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REMOVAL ACTION NUMBER 9 REMOVAL OF WASTE INVENTORIES, ANNUAL UPDATE

06/27/96

DOE-1054-96
DOE-FN EPAS
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REPORT

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Department of Energy

Ohio Field Office
Fernald Area Office
P. O. Box 538705
Cincinnati, Ohio 45253-8705
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JUN 2 7 1996

DOE-1054-96

Mr. James A. Saric, Remedial Project Director
U.S. Environmental Protection Agency
Region V - SRF-5J
77 West Jackson Boulevard
Chicago, Illinois 60604-3590

Mr. Tom Schneider, Project Manager
Ohio Environmental Protection Agency
401 East 5th Street
Dayton, Ohio 45402-2911

Dear Mr. Saric and Mr. Schneider:

REMOVAL ACTION NUMBER 9 REMOVAL OF WASTE INVENTORIES, ANNUAL UPDATE

Enclosed is the Removal Action (RA) Number 9, Removal of Waste Inventories Annual Update, prepared in compliance with the Amended Consent Agreement. This annual update is a streamlined summary of Fernald Environmental Management Project (FEMP) waste management activities and includes:

- A summary of significant activities since the 1995 submittal;
- An index of RA Number 9 documents and their status (Enclosure 1). A copy of any document will be available upon request;
- A description of waste streams to be shipped to the Nevada Test Site (NTS) (Enclosure 2);
- A three year waste shipment forecast to the NTS (Enclosure 3); and,
- A bar chart indicating the FEMP uranium waste inventory (Enclosure 4).

RA Number 9 activities completed since the 1995 update and ongoing RA Number 9 activities include:

- Thorium wastes from Building 65 are being overpacked by remote controlled equipment. To date, approximately 50 drums of waste have been shipped to the NTS;

Recycled and Recyclable

- A 418.8 m^3 of uranium-contaminated mixed waste has been stabilized and awaiting shipment to NTS. Waste shipments will be initiated during the 4th Quarter of FY96;

- 364 drums of thorium nitrate mixed waste from Tank T-2 were stabilized to be shiped to NTS;

- Liquid mixed waste was bulked for incineration at the Department of Energy, Toxic Substance Control Act/Resource Conservation and Recovery Act (TSCA/RCRA) incinerator in Oak Ridge, Tennessee:

  - 640.8 m^3 of mixed waste was bulked for shipment.
  - 440 m^3 of mixed waste was shipped.

- 41 m^3 of mixed waste have been shipped to Envirocare;

- Revision 7.0 of the Fernald Environmental Management Project (FEMP) application to ship low-level radioactive waste (LLRW) to the NTS was approved;

- In FY95, 20,447 m^3 of LLRW and nuclear materials (200 tons) were shipped for disposal and reuse. So far in FY96, 3,729 m^3 of LLRW waste have been shipped off-site; and,

- 21.8 m^3 of mixed waste were treated through the FEMP Wastewater Treatment System (WWTS).

Future Fiscal Year (FY) 1996 activities include submittal of Technology Specific Work Plans under the Chemical Treatment Project for treatment of mixed low-level radioactive waste.

If you have any questions, please contact John H. Trygier at (513) 648-3154.

Sincerely,

Johnny Reising

Johnny W. Reising
Fernald Remedial Action
Project Manager

FN:Trygier

Enclosure: As Stated

cc w/enc:

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AR Coordinator/78

cc w/o enc:

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S. M. Houser, FERMCO/52-3
K. R. Kolthoff, FERMCO/52-3
C. C. Little, FERMCO/2
M. L. West, FERMCO/35-1

I. General Supporting Documentation

	DOE Order 5820.2A (10/28/93)	No change
MS-1001	FERMCO Site Procedure System, Rev. 1 (2/15/96)	Revised/reissued
SDI-100	Site Document System Index	Revised monthly
SFI-100	Site Forms Index	Revised monthly
DI-776	Remediation Support Operations Document Program Index	Revised quarterly
QA-0001	Processing Deviation and Corrective Action Reports, Rev. 7 (3/15/96)	Revised
RM-0002	Centralized Training Department Training Manual, Rev. 1 (4/11/96)	Revised
RM-0012	Quality Assurance Program Description, Rev. 3 (11/30/94)	No change
MS-1002	Control of Plans and Internal Requirements Documents, Rev. 1 (4/30/96)	New and revised
MS-1006	FERMCO Forms Control System (11/27/95)	New
SH-0001	Development of Project Specific Health and Safety Plans (4/15/95)	No change
20-C-001	Changes to Form Entries (1/16/96)	New
M-140	Remediation Support Operation Division Document System (4/10/96)	New

