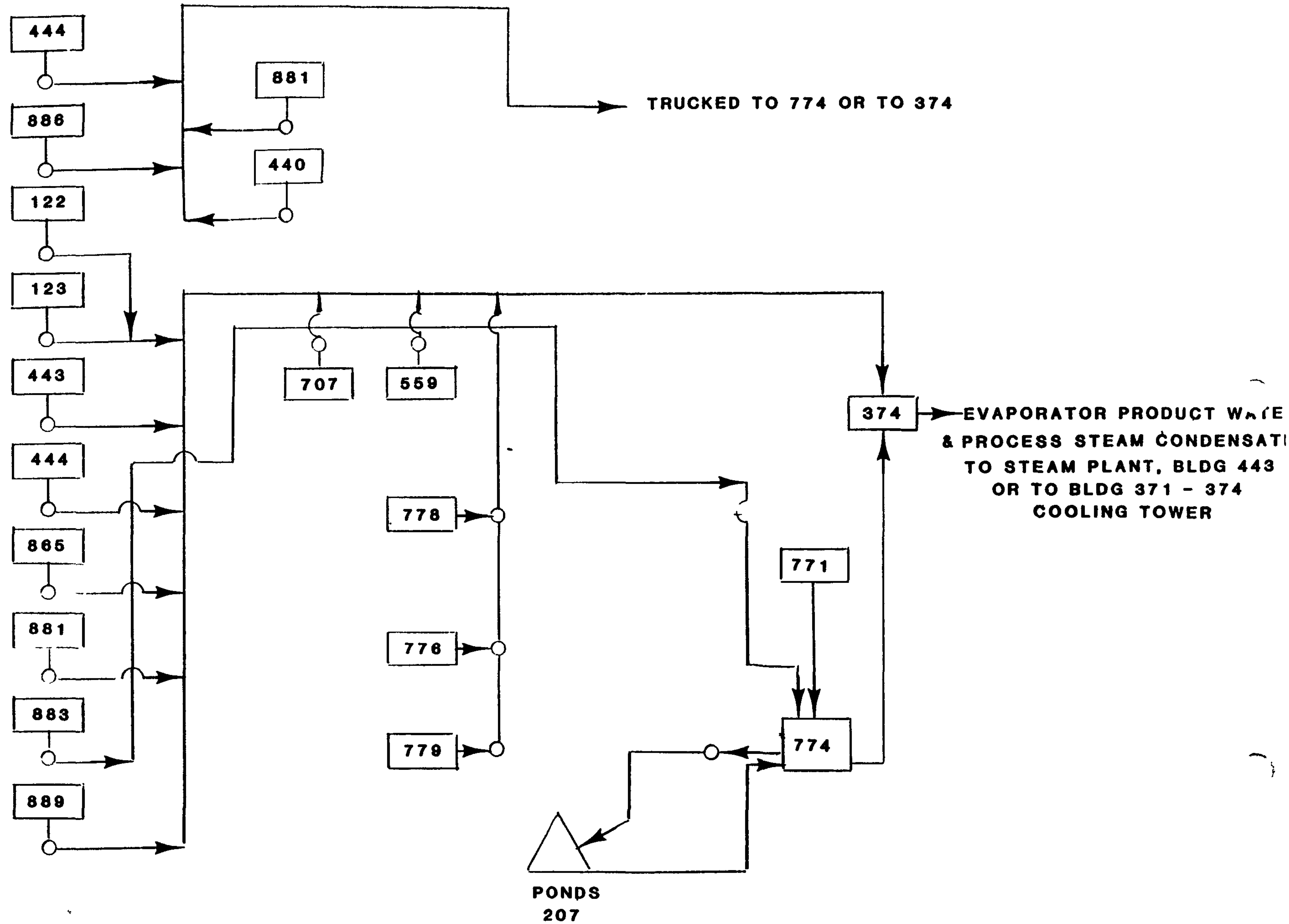

FIGURE 11 Aqueous Process Waste Transfer Piping Diagram

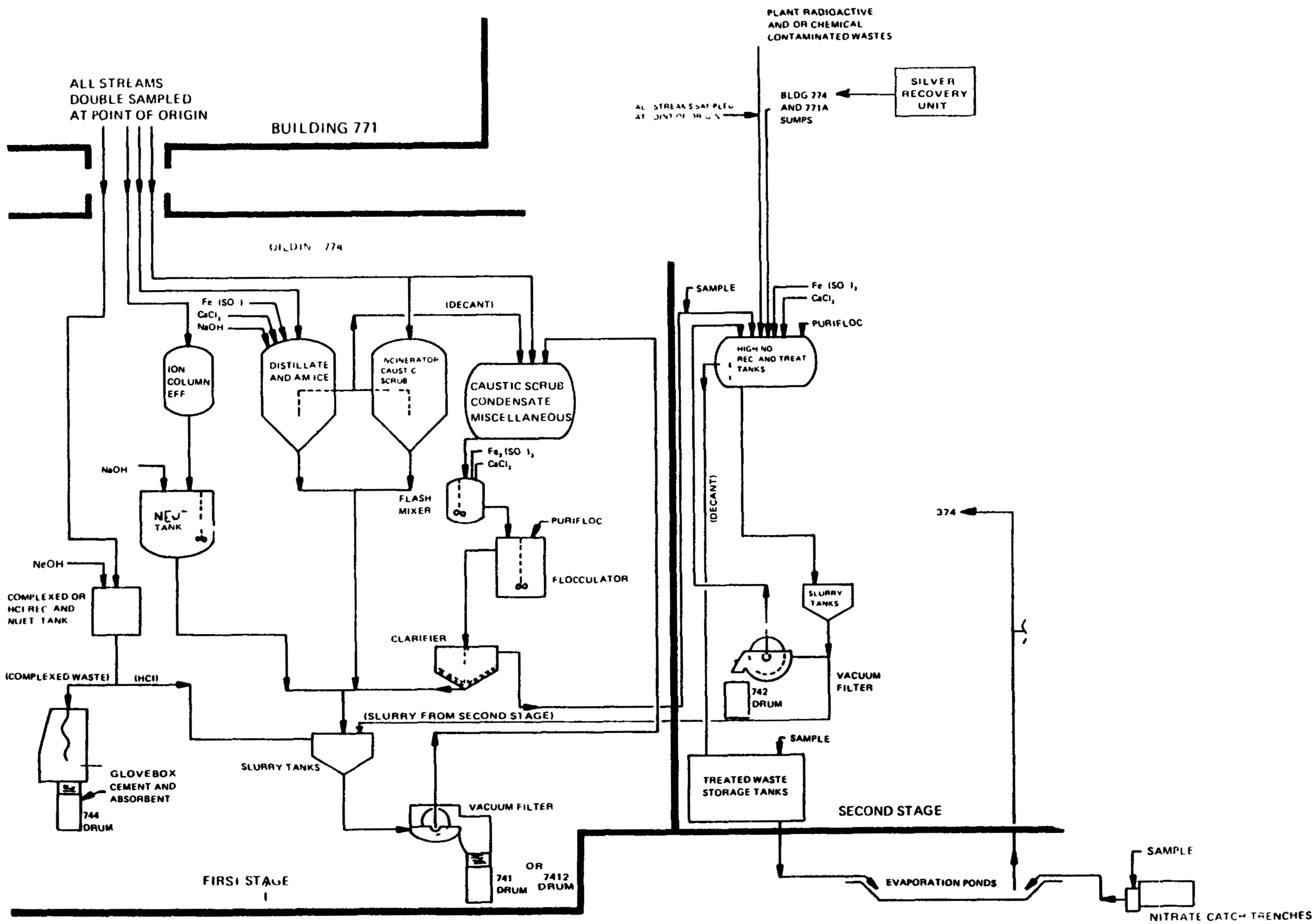

FIGURE 12 Building 774, Aqueous Waste Treatment Flow Diagram

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The second-stage operation handles other aqueous Plant process wastes that require treatment as well as providing further treatment for the first-stage effluent. The second stage is a batch precipitation process utilizing the same chemical reagents as the first stage. The precipitates formed in the first and second stages are blended together, filtered, and packaged as "7412-series" sludge drums.