II. Implementing Workplans (Project Specific Plans)

8ADD9-2200-002	FEMP Mixed Waste Chemical Treatment Project General CERCLA Work Plan, Rev. 1 (3/96)	New, revised, and reissued
8ADD9-2200-004	FEMP Mixed Waste Chemical Treatment Project Technology Specific Work Plan for Decontamination of Mixed Waste Material, Rev. 1 (5/96)	New, revised, and reissued
8ADD9-2200-003	FEMP Mixed Waste Chemical Treatment Project Waste Segregation Technology Specific Work Plan (1/96)	New
8ADD5-2200-002	Fernald Mixed Waste Stabilization Project, Project Specific Plan and Procedures, Volumes 1 and 2, Rev. 5 (8/95)	Revised/reissued
HMWM-001-95	Work Plan for FEMP Liquid Mixed Waste (12/95), which includes waste sent to the TSCA Incinerator and waste sent to the FEMP WWTS.	Revised/reissued

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III. Implementing Procedures

Step 1. Generate Waste		
PL-3006	Materials Control and Accountability (MC&A) Plan, Rev. 1 (10/2/95)	Revised
EP-0005	Controlling Aqueous Wastewater Discharges into the Wastewater Treatment System, Rev. 1 (11/3/95)	Revised/reissued
8-C-200	Plant 8 Perched Groundwater Volatile Organic Compound (VOC) Treatment System (1/22/96)	Revised
8-C-602	Large EIMCO Filter Operation - Plant 8 Wastewater Processing System (1/9/96)	Revised
8-C-611	Plant 8 Wastewater Receiving System (3/27/96)	Revised
20-C-017	Movement of Hazardous Waste (3/1/96)	Revised
20-C-606	Hazardous Waste Spill Clean-up (1/27/95)	No change
20-C-615	Handling Uncharacterized Waste in the Controlled Holding Area (3/28/96)	Revised/reissued
20-C-627	Liquid Removal from Containerized Low-Level Radioactive Waste (3/20/95)	No change
20-C-629	Hazardous Liquid Waste Transfer Procedure (1/2/96)	New and revised
20-C-800	Sorting Drummed Legacy Waste (12/28/96)	New
20-C-802	Sorting Containerized Mixed Waste (2/21/96)	New
20-C-918	Preparation for Movement of Unvented Containers (3/28/96)	Revised/reissued
50-C-105	Receipt of Mixed LLRW (9/14/95)	Revised/reissued

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III. Implementing Procedures (continued)

Step 2. Sample and Characterize		
EW-0001	Initiating Waste Characterization Activities Using the Material Evaluation Form (MEF), Rev. 5 (2/13/95)	No change
8-C-618	Plant 8 Process Control Testing Procedure (11/2/95)	New
20-C-806	Sampling Waste for Hazard Identification (11/27/94)	Revised
PT-0011	Evaluation of LLRW Streams for Shipment to the Nevada Test Site (NTS), Rev. 3 (11/17/95)	New and revised
	Waste Characterization Manual (7/21/93)	Canceled and replaced by PL3052(M-128)
PL-3052(M-128)	Waste Characterization Plan (11/24/95)	New
RM-0041	Radiological Characterization Program Manual (4/30/96)	New

Step 3. Package for Storage		
EW-0006	Management of Excess Soil, Debris, and Waste from a Project, Rev. 1 (1/31/94)	No change
PT-0008	Packaging, On-Site Movement and Off-site Shipment of Material (12/20/91)	No change
EW-0024	Operating the Material Release Facility (7/7/95)	New
RM-0005	FEMP Lot Marking and Coding System, Rev. 6 (3/17/95)	No change
PT-0003	Control and Movement of Containers at the FEMP, Rev. 1 (6/20/95)	New and revised
20-C-600	Overpacking Defective Containers (3/17/95)	Revised

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III. Implementing Procedures (continued)

Step 4. Storage		
20-C-623	Receipt and Storage of LLRW and Nuclear Material (2/6/95)	Revised
20-C-100	Moving and Storing Depleted, Normal, and Enriched Uranium Materials <20% and Thorium Metal and Materials (10/4/94)	No Change
Step 5. Package for Disposal		
PT-0005	Packaging of LLRW in Drums for Shipment to the NTS, Rev. 2 (3/30/95)	Revised
PT-0006	Packaging of LLRW in ISO Containers for Shipment to the NTS, Rev. 2 (3/31/95)	Revised
PT-0007	Packaging of LLRW in Metal Boxes for Shipment to the NTS, Rev. 2 (3/31/95)	Revised
EW-0014	Managing PCBs and PCB Items, Rev. 1 (3/8/95)	Revised
1-C-306	Crushing Scrap Drums (1/7/94)	Canceled
1-C-918	Thorium Overpacking (6/21/93)	Canceled
2-C-923	Trash Baler Operation (10/27/94)	Revised
8-C-610	Plant 8 Supercompactor Operation (2/12/96)	Revised/reissued
20-C-109	Crushing Scrap Drums Using the Teemark Drum Packer/Crusher (1/11/95)	No change
20-C-809	Dispositioning Hazardous Recyclable Waste/Material (2/14/96)	New
64-C-101	Thorium Overpack Project Manned Operations Procedure (1/17/96)	New
64-C-102	Thorium Overpack Project Remote Operations Procedure (1/17/96)	New
64-C-104	Simulation of Startup and Operation (REMOTE) Building 65 Thorium Overpack Project (9/18/95)	New
64-C-105	Simulation of Startup and Operation (MANNED) Building 65 Thorium Overpack Project (8/24/95)	New

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III. Implementing Procedures (continued)

Step 5 (continued)		
PT-0009	Contaminated Trash Dumpsters (5/1/95)	Revised
20-C-020	Inspection of LLRW and Nuclear Materials Containers (2/6/96)	Revised/reissued
20-C-111	Transport of LLRW and Nuclear Materials (2/6/95)	Revised
20-C-500	Inspection RCRA Waste Load/Unload and Staging Areas (9/7/94)	No change
20-C-613	Emptying Liquid Hazardous Waste Storage Containers (8/3/93)	No change
20-C-616	Inspection of Hazardous Waste Management Units (9/7/94)	Revised
20-C-630	Receipt, Inspection, and Placement of Hazardous, Mixed, PCB, and Asbestos Waste into Storage (3/20/95)	No change
QP 12.03	Certification of Waste Containers and Filling with LLRW for Shipment to the NTS, Rev. 3 (3/20/96)	Revised/reissued
QP 12.07	Certification of Waste Package Examination and Sealing for Off-site Shipment, Rev. 2 (3/20/96)	Revised/reissued

Step 6. Loading and Transport		
1-C-602	Low-Level Radioactive Waste Shipment Preparation, Rev. 3 (8/9/93)	Canceled, replaced by 20-C-633
20-C-633	Preparation of Containerized LLRW for Shipment (2/29/96)	New and revised
50-C-111	Traffic Documentation for LLRW to the NTS (12/29/95)	Revised/reissued
50-C-112	Preparation of Documentation for LLRW to the NTS (7/26/95)	Revised/reissued
50-C-107	Inspection of Inbound Carrier Vehicles Used for LLRW, Hazardous Waste and/or Product Off-site Shipment (12/5/94)	No change

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III. Implementing Procedures (continued)

Step 6 (continued)		
50-C-108	Loading LLRW Containers on Flatbeds for Off-site Shipment (12/15/94)	No change
50-C-109	Loading LLRW Containers on Vans for Off-site Shipment (1/2/96)	Revised/reissued
D22-00-002	Documentation for Radiological Characterization of Bulked Waste (4/30/96)	New
D22-00-003	Documentation for Radiological Characterization of Process Residues and Intermediate Product Materials (4/30/96)	New
RC-RDA-006	Radiological Survey Requirements for Radioactive Material Shipping and Receiving (10/5/94)	No change
QP 12.04	Certification of Loading and Shipping of LLRW, Rev. 3 (3/20/96)	Revised/reissued
Step 7. Disposal Facility Requirements and Criteria		
NVO-325	Nevada Test Site Defense Waste Acceptance Criteria, Certification, and Transfer Requirements, Rev. 1 (6/92)	No change
Step 8. Fernald Approval to Ship for Disposal		
RM-0040	FEMP Application to Ship Waste to the Nevada Test Low-Level Site, Rev. 7 (4/30/96)	Revised/reissued
	Waste Certification Program Plan for Low-Level Waste Characterization and Certification (4/30/96)	Revised and incorporated into RM-0040
QA-0004	FEMP Quality Assurance Audit Program, Rev. 1 (10/18/93)	No change