The treated effluents from the second-stage process are held in an isolated tank until analytical sample data can be obtained. When the liquid meets radioactive specifications, it is transferred to Building 374 for further processing. Treated waste that does not meet the radioactive requirements is recycled through the second-stage process.

Aqueous wastes that are not compatible (e.g., wastes containing complexing agents, chlorides, etc.) with the above processes are isolated and set up with cement and an absorbent material in specially prepared drums. These drums are referred to as "744-series" cemented waste.

The organic waste treatment flow diagram is depicted in Figure 13. Contaminated lathe coolant (CCl_4 and oil) and organic solvents are received into the feed tank system either by pipeline or transferred via approved shipping containers. These wastes are processed by blending with calcium silicate in a continuous mixer to form a solid. The solid is packaged as a "743-series grease" drum.

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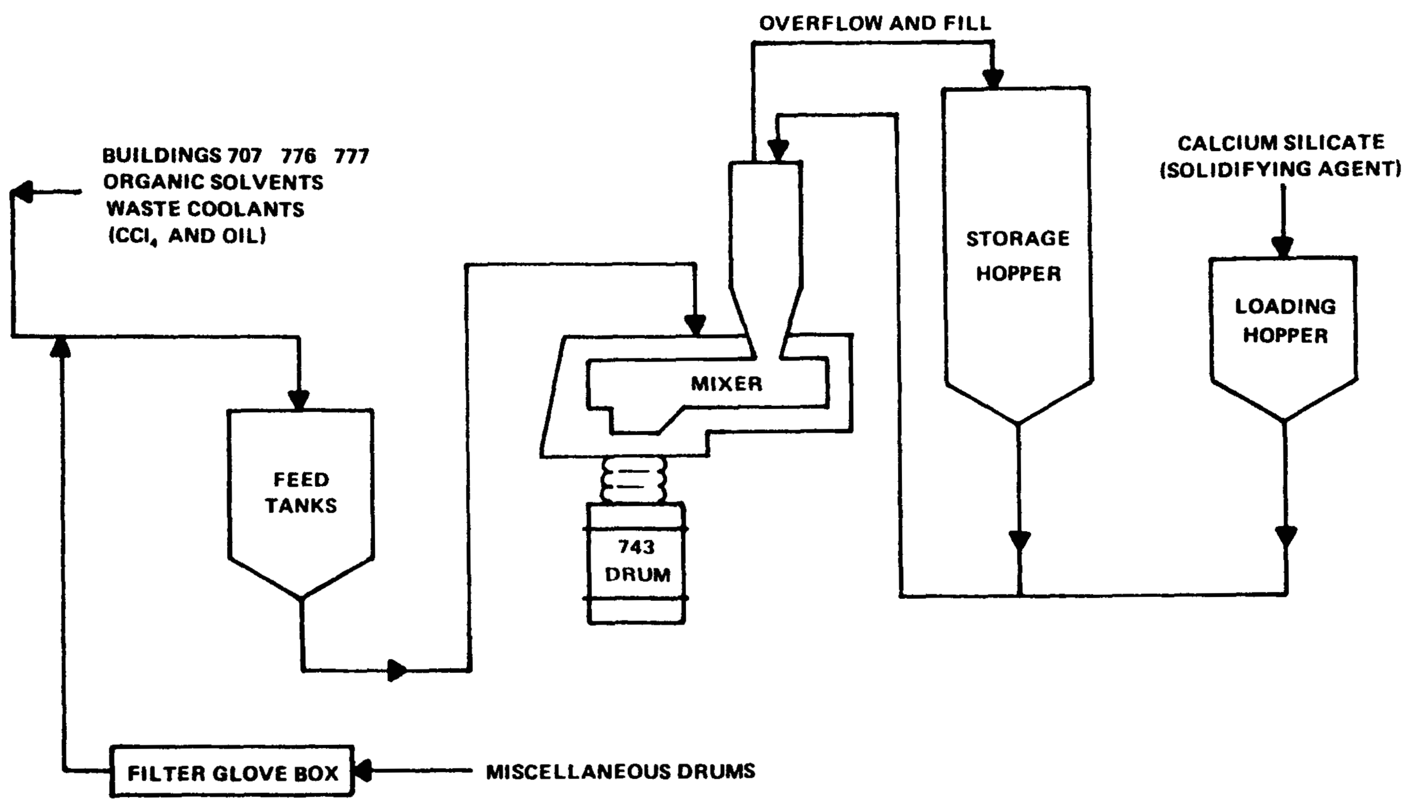

FLOW DIAGRAM, ORGANIC WASTE TREATMENT

FIGURE 13 Organic Waste Treatment Flow Diagram

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Low level liquid organic wastes are segregated from TRU waste at the point of generation and are shipped to Building 774 in 55-gallon drums where they are solidified with Envirostone[R], a polymer modified gypsum cement.

Silver is reclaimed from spent photographic and radiographic fixing solutions in building 774. Solutions are transferred by drum from onsite film processing facilities to the recovery unit. The reclaimed silver is entered into the Rocky Flats precious metals inventory. The remaining solution is blended with Plant process wastes and treated through the second-stage operations.

2.1.2 <u>Building 374, Liquid Waste Treatment Facility (Figure 14)</u>
At present, aqueous process wastes from Buildings 123, 371, 440, 443, 444, 559, 707, 774, 778, 865, 881, and 889 are being received and processed at Building 374. Since solar pond use for storage and evaporation of most process liquid wastes has been discontinued, plutonium operation liquid wastes that were previously transferred to the ponds are now processed in Building 374 with the exception of Buildings 771 and 883 liquid wastes which are processed in Building 774. In addition, high nitrate concentration effluent wastes from Building 774 are transferred to Building 374 instead of transferring them to the solar ponds.

The process waste solar evaporation ponds, 207 A&C, will be completely drained and the remaining sludges processed to meet burial criteria. However, the 207-B solar evaporation ponds have

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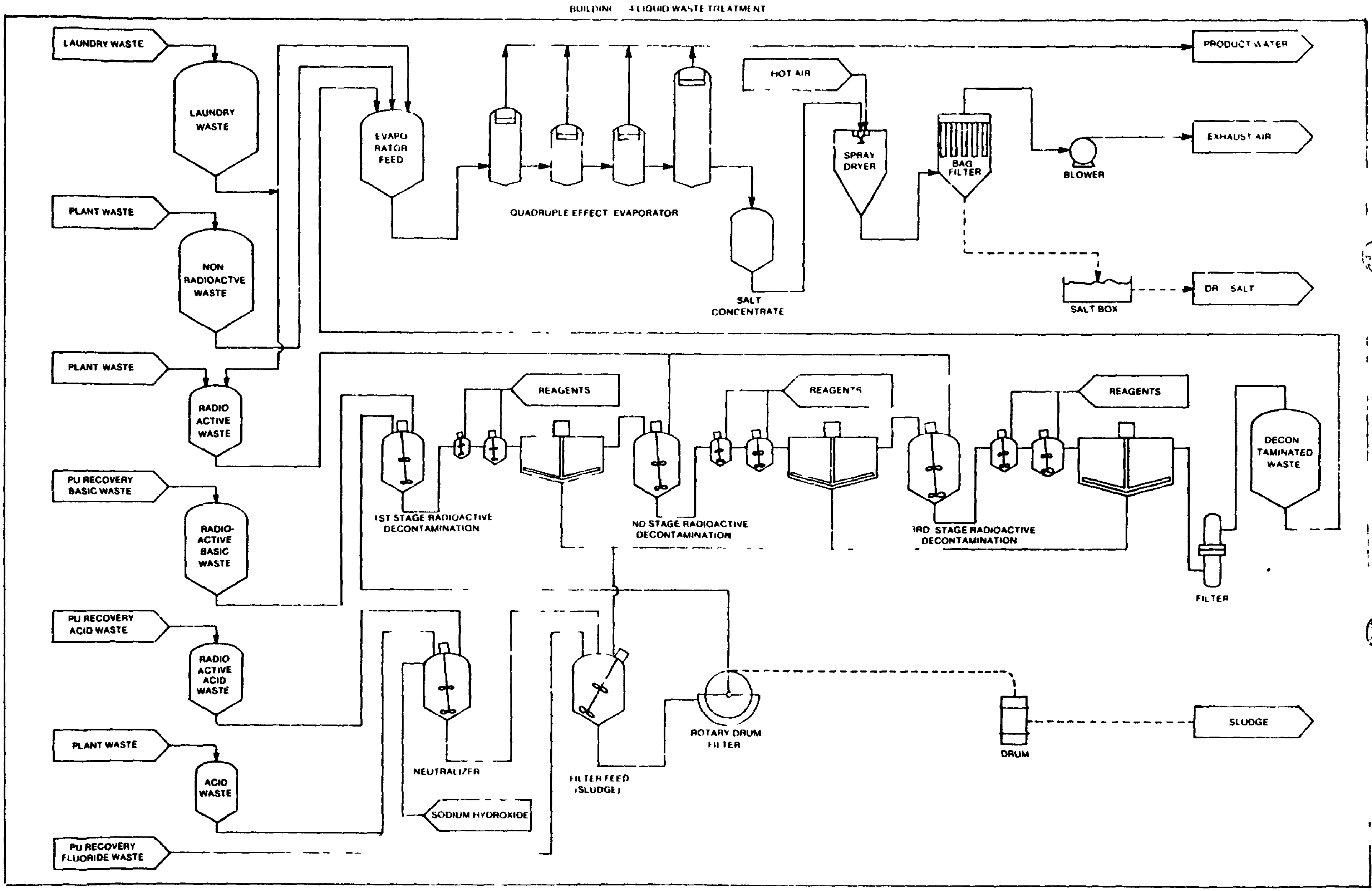