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III. Implementing Procedures (continued)

Step 9. Waste Analysis and Characterization Plans		
PL-3048(93-290)	Prototype for Sampling Waste at the FEMP, Rev. 0 (6/1/94)	No change
Step 10. Waste Minimization Plans Developed	[illegible]	[illegible]
PL-3009	Waste Minimization Plan (4/7/94)	No change
Step 11. Waste Minimization Activities Implemented		
20-C-607	Segregation of Wooden Pallets, Rev. 1 (8/9/93)	Canceled

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- ATTACHMENT 2 -
DESCRIPTION OF WASTE STREAMS TO BE SHIPPED TO NTS

WASTE STREAMS TO BE SHIPPED TO THE NEVADA TEST SITE

ONLO000000001 Contaminated Process Area Scrap Wastes
This waste is generated in the dismantling of equipment and disposal of waste that has been stockpiled during Fernald operations. The remediation process generates scrap metal, scrap wood, and scrap vehicles.

ONLO000000002 Contaminated Construction/Removal Action Wastes
This waste is generated during the demolition or excavation phase of construction, maintenance, and removal action projects (e.g., crushed concrete, soil, broken pieces of wood).

ONLO000000006 Low/High-Grade Residues
Low-grade residues generally contain between 0.1 to 20 percent U-total by weight and 0.2 to 2.0 percent U-235 relative to total uranium. These residues consist of uranium oxides and fluorides mixed with a wide variety of other materials and comprise approximately 70 percent of this waste stream.

High-grade residues generally contain between 20 to 100 percent U-total by weight and 0.2 to 2.0 percent U-235 relative to total uranium. These residues contain impurities or are mixtures of several uranium compounds.

ONLO000000007 Contaminated Trash
This material is generated in the daily work areas, material unpackaging, and light cleanup operations. The waste is size-reduced in a compactor or processed in baling operations.

ONLO000000010 Radioactively-Contaminated Regulated Asbestos-Containing Material
Radioactively-contaminated asbestos-containing materials generated at the FEMP during renovation, demolition, and remediation activities.

ONLO000000011 Thorium Residues and Wastes Not Amenable to Sampling
These wastes are from the thorium production process and the remediation activities of the thorium production site. This material is not amenable to sampling.

ONLO000000012 Thorium Residues
This waste stream contains homogeneous thorium products and includes approximately one-third of the thorium inventory stored at the FEMP.

ONLO000000014 Vitrified Silo Residues
Solid glass-like material created by the vitrification of silo residues, sludge, and soil. The major constituents in the glass matrix are oxides of uranium, lead, calcium, iron, sodium, aluminum, barium, and potassium. (Approval pending further evaluation.)

WASTE STREAMS TO BE SHIPPED TO THE NEVADA TEST SITE

ONLO000000015 Stabilized Treated Waste
Paint chips and debris from building structures and equipment surfaces, grit and shot blast, furnace salts, sump cakes, construction rubble, and miscellaneous trash that have been solidified in cement. Also will be sending stabilized residues from the treatment of barium chloride salts and sludges, oxidizers, and reactives.

ONLO000000016 Stabilized Thorium Waste
Thorium residues, debris, or other wastes characterized as corrosive or ignitable (oxidizer) or containing heavy metals, neutralized and stabilized in cement. Rinseates, sweepings, disposable mixing blades, personal protective equipment (PPE), etc., generated in the stabilization process were also treated to meet the NTS WAC for disposal.

- ATTACHMENT 3 -
THREE YEAR WASTE SHIPMENT FORECAST

The FEMP estimated three-year waste shipment forecast for Fiscal Years 1996-1998 are provided on the following pages. These forecasts are subject to change due to budget impact and FEMP priorities. FEMP waste forecasts are updated every six months.

THREE – YEAR WASTE SHIPMENT FORECAST

GENERATOR: Fernald Env. Mgt. Proj. PREPARED BY: J. Rowe DATE: 04/30/96

FORECAST PERIOD	WASTE STREAM NUMBER	WASTE TYPE	CODE	CONTAINER SIZE (IN FEET)	NUMBER	NUMBER OF SHIPMENTS	TOTAL VOLUME (cubic feet)	TOTAL VOLUME (cubic meters)
FY–1996	ONLO000000001	LLW	109	8.5 x 7.92 x 19.83 (ext.)	0	0	0	0
10/1/95 to				7.75 x 7.83 x 19.33 (int.)			0	0
12/30/95			130	3.54 x 4.42 x 6.60 (ext.)	0	0	0	0
(Actuals)				3.17 x 4.33 x 6.33 (int.)			0	0
FY–1996	ONLO000000001	LLW	109	8.5 x 7.92 x 19.83 (ext.)	43	30	57815	1637
1/1/96 to				7.75 x 7.83 x 19.33 (int.)			50342	1426
3/31/96			130	3.54 x 4.42 x 6.60 (ext.)	0	0	0	0
(Actuals)				3.17 x 4.33 x 6.33 (int.)			0	0
FY–1996	ONLO000000001	LLW	109	8.5 x 7.92 x 19.83 (ext.)	1	0	1349	38
4/1/96 to				7.75 x 7.83 x 19.33 (int.)			1174	33
6/30/96			107	3.92 x 4.00 x 7.00 (ext.)	0	0	0	0
				3.67 x 3.60 x 6.60 (int.)			0	0
FY–1996	ONLO000000001	LLW	109	8.5 x 7.92 x 19.83 (ext.)	0	0	0	0
7/1/96 to				7.75 x 7.83 x 19.33 (int.)			0	0
9/30/96			107	3.92 x 4.00 x 7.00 (ext.)	0	0	0	0
				3.67 x 3.60 x 6.60 (int.)			0	0
TOTAL	ONLO000000001	LLW	109	8.5 x 7.92 x 19.83 (ext.)	44	30	59164	1675
FY–1996				7.75 x 7.83 x 19.33 (int.)			51516	1459
			130	3.54 x 4.42 x 6.60 (ext.)	0	0	0	0
				3.17 x 4.33 x 6.33 (int.)			0	0
			107	3.92 x 4.00 x 7.00 (ext.)	0	0	0	0
				3.67 x 3.60 x 6.60 (int.)			0	0
			ALL	External			59164	1675
				Internal			51516	1459
FY–1997	ONLO000000001	LLW	109	8.5 x 7.92 x 19.83 (ext.)	0	0	0	0
				7.75 x 7.83 x 19.33 (int.)			0	0
			107	3.92 x 4.00 x 7.00 (ext.)	0	0	0	0
				3.67 x 3.60 x 6.60 (int.)			0	0
FY–1998	ONLO000000001	LLW	109	8.5 x 7.92 x 19.83 (ext.)	0	0	0	0
				7.75 x 7.83 x 19.33 (int.)			0	0
			107	3.92 x 4.00 x 7.00 (ext.)	0	0	0	0
				3.67 x 3.60 x 6.60 (int.)			0	0