FIGURE 14 Building 374, Liquid Waste Treatment Flow Diagram

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been decontaminated and will be utilized as holding ponds for sewage treatment plant effluent, reverse osmosis plant effluent and nitrate trench water.

Building 374 processing equipment removes radioactive and chemical contaminants from aqueous process effluents collected from operations throughout the Plant. These effluents are converted into reusable distilled water, disposable solid residues, and exhaust gases. The distilled water is transferred to boilers and cooling towers. The solid residues are monitored for radioactivity and properly packaged for offsite disposal. The exhaust gases are continuously filtered, sampled, and vented to the atmosphere.

Plant aqueous process wastes containing chemical and/or radioactive contaminants are received through the Plant inspectable waste collection pipeline or by portable tankage at Building 374. These waste streams are divided into two general categories: 1) treatable waste and 2) desaltable waste.

Treatable waste is defined as an aqueous liquid containing radioactive contaminants above the limit established for direct introduction into the evaporation process. All acid wastes are included in this category because neutralization, precipitation, and filtration of the waste is necessary prior to the evaporation process. Desaltable waste is defined as an aqueous liquid in which the radioactive contaminant is below the limit established for direct introduction into the evaporation process.

The routing and the processing steps within waste treatment vary depending upon the chemical composition of the liquid streams and the amount of residual activity contained. The liquid streams entering waste treatment are distributed to storage tanks reserved for specific kinds of wastes according to their chemical and radioactive composition and intended future processing.

Acidic wastes are neutralized and made basic with sodium hydroxide and filtered to remove solids. In general, these neutralized wastes plus blended basic wastes are pumped to the first-stage precipitation feed tank, where a three-stage precipitation process begins. Each stage of the process consists of precipitation, flocculation, and clarification. The process equipment includes feed tanks, reactors, flocculators, and clarifiers. Ferric sulfate, calcium chloride, magnesium sulfate, and a flocculant are used to form a floc that co-precipitates with the radioactive contaminants.

The supernatant liquid from the third-stage precipitation clarifier passes through a filter into the clarifier effluent holding tanks and is analyzed for radioactivity prior to being transferred to the evaporation system. If the radioactivity level exceeds the limit established for introduction into the evaporation system, the clarifier supernatant is recycled through the precipitation process. If the radioactivity is below the limit, the clarifier supernatant is transferred to the evaporator feed tank.

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The slurry collected in each clarification unit is periodically drained to filter feed storage tanks. The solids of the combined slurries are separated from the bulk of the water by rotary-drum vacuum filtration. The wet sludge is packed in steel drums for offsite storage. The filtration and filling operations are housed in an enclosed system. The filtrate from the rotary-drum filters is recycled to the first-stage precipitation feed tank. Water vapor exhausted from the sludge dryer is vented through a scrubber prior to its release through four stages of exhaust high efficiency particulate air (HEPA) filters to the environment. Scrubber waste solution is transferred to the basic waste receiving and blending tanks for further processing.

Liquid process waste from the evaporator feed tanks is fed to a multiple-effect evaporator. The water vapor from all stages of the multiple-effect evaporator is condensed to liquid and transferred to the Building 371 Steam Condensate Return System where it can be used for boiler feed water or cooling tower water as needed.

Concentrate from the fourth (last) evaporator is transferred to the spray dryer feed tank. From there it is fed into the gas or oil fired spray dryer. Solids (salts) formed in the dryer are separated from the hot air stream by bag filters. The hot air vapor carrier stream consisting of air, water vapor, and combustion gases, is then directed through two stages of inspectable HEPA filters prior to being released to the environment. The exhaust stream is continuously sampled for radioactive contaminants. The solids (salts) separated by the bag filters are packaged in triwall boxes for shipment offsite.

2.2 Solid Waste Operations

2.2.1 Building 776, Size Reduction and Inspection Area

As a result of the 1969 fire cleanup, a plutonium storage vault in Building 776 was converted into a size reduction facility (Figure 15). The purpose of the facility is to reduce the size of contaminated equipment (e.g., glove boxes, machinery, ducting, HEPA filters) for packaging into waste containers. Washing techniques are used to remove gram quantities of plutonium from miscellaneous metals, rubber gloves, etc. Work inside the vault is conducted on a routine (i.e., two 2½-hour work periods per shift, three shifts per day) basis for ongoing size reduction work by personnel in supplied-air suits using a drum compactor, reciprocating saws, and other common disassembly tools. Drummed waste is repackaged into standard-size waste boxes in order to reduce wasted void spaces present while shipping and/or storing drums. All waste loaded into waste boxes is inspected by Quality Acceptance (QA) personnel to assure compliance with applicable waste acceptance criteria. The emptied drums are reinspected and reissued. A volume reduction factor of 2 to 1 can usually be expected from the above-mentioned operations.

In some instances, equipment is size reduced in place if it can reduce the overall exposure to personnel (e.g., a glove box line containing high levels of americium). If an item cannot be

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Size Reduction Facility in Building 776/777