THREE – YEAR WASTE SHIPMENT FORECAST

GENERATOR: Fernald Env. Mgt. Proj. PREPARED BY: J. Rowe DATE: 04/30/96

FORECAST PERIOD	WASTE STREAM NUMBER	WASTE TYPE	CODE	CONTAINER SIZE (IN FEET)	NUMBER	NUMBER OF SHIPMENTS	TOTAL VOLUME (cubic feet)	TOTAL VOLUME (cubic meters)
FY–1996 10/1/95 to 12/30/95 (Actuals)	ONLO000000002	LLW	109	8.5 x 7.92 x 19.83 (ext.)	0	0	0	0
				7.75 x 7.83 x 19.33 (int.)			0	0
			119	3.38 x 4.77 x 6.77(ext.)	0	0	0	0
				3.03 x 4.33 x 6.33 (int.)			0	0
			130	3.54 x 4.42 x 6.60 (ext.)	0	0	0	0
				3.17 x 4.33 x 6.33 (int.)			0	0
FY–1996 1/1/96 to 3/31/96 (Actuals)	ONLO000000002	LLW	109	8.5 x 7.92 x 19.83 (ext.)	10	10	13490	382
				7.75 x 7.83 x 19.33 (int.)			11740	332
			119	3.38 x 4.77 x 6.77(ext.)	0	0	0	0
				3.03 x 4.33 x 6.33 (int.)			0	0
FY–1996 4/1/96 to 6/30/96	ONLO000000002	LLW	109	8.00 x 9.00 x 19.83 (ext.)	20	20	26980	764
				7.75 x 8.00 x 19.33 (int.)			24240	686
			107	3.92 x 4.00 x 7.00 (ext.)	0	0	0	0
				3.67 x 3.60 x 6.60 (int.)			0	0
FY–1996 7/1/96 to 9/30/96	ONLO000000002	LLW	109	8.00 x 9.00 x 19.83 (ext.)	12	12	16188	458
				7.75 x 8.00 x 19.33 (int.)			14544	412
			107	3.92 x 4.00 x 7.00 (ext.)	0	0	0	0
				3.67 x 3.60 x 6.60 (int.)			0	0
TOTAL FY–1996	ONLO000000002	LLW	107	3.92 x 4.00 x 7.00 (ext.)	0	0	0	0
				3.67 x 3.60 x 6.60 (int.)			0	0
			109	8.5 x 7.92 x 19.83 (ext.)	42	10	56658	1604
				7.75 x 7.83 x 19.33 (int.)			50524	1431
			119	3.38 x 4.77 x 6.77(ext.)	0	0	0	0
				3.03 x 4.33 x 6.33 (int.)			0	0
			130	3.54 x 4.42 x 6.60 (ext.)	0	0	0	0
				3.17 x 4.33 x 6.33 (int.)			0	0
			133	8.00 x 9.00 x 19.83 (ext.)	0	0	0	0
				7.75 x 8.00 x 19.33 (int.)			0	0
			ALL	External			56658	1604
				Internal			50524	1431
FY–1997	ONLO000000002	LLW	133	8.00 x 9.00 x 19.83 (ext.)	200	200	285600	8087
				7.75 x 8.00 x 19.33 (int.)			242400	6864
			107	3.92 x 4.00 x 7.00 (ext.)	24	3	2688	76
				3.67 x 3.60 x 6.60 (int.)			2304	65
FY–1998	ONLO000000002	LLW	133	8.00 x 9.00 x 19.83 (ext.)	256	256	365568	10352
				7.75 x 8.00 x 19.33 (int.)			310272	8786
			107	3.92 x 4.00 x 7.00 (ext.)	24	3	2688	76
				3.67 x 3.60 x 6.60 (int.)			2304	65

THREE – YEAR WASTE SHIPMENT FORECAST

GENERATOR: Fernald Env. Mgt. Proj. PREPARED BY: J. Rowe DATE: 04/30/96

FORECAST PERIOD	WASTE STREAM NUMBER	WASTE TYPE	CODE	CONTAINER SIZE (IN FEET)	NUMBER	NUMBER OF SHIPMENTS	TOTAL VOLUME (cubic feet)	TOTAL VOLUME (cubic meters)
FY–1996 10/1/95 to 12/30/95 (Actuals)	ONLO000000006	LLW	102	55 GALLON (ext.)	0	0	0	0
							0	0
			130	3.54 x 4.42 x 6.60 (ext.)	20	3	2060	58
				3.17 x 4.33 x 6.33 (int.)			1740	49
			117	3.50 x 4.58 x 6.67 (ext.)	6	1	636	18
				3.08 x 4.17 x 6.25 (int.)			492	14
FY–1996 1/1/96 to 3/31/96 (Actuals)	ONLO000000006	LLW	102	55 GALLON (ext.)	0	0	0	0
							0	0
			107	3.92 x 4.00 x 7.00 (ext.)	147	21	16464	466
				3.67 x 3.60 x 6.60 (int.)			14112	400
			117	3.50 x 4.58 x 6.67 (ext.)	4	1	424	12
				3.08 x 4.17 x 6.25 (int.)			328	9
			119	3.38 x 4.77 x 6.77(ext.)	8	1	872	25
				3.03 x 4.33 x 6.33 (int.)			656	19
			130	3.54 x 4.42 x 6.60 (ext.)	152	3	15656	443
				3.17 x 4.33 x 6.33 (int.)			13224	374
FY–1996 4/1/96 to 6/30/96	ONLO000000006	LLW	102	55 GALLON (ext.)	292	31	2333	66
							2161	61
			107	3.92 x 4.00 x 7.00 (ext.)	350	50	39200	1110
				3.67 x 3.60 x 6.60 (int.)			33600	951
			130	3.54 x 4.42 x 6.60 (ext.)	28	4	2884	82
				3.17 x 4.33 x 6.33 (int.)			2436	69
FY–1996 7/1/96 to 9/30/96	ONLO000000006	LLW	102	55 GALLON (ext.)	112	9	895	25
							829	23
			107	3.92 x 4.00 x 7.00 (ext.)	215	47	26015	737
				3.67 x 3.60 x 6.60 (int.)			18705	530
TOTAL FY–1996	ONLO000000006	LLW	102	55 GALLON (ext.)	404	40	3228	91
							2990	85
			107	3.92 x 4.00 x 7.00 (ext.)	712	118	81679	2313
				3.67 x 3.60 x 6.60 (int.)			66417	1881
			117	3.50 x 4.58 x 6.67 (ext.)	10	2	1060	30
				3.08 x 4.17 x 6.25 (int.)			820	23
			119	3.38 x 4.77 x 6.77(ext.)	8	1	872	25
				3.03 x 4.33 x 6.33 (int.)			656	19
			130	3.54 x 4.42 x 6.60 (ext.)	200	10	20600	583
				3.17 x 4.33 x 6.33 (int.)			17400	493
			ALL	External			107439	3042
				Internal			88283	2500
FY–1997	ONLO000000006	LLW	124	85 GALLON (ext.)	0	0	0	0
				55 GALLON (int.)			0	0
			107	3.92 x 4.00 x 7.00 (ext.)	800	160	96800	2743
				3.67 x 3.60 x 6.60 (int.)			69600	1971
FY–1998	ONLO000000006	LLW	124	85 GALLON (ext.)	0	0	0	0
				55 GALLON (int.)			0	0
			107	3.92 x 4.00 x 7.00 (ext.)	400	100	48400	1371
				3.67 x 3.60 x 6.60 (int.)			34800	985