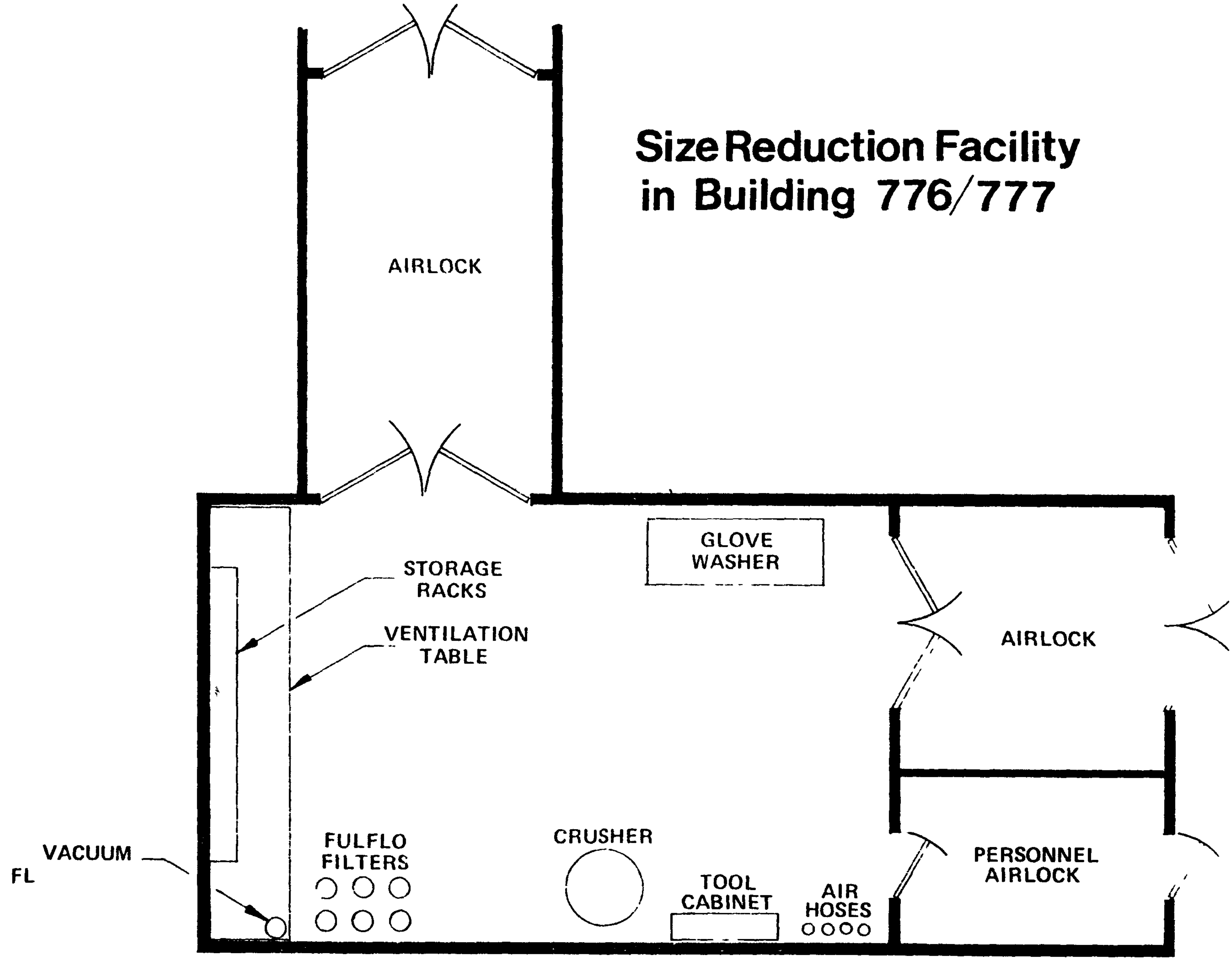

FIGURE 15

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sectioned for transfer to the vault, or if the in situ option reduces the possibility of contamination release to the environment (i.e., in a large-scale decommissioning project), it is safer to size reduce the equipment in place than it is to section the equipment, package it, and transport the pieces via truck to the Size Reduction Facility for processing.

Adjacent to the Size Reduction Facility is an inspection area. In this area, drums are inspected by QA personnel for container integrity, correctness of content code, free liquids, and fissile material assay values. If any of these items is unacceptable, the drum is returned to the generator for repackaging. After the drums are inspected, absorbent is added and the lid is bolted, sealed, and readied for shipment. Waste boxes are inspected as they are generated in the various work areas. Control over material placed in the boxes is exercised by Waste Operations personnel for LLW and by QA personnel for TRU wastes (the boxes are chained and locked and only designated Waste Operations and QA personnel have the key).

The radioactive waste flow diagram for Rocky Flats, indicating all phases of the waste management process, is shown in Figure 16.

2.2.2 Building 889, Uranium-Contaminated Equipment, Decontamination and Volume Reduction

Volume reduction and decontamination of equipment contaminated with uranium and beryllium are conducted in Building 889. The majority of the equipment is decontaminated for reuse in

ROCKY FLATS RADIOACTIVE WASTE FLOW

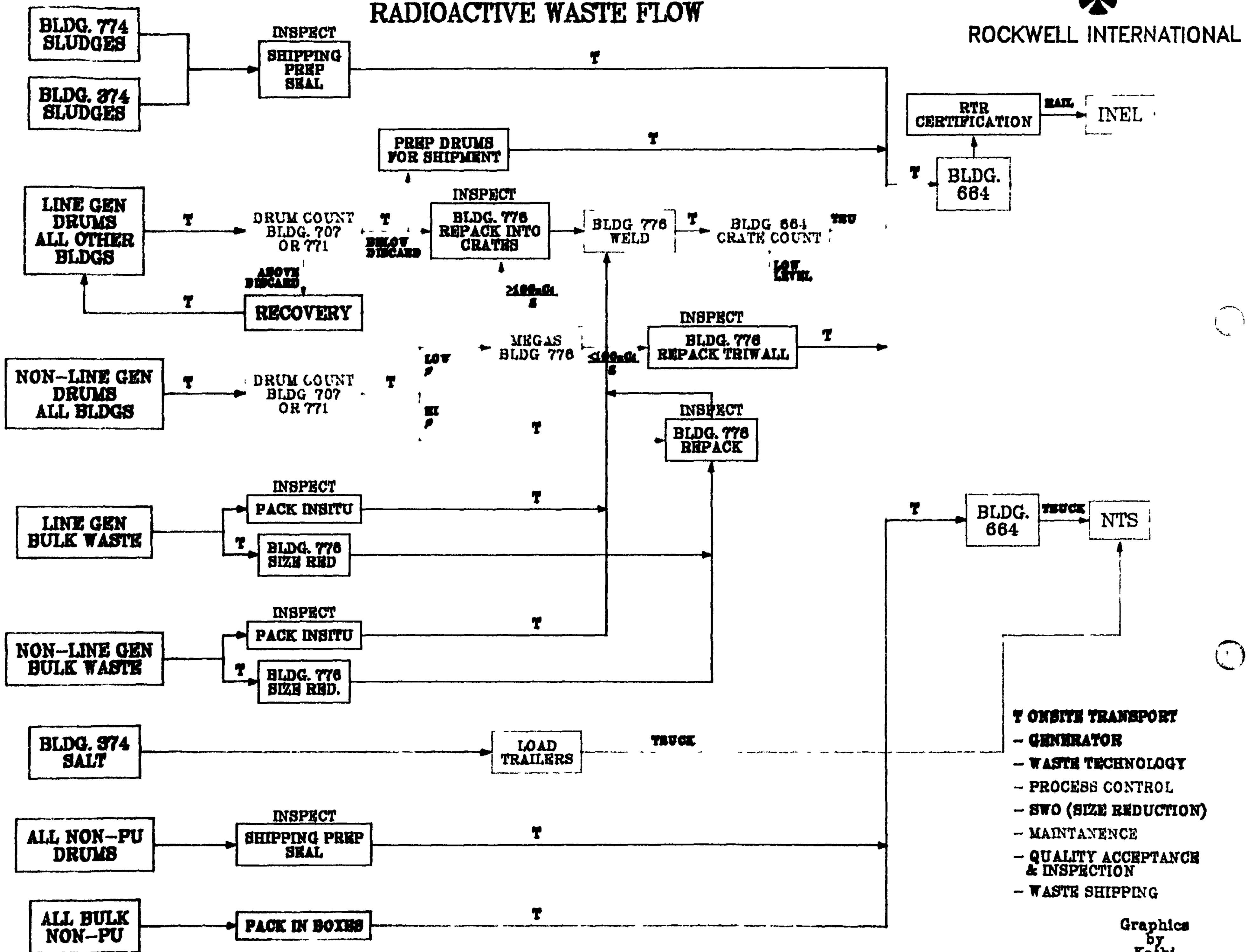

FIGURE 16

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noncontaminated areas or for sale through General Services Administration. Ducts, drums, and similar items are cut, crushed, or otherwise processed to minimize volume and packaged as LLW. A HEPA filter compactor is used to crush filters. A volume reduction factor of 6 to 1 has been achieved.

Decontamination services are provided by Solid Waste personnel for all outside decontamination efforts requiring protective clothing. Indoor decontamination services are provided for general overhead cleaning requirements, paint stripping, and other extensive surface removal.

2.2.3 Building 664, Shipping

This facility receives, prepares, and loads for shipment drums and crates which have been inspected and approved for shipment. The final coat of fiberglass reinforced polyester (FRP) resins, applied to FRP boxes prior to shipment, is applied in a specially designed room within the building. The metal box (SAND box) has been phased in to replace the FRP box this fiscal year (FY 1984). In addition, TRU waste crates are neutron and gamma assayed in a crate counter as a safeguards check.

3.0 Radioactive Waste Storage Facilities

Except for the solar evaporation ponds, there are no other waste storage tanks at Rocky Flats where liquid wastes are customarily contained for a period of 1 year or more, and no solid radioactive waste is stored in excess of one year.

4.0 Radioactive Waste Categories

The following identifies and describes the radioactively contaminated wastes generated at Rocky Flats.

4.1 Transuranic (TRU) Wastes

All Rocky Flats TRU waste is segregated and classified, for the purpose of controlling nuclear materials, into separate item description codes (IDC or content codes). These item description codes are described as follows:

Content Code	Description
001	First and Second Stage Sludge - Building 774
003	Grease - Building 774
004	Special Setups - Building 774
006	Organic Sludge - Retrievable - Building 774
007	Dried Sludge - Retrievable - Building 374
009	Miscellaneous Waste-Nonretrievable-Bldg. 374
292	Cemented Sludge
300	Graphite Molds
301	Graphite Cores
302	Benelex and Plexiglas
310	Graphite Pulverized or Fines
311	Graphite Heels
320	Heavy Non-SS Metal (Ta, W, Pt, Pb)
330	Combustibles, Dry (paper, rags, etc.)
334	Blanket, Fire
335	Absolute Drybox Filters

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Content Code	Description
336	Combustibles, Wet
337	Plastic (Teflon, PVC, Vinyl, etc.) and Rubber, non-leaded
338	Insulation (including CWS filter media)
339	Leaded Drybox Gloves and other Leaded Rubber
371	Fire Brick
372	Grit
373	Fire Brick Heel
374	Blacktop, Concrete, Dirt and Sand
375	Oil-Dri^{R}
376	Cemented Insulation and Filter Media
392	Unpulverized Sand, Slag and Crucible
393	Sand, Slag and Crucible Heel
410	Molten Salt, 30% Pulverized - Building 771
411	Electrorefining Salt
420	Incinerator Ash, Virgin
421	Ash Heels
422	Soot
425	Fluid Bed Ash
432	Resin - Leached and Cemented
440	Glass (except Raschig rings)
441	Unleached Raschig rings only
442	Leached Raschig rings
480	Light Non-SS Metal (Fe, Cu, Al, Stainless Steel, etc.) not requiring leaching
481	Light Non-SS Metal (Fe, Cu, Al, Stainless Steel, etc.) requiring leaching
490	HEPA Filters

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Rocky Flats Tru Waste Forms are made up of similar IDC's based on mode of generation (line or non-line generated), processing similarities, or other similar control methods. These waste forms and their assigned Waste Form Number (WFN) are :

WFN	Waste Form Name	IDC	IDC Name
111	Solidified Wet Sludge	001	First & Second Stage Sludge, Bldg. 774
		007	Bldg. 374 Wet Sludge
112	Solidified Organics	003	Grease, Bldg. 774
113	Solidified Laboratory Waste	004	Special Setups, Bldg. 774
114	Solidified Process Solids	292	Cemented Sludge
		311	Graphite Heels & Fines
		372	Grit
		373	Firebrick Heels & Fines
		393	Sand, Slag & Crucible Heels
		421	Incinerator Ash & Heels
		423	Soot & Soot Heels
		432	Cemented Resin
115	TRU Graphite Waste	300	Graphite Molds
116	TRU Combustible Waste	330	Combustibles, Dry
		336	Combustibles, Wet
		337	Plastic & Non-Pb Rubber

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WFN	Waste Form Name	IDC	IDC Name
117	TRU Metal Waste	320	Heavy Metal (Ta, W, Pt, Pb)
		480	Light Metal, Not Leached
		481	Light Metal, Leached
118	TRU Glass Waste	370	Leco Crucibles
		440	Glass, Except Raschig Rings
		441	Raschig Rings, Not Leached
		442	Raschig Rings, Leached
119	TRU HEPA Filter Waste	335	Absolute Dry Box Filters
		490	HEPA Filters
120	TRU Insulation & Filter Media	328	Ful-Flow Filters
		338	Insulation & Filter Media
		376	Cemented Insulation & Filter Med:
121	TRU Organic Solid Waste	302	Benelex & Plexiglas
122	TRU Inorganic Solid Waste	371	Firebrick
		374	Black Top, Concrete & Gravel
		375	Oil Dry
123	TRU Leaded Rubber	339	Leaded Rubber
124	TRU Pyrochemical Salt Waste	410	Molten Salts
		411	Electrorefining Salt
		414	Direct Oxide Reduction Salt

4.2 Low Level Wastes (LLW)

Low level wastes routinely generated at Rocky Flats include:

- Nitrate Salts
- Solidified Organics
- Pu Contaminated Solids (<100 nCi/g)
- Sanitary Sewage Sludge
- Depleted Uranium Contaminated Solid Waste
- Depleted Uranium Oxide (roaster oxide)

4.3 Radioactive Mixed Wastes

Hazardous wastes are wastes which meet one of the four general characteristics which make waste hazardous (ignitability, reactivity, toxicity, and corrosivity). Mixed wastes are co-contaminated with hazardous and radioactive wastes. The management of radioactive mixed wastes at Rocky Flats is discussed in Section II, Part 8.0.

4.4 Naturally Occurring Radionuclides

Wastes containing naturally occurring radionuclides are categorized according to their respective activity levels. Currently, ^{233}U (>100 nCi/g) is managed as TRU waste and ^{235}U (<100 nCi/g) as low level waste.

4.5 Special Category - PCB

While radioactive PCB wastes are not routinely generated at Rocky Flats, solid and liquid radioactive PCB's are currently in

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storage. These radioactive PCB wastes are a result of the cleaning and retrofilling of PCB transformers, PCB capacitors, and PCB contaminated clean-up debris.

5.0 Radioactive Waste Generation

Table 1 shows past, current and projected yearly generation and activity levels for Rocky Flats Plant radioactive waste.

6.0 TRU Waste Program

In keeping with the Radioactive Waste Management Policy (RFPM M20-001), Rocky Flats emphasizes TRU waste certification procedures to maintain an efficient, effective, and auditable program that will comply with all existing orders, guidelines, and regulations.

6.1 Certification Program Responsibilities

The Quality Engineering and Control (QE&C) organization has overall authority and responsibility for assuring the certifiability of TRU waste packages shipped to the WIPP. The Quality Operations (QO) Group within QE&C is responsible for all verification activities supporting certification. The Quality Acceptance (QA) Group within QO is responsible for performing waste certification activities involving both physical inspection and administrative verification functions. The Quality Engineering (QE) Group within QO has overall authority and responsibility for establishing the TRU Waste Certification QA Program.

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Table 1 Radioactive Waste Generation

WASTE CATEGORY	MAIN CONSTITUENTS	ACTIVITY LEVEL (Ci)			VOLUME/YR (m^3)			MASS/YR (Kg)		
		FY83	FY84	FY85	FY83	FY84	FY85	FY83	FY84	FY85
TRU	Pu (>100 nCi/g)	$1.82x10^4$	$2.09x10^4$	$3.00x10^4$	2727	3297	3300	908,484	1,166,189	1,282,808
	Am	$3.64x10^3$	$5.36x10^3$	$5.90x10^3$						
LLW	Pu (<100 nCi/g) Depleted Uranium	2.86	2.77	3.00	5345	5962	6560	1,624,258	1,751,588	1,0891,715
NATURALLY OCCURRING	^{235}U (TRU)	$2.82x10^{-3}$	$5.14x10^{-3}$	$8.14x10^{-3}$	*	*	*	*	*	*
	^{233}U (TRU)	2.77	1.00	1.00	*	*	*	*	*	*
	^{235}U (LLW)	$3.83x10^{-1}$	$3.71x10^{-1}$	$4.00x10^{-1}$	*	*	*	*	*	*
PCB	Pu									
Solid		-	-	-	1 drum	1 drum	1 drum	-	-	-
Liquid		0.05	0.05	0.05	1646 1	1646 1	1646 1	2370	2370	2370
Capacitors		-	-	-	8	8	8	120	120	120

* Included in LLW or TRU values, respectively.

The Plutonium Operations (PO) organization is responsible for applying controls to their waste operations as needed to comply with WIPP-WAC. The Waste Operations (WO) Group within PO is responsible for handling, treating, processing, and packaging TRU waste to approved Chemical Operations (CO) Procedures in a manner which facilitates waste certification. The Group is also responsible for the effective implementation of the certification program (TRU Waste Compliance Program for WIPP-WAC, CO-4500). The Waste Technology and Compliance (WT&C) Group within WO is responsible for assisting waste generators in identifying and administering the controls needed for waste compliance. The WT&C Group shall monitor the effectiveness of all waste processing compliance to WIPP-WAC, and will appropriately revise CO Procedures and/or training requirements as needed to promote compliance. The WT&C Group shall represent PO as the facilitator for implementation of QE&C Verification needs.

6.2 TRU Waste Certification Commitment

It is Rocky Flats intention to certify all contact handled (<200 mrem/hr @ surface) TRU waste by October 1985. Rocky Flats is not expected to generate any TRU waste that cannot be certified.

6.3 Waste Segregation

6.3.1 Content Segregation

When waste is initially packaged, it is segregated by content (content codes described in 4.1). Segregation is used for the purpose of assaying and controlling nuclear materials. When waste drums are assayed, the plutonium content is determined using a specific scrap/waste matrix dependent factor.

6.3.2 LLW/TRU Segregation

Another form of segregation is the separation of LLW from TRU waste. The Radiation Monitoring group checks wastes that have readily accessible surfaces for surface contamination. If the contamination level falls below that level specified by CO procedures, the waste is packaged and shipped as LLW. This method of segregating wastes also aids the certification effort in that certified and uncertified waste forms are more easily identified and controlled.

Rocky Flats will procure nondestructive assay instrumentation (e.g., MEGAS counters, differential die-away drum and crate counters) to segregate LLW from TRU waste.

The supervisor generating the waste is responsible for the segregating, packaging, and placing of waste into drums. The supervisor generating the waste maintains responsibility for what is introduced into that waste drum until it is filled, bolted closed, and sent to the drum counting facility to determine whether it is a recoverable residue or a discardable waste. This determination is based on an economic discard limit. These discard limits are DOE established for each scrap/waste material using a documented and controlled procedure. If the material is

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determined to be waste (i.e., below the discard limit), it is then sent to QA for Waste Inspection or to Waste Operations for processing or repackaging.

6.4 Waste Packaging Control

Waste generators exercise the primary control when waste is initially packaged to ensure that the waste meets the WIPP criteria. In order for the generators to be aware of certification requirements, they are instructed regarding the role of the criteria in the packaging procedures prepared by WT&C. As explained in the company policy, each employee must know and follow waste certification (i.e., packaging) procedures that apply to his/her operation. Also, the employee's supervisor must assure that the employee is trained to perform these procedures, and that the procedures are followed.

Rocky Flats will procure and utilize real-time radiography (R-TR) capability to verify that waste is always packaged correctly. The R-TR will be used to verify all TRU waste packages shipped from Rocky Flats and will be performed as part of the waste package inspection operation.

6.5 Waste Inspection

QA Waste Inspection currently inspects all TRU waste readied for shipment offsite. This inspection includes both a visual inspection of the container and its contents, and a check for

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free liquids. Containers in violation of the acceptance criteria are returned to the generator who is responsible for proper repackaging and/or reprocessing of the nonconforming items.

6.6 Packaging, Storage and Transportation

6.6.1 Packaging

Shipping containers meeting DOE requirements and DOT specifications are used for packaging transuranic waste. The containers are controlled by serial number and are released to generators of waste as needed.

TRU waste is packaged in 55-gallon drums, ~~fiberglass-reinforced polyester (FRP) coated plywood boxes and~~ and metal (SAND) boxes. Waste Operations personnel inspect each drum for the requirements listed in the appropriate inspection procedure. Drums passing final inspection are closed, weighed, sealed and labeled by QA Waste Inspection personnel and forwarded to the shipping complex. Drums over/under weight are rejected.

~~FRP coated plywood boxes are closed, identified, and forwarded to the shipping complex to have the tops sealed with FRP.~~ Metal boxes are sent to the welding facility to have the tops welded shut. The boxes are then assayed, weighed, and labeled. Overweight boxes are rejected. All rejected drums and boxes are returned to the operation generating the waste.

6.6.2 Storage

All waste packages are stored inside for protection from the environment and for security requirements. Storage is in buildings designated by CO procedures and in Building 664. Drums shipped from generating buildings to the waste inspection complex are stored in the area during drum counting, inspection, and closing operations. Drums accepted for shipment are transferred to Building 664 and segregated by waste classification while shipment quantities accumulate.

6.6.3 Transportation

Waste packages are shipped from Rocky Flats under the authority of a DOT Exemption, DOT regulations, and DOE requirements. Operating procedures define transportation methods for the various categories of waste packages.

TRU waste packages are shipped to the storage site by ATMX Railcar. Each ATMX Railcar is inspected before use and each package is checked for damage and proper labeling before loading.

Filled waste drums are placed in a cargo container which is loaded in an ATMX Railcar. ~~Loaded FRP-coated boxes and~~ Loaded metal boxes are placed directly in an ATMX Railcar. The boxes are secured by inflatable dunnage.

Compliance with packaging requirements is verified by the Quality Engineering representative. Compliance is established by verifying that applicable waste packaging, inspection, and loading procedures have been followed.

The Traffic Department prepares Bills of Lading from information provided by Waste Operations. The ATMX Railcars are monitored by Radiation Monitoring personnel. Waste Operations personnel perform a final inspection and the railcars are closed and sealed. The packages are transported to Idaho National Engineering Laboratory (INEL) where Nuclear Materials Control personnel at INEL independently verify the contents of the shipment. The waste packages are then placed in retrievable storage at INEL. All Rocky Flats TRU waste is slated for future emplacement at the Waste Isolation Pilot Plant (WIPP) facility in New Mexico.

6.7 Volume Reduction

The programs (both technical and administrative) at Rocky Flats which are designed to reduce the volume of TRU waste include: 1) a size reduction facility, Building 776; 2) repackaging of metal, combustible, and glass TRU wastes; 3) compaction of HEPA filters; 4) segregation of TRU and LLW liquid organic wastes, 5) segregation of TRU and LLW solid wastes and 6) reduction of 1 million gallons of liquid process wastes per month to 14,000 gallons of sludge in two liquid waste treatment facilities. In addition, Rocky Flats plans to begin operation of an Advanced Size Reduction Facility in ~~May 1985~~ January 1986.

7.0 Low Level Waste Program

Contaminated waste at Rocky Flats is classified as transuranic or low level to facilitate isolation and to meet DOE requirements.

Wastes that contain less than 100 nCi of transuranics per gram of waste are classified as low level.

7.1 Waste Identification and Generation

Low level wastes that are routinely generated at Rocky Flats are identified in 4.2. Table 2 shows the past, current and projected yearly generation of Rocky Flats low level radioactive wastes.

7.2 Waste Form Description

Rocky Flats meets the criteria for low level radioactive wastes as stated in NVO-185. Low level wastes are segregated, treated and packaged so as to provide the best (reasonably obtainable) waste form possible. This includes addressing the requirements governing immobilization, free liquids, pyrophoric material, explosives and compressed gases, and toxic and corrosive materials.

7.3 Low Level Waste Disposal

Rocky Flats does not operate a low level waste disposal facility. All low level radioactive wastes are shipped by trailer to the Nevada Test Site for permanent disposal.

7.4 Packaging, Storage and Transportation

7.4.1 Packaging

Shipping containers meeting DOE requirements and DOT specifications are used for packaging low level waste. These waste packages are controlled by serialization.

Table 2
Low Level Waste Generation

Waste Description	Yearly Generation (m^3) FY83	FY84	FY85
Nitrate Salts	1,527	1,679	1,847
Solidified Organics	76	84	93
Sanitary Sewage Sludge	59	65	72
Pu Contaminated Solids (<100 nCi/g)	739	813	894
Depleted Uranium Oxide	116	127	140
Depleted Uranium Contaminated Waste	2,904	3,194	3,514

Waste Operations personnel inspect each drum for the requirements listed in the appropriate inspection procedure. Drums passing final inspection are closed, weighed, sealed and labeled by Waste Operations personnel and forwarded to the shipping complex. Drums over/under weight are rejected.

Each plywood box is inspected by Waste Operations personnel in order to assure proper segregation and packaging as required by the operating procedure. Plywood boxes passing final inspection are closed, sealed, labeled, and moved to the shipping complex. Tri-wall boxes are filled, closed, sealed, inspected, and moved to the shipping complex. Overweight boxes are rejected. All rejected drums and boxes are returned to the operation generating the waste.

7.4.2 Storage

All waste packages are stored inside a secure building for protection from the environment and for security requirements. Storage is in buildings designated by CO procedures and in Building 664. Drums shipped from generating buildings to the waste inspection complex are stored in the area during drum counting, inspection, and closing operations. Drums accepted for shipment are transferred to Building 664 and segregated by waste classification while shipment quantities accumulate.

7.4.3 Transportation

Waste packages are shipped from Rocky Flats under the authority of a DOT exemption, DOT regulations, and DOE requirements.

Operating procedures define transportation methods for the various categories of waste packages.

Low level waste packages are shipped to the disposal site by semi-trailer truck. Each semi-trailer is inspected before use. The waste packages are loaded and secured in the trailer. Each package is checked for damage and labels during loading. Waste packages to be loaded are specified on a Shipment Load list. Copies of the Shipment Load List are placed in the trailer before it is sealed for shipment.

The Traffic department prepares a Bill of Lading from information provided by Waste Operations. Waste Operations personnel perform a final inspection and the trailers are closed and sealed. The packages are transported to the Nevada Test Site (NTS) where NTS personnel independently verify the contents of the shipment prior to shallow land burial.

8.0 Radioactive Mixed Waste

8.1 TRU Radiaoactive Mixed Waste

TRU mixed waste is considered to be TRU waste, and the safety considerations for handling, shipping, and disposing of this material are addressed in the WIPP-WAC. TRU waste, because of the presence of transuranics, is packaged, shipped and stored at WIPP in compliance with criteria which exceed the requirements of 40 CFR 261-265.

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8.2 LLW Radioactive Mixed Waste

Where practicable, low level radioactive mixed waste will be altered to remove the hazardous waste characteristic so that the waste becomes radioactive waste. For example, nitrate salts, which account for approximately 50% of all LLW, will be cemented to eliminate their classification as an oxidizer.

9.0 Naturally Occurring Radionuclide Waste

All Rocky Flats waste contaminated with naturally occurring radionuclides (^{233}U and ^{235}U) are treated, packaged and shipped to NTS as LLW unless its activity level exceeds 100 nCi/g of waste, in which case it will be treated as TRU waste.

10.0 Classified Waste

At the present time, all Rocky Flats radioactively contaminated classified waste is shipped to Rockwell Hanford Plant. Efforts are being made to shred, melt, machine or otherwise treat radioactive classified waste to declassify it. Uncontaminated classified waste is shipped to Oak Ridge National Laboratory (ORNL) for storage or disposal.

11.0 Decontamination & Decommissioning Waste

At the present time, there are no buildings at Rocky Flats that are known or suspected to be radioactively contaminated which are excess to present needs or which are currently considered to be

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standby. In addition, there are no buildings at Rocky Flats that are known or suspected to be radiactively contaminated which are expected to become excess within the next 5 years under program assumptions used in preparing FY 1984 budget submissions.

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SECTION III

WASTE MANAGEMENT BUDGET

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1.0 Operating Budget

Table 3 lists the Operating Budget for Waste Operations in FY 1983. Projections for FY 1984 and FY 1985 are given in Table 4.

2.0 Capital Equipment, General Plant Project, and Line Items

The Capital Equipment, General Plant Project (GPP), and Line Items identified in the formal budget for FY 1984 are given in Table 5. Table 6 shows the proposed Capital Equipment, GPP, and Line Items for FY 1985 and FY 1986.

3.0 Manpower Requirements

The manpower projections for FY 1984 through FY 1986 are listed in Table 7.

Table 3
Waste Operations Costs
FY 1983

ITEM	LIQUID WASTE OPERATIONS BLDG 374	BLDG 774	COMBINED	SOLID WASTE OPERATIONS	COMBINED COST OF WASTE OPERATIONS
Labor	$839,904	$570,741	$1,410,645	$1,266,060	$2,676,705
Supplies	110,017	193,788	303,805	269,302	573,107
Packages	7,074	-0-	7,074	858,531	865,605
Repair Material	14,813	18,857	33,670	-0-	33,670
Miscellaneous	3,198	-0-	3,198	126,099	129,297
Burial & Shipping	3,234	4,502	7,736	533,321	541,057
TOTAL COST	$978,240	$787,888	$1,465,362	$3,053,313	4,819,441

Production:

TRU Waste	2,452,070 lb	87,725 ft^3
LLW	4,003,609 lb	118,195 ft^3
TOTAL	6,455,679 lb	205,925 ft^3

FY 1983 UNIT COST:
$0.75/lb & $23.40/$ft^3$

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Table 4
Operating Budget Projections

	Yearly Budget (x1000) FY83	FY84	FY85
Labor	2,700	3,200	3,900
Supplies & Services	710	1,900	2,200
Waste Packages	900	1,400	1,700
Waste Shipping	470	700	900
Waste Disposal	120	300	400
TOTAL	4,900	7,500	9,100

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Table 5
Capital Equipment, General Plant Project (GPP), and Line Items
FY 1984

	LOCATION	AUTH. NO.	TOTAL EST. COST (thousands)
Liquid Waste Operations			
Equipment			
Direct Cementation	374	330951	300
Salt Cementation	374	340916	103
Organic & Sludge Immobilization	774		
Solid Waste Operations			
Equipment			
Electric Forklift	664	330001	30
Real-Time Radiography	664	340912	600
Low Specific Activity Counter	776	337001	115
GPP			
Neutron Crate Counter	664	330369	150
Building 664 Modification	664	345236	350

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Table 6
Proposed Capital Equipment, GPP, and Line Items

FY 1985

	LOCATION	AUTH. NO.	TOTAL EST. COST (thousands)
Liquid Waste Operations			
Equipment			
Portable Transfer Tank		320559	31
Process Waste Storage Tank	374	379220	700
Evaporator Product Water Tank	374		210
Chem. Waste Proc. Equipment	774	340024	500
Fork Truck	374		60
Evaporator Salt Immobilization	374	330022	500
Solid Waste Operations			
Equipment			
HEPA Filter Compactor	776	320555	172
TRU Waste Repackaging	776		500
Raschig Ring Crusher	776	330009	138
45 HP Shredder	889		125
Assay			
Equipment			
Passive/Active Drum Counter			600

FY 1986

	LOCATION	AUTH. NO.	TOTAL EST. COST (thousands)
Liquid Waste Operations			
Equipment			
Thin Film Evaporator	374	360015	500

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Table 7
Manpower Summary

	FY84	FY85	FY86
Direct Labor			
Chemical Operator Treatment Bldg 374	12	12	12
Indirect Labor			
Building 774			
Chemical Operators	23	23	23
Salary	6	6	6
Building 374			
Chemical Operators	19	19	19
Salary	9	9	9
Pond Cleanout			
Chemical Operators	0	10	10
Salary	0	2	2
Waste Tech. & Waste Ops.			
Salary	11	13	13
Solid Waste Operations			
Size Reduction 1st Shift (DW)	9	9	9
Size Reduction 2nd Shift (DW)	6	7	7
Size Reduction 3rd Shift (DW)	5	6	6
Building 889,664 & Decon Crew	11	8	9
Decon Crew (DW) 3rd Shift	5	5	5
Fluid Bed Incinerator (CO) & ASRF (CO)	0	10	15
Drum Serialization	2	2	2
D & D Stripouts (DW)	26	26	26
Salaried	16	16	16
Subtotals:			
Hourly	118	137	143
Salaried	42	46	46
GRAND TOTAL	160	183	189

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SECTION IV

RELATED SUBJECTS

1.0 Audits

Quality Engineering and Control conducts periodic formal audits of the certification program. The frequency and thoroughness of the audits is determined by DOE guidance, available manpower, compliance history, and the priority and complexity of the operation.

Audits conducted by Quality Engineering Systems and Plans (QES&P) personnel follow established operational procedures and Section 8 of the Quality Program Plan for Waste Processing. These audit activities include provisions for planning and performance of audits, evaluation of procedures and activities (with emphasis on the implementation of controls), and reporting of audit results to the proper level of management (e.g., a copy is forwarded to the director of the operational division). Audit results are submitted to the Manager, Waste Operations for review and/or correction of deficiencies. Records of completed audits are maintained in the Waste Operations office, and the original is maintained in the QES&P office.

Procedural audits and informal inspections are conducted frequently (e.g., several procedures in one year). The scheduling and priority of audits is determined by available manpower, procedural compliance history of the operation, and the priority placed on a particular activity.

2.0 Records Management

Records and information pertinent to waste certification are kept on file as specified by the Plant Records Management Manual, which references DOE specified retention schedules.

The Records Management Manual specifies instruction for maintenance of current records, long term storage requirements for inactive records, procedures for reference, withdrawal and return of records, and a vital records protection program.

Process log books are kept on permanent retrievable file by each operational group. Data package information is kept on permanent retrievable file, both in the original form and on permanent computer tape storage by Process Control operations. Process (e.g., hourly) work sheets are maintained on retrievable files for a minimum of one year by the operational group. In addition, all records which directly relate to the certifiability of a waste package are maintained in accordance with documented and auditable programs and procedures.

3.0 Personnel Training

All persons who operate and supervise the handling of fissile materials are required to undergo training in the handling and understanding of fissile material characteristics. Although all nuclear workers receive formal training in nuclear safety, radiation safety, industrial safety, and hazardous materials handling and shipping, no specific classroom training is given in radioactive waste management. On-the-job-training, however, provides specific waste management training in the individuals work area. In addition, all operating procedures are written so as to be in compliance with the regulations and guidelines established by the various government agencies in regard to the handling of radioactive waste.

4.0 Emergency Planning

Rocky Flats Plant has an emergency plan designed to provide guidance for bringing together the emergency response personnel and the supportive expertise, knowledge and resources available into one unified effort in response to operational and natural hazards in which there is a potential for personal injury, destruction of property, or damage to the environment. The Rocky Flats Emergency Plan was prepared in compliance with DOE Order 5500.2, "Emergency Planning, Preparedness, and Response for Operations", the "Offsite Radiological Emergency Response Plan", and the "Best Management Plan Spill Control" document.

The Emergency Plan and its implementing procedures are prepared and maintained according to a fanout concept. It provides basic guidance to management and supervision. Supervision prepares specific plans and procedures for buildings, operating areas within buildings, and emergency response groups and teams. Each plan holder is responsible for preparing and maintaining, on an individual basis, those procedures and other information necessary to activate emergency response activities.

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5.0 Unusual Occurrences

Unusual occurrence investigations will be conducted for radioactive waste incidents according to the guidelines provided in the Quality Program Plan for HS&E (3.01) and in accordance with DOE Order 5484.1, "Environmental, Safety, and Health Protection Information Reporting Requirements." A copy of the final report will be sent to RFAO for forwarding to WMTDD.

6.0 Closure and Post-Closure

The Rocky Flats Plant will cease operations and undergo decontamination and decommissioning (D&D) at some unspecified future date (to be determined by DOE). The D&D effort will address the requirements for closure of a facility that manages radioactive materials. Those facilities onsite that utilize radioactive materials will be decontaminated and decommissioned in a manner designed to eliminate or minimize potential hazards to the public health and environment. The buildings at Rocky Flats which are currently in use and are known or suspected to be radioactively contaminated are shown in Table 8.

7.0 Annual Site Plan

The annual radioactive waste management report shall be included in the Annual Site Plan. The report will be based on the fiscal

Table 8
Buildings Known or Suspected to be Radioactively Contaminated

Bldg.	Facility Designation	Principal Contaminant	Degree of Contamination*
122	Medical	^{239}Pu	Trace
123	Health Sciences	^{239}Pu	Low
125	Standards Lab	^{239}Pu	Trace
331	Garage	^{235}U	Trace
334	General Shops	^{235}U	Trace
371	Pu Recovery	^{239}Pu	High
374	Waste Treatment	^{239}Pu	Moderate
439	Material Certification	^{238}U	Trace
440	Production Control Warehouse	^{238}U	Trace
441	Purchasing & Design Engineering	^{238}U	Trace
442	Laundry	^{238}U	Low
444	Manufacturing	^{238}U	Low
447	Manufacturing	^{238}U	Low
559	Pu Analytical Laboratory	^{239}Pu	Moderate
663	Storage	^{239}Pu	Trace
701	Maintenance	^{239}Pu	Low
707	Manufacturing	^{239}Pu	High
770	Storage	^{239}Pu	Low
771	Pu Recovery	^{239}Pu	High
774	Waste Treatment	^{239}Pu	Moderate
776	Manufacturing	^{239}Pu	High
777	Assembly	^{239}Pu	High
778	Service	^{239}Pu	Low
779	Pu Development	^{239}Pu	High
865	Materials Development Lab	^{238}U	Low
881	Manufacturing	^{235}U	Low
883	Rolling and Forming Facility	^{235}U	Low
884	Warehouse	^{235}U	Trace
886	Nuclear Safety Facility	^{239}Pu	Trace
889	Decontamination Facility	^{235}U	Low
991	Research and Development	^{239}Pu	Trace

* Degree of contamination is intended to indicate the relative costs of decontamination and decommissioning. For example, "trace" would involve relatively simple and normal cleaning with a high probability of conversion to other use; "high" would involve elaborate and unusual cleaning with very low probability of conversion to other use.

year, October 1 to September 30. A record of the report will be kept for 3 years. The report will contain:

- A description of the radioactive waste generated and of the radioactive waste management facilities.

- An inventory of the previous year's radioactive waste to include kinds, quantities, final disposition, and future projections.

- Waste Operations costs and operating budget projections.

- Proposed Capital equipment, General Plant Project, and Line Items.

- A summary and interpretation of Environmental Monitoring results.

- A summary of incidents requiring Unusual Occurrence Reports.

REFERENCES

* Waste Management Site Plan, November 1983
* Quality Program Plan - Waste Processing
* Waste Management Manual
* TRU Waste Compliance Program for WIPP-WAC, CO-4500
* Waste Management Information Systems Reports
* Hazardous Waste Implementation Plan, November 1983
* Material Packaging, Shipping, and Transportation Plan
* Quality Program Plan - Health, Safety and Environment
* Rocky Flats Emergency Plan
* Quality Assurance Program for TRU Waste Certification, WC-4500
* Offsite Radiological Emergency Response Plan
* Best Management Plan Spill Control

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