THREE – YEAR WASTE SHIPMENT FORECAST

GENERATOR: Fernald Env. Mgt. Proj. PREPARED BY: J. Rowe DATE: 04/30/96

FORECAST PERIOD	WASTE STREAM NUMBER	WASTE TYPE	CODE	CONTAINER SIZE (IN FEET)	NUMBER	NUMBER OF SHIPMENTS	TOTAL VOLUME (cubic feet)	TOTAL VOLUME (cubic meters)
FY–1996: 10/1/95 to 12/30/95 (Actuals)	ONLO000000007	LLW	109	8.5 x 7.92 x 19.83 (ext.)	0	0	0	0
				7.75 x 7.83 x 19.33 (int.)			0	0
			132	4.38 x 3.90 x 6.17 (ext.)	0	0	0	0
				3.92 x 3.52 x 5.79 (int.)			0	0
FY–1996: 1/1/96 to 3/31/96 (Actuals)	ONLO000000007	LLW	109	8.5 x 7.92 x 19.83 (ext.)	0	0	0	0
				7.75 x 7.83 x 19.33 (int.)			0	0
			132	4.38 x 3.90 x 6.17 (ext.)	10	3	1050	30
				3.92 x 3.52 x 5.79 (int.)			800	23
FY–1996: 4/1/96 to 6/30/96	ONLO000000007	LLW	109	8.5 x 7.92 x 19.83 (ext.)	3	3	4047	115
				7.75 x 7.83 x 19.33 (int.)			3519	100
			132	4.38 x 3.90 x 6.17 (ext.)	100	5	10500	297
				3.92 x 3.52 x 5.79 (int.)			8000	227
FY–1996: 7/1/96 to 9/30/96	ONLO000000007	LLW	109	8.5 x 7.92 x 19.83 (ext.)	0	0	0	0
				7.75 x 7.83 x 19.33 (int.)			0	0
			132	4.38 x 3.90 x 6.17 (ext.)	60	5	6300	178
				3.92 x 3.52 x 5.79 (int.)			4800	136
TOTAL FY–1996	ONLO000000007	LLW	109	8.5 x 7.92 x 19.83 (ext.)	3	3	4047	115
				7.75 x 7.83 x 19.33 (int.)			3519	100
			132	4.38 x 3.90 x 6.17 (ext.)	170	13	17850	505
				3.92 x 3.52 x 5.79 (int.)			13600	385
			ALL	External			21897	620
				Internal			17119	485
FY–1997:	ONLO000000007	LLW	109	8.5 x 7.92 x 19.83 (ext.)	0	0	0	0
				7.75 x 7.83 x 19.33 (int.)			0	0
			132	4.38 x 3.90 x 6.17 (ext.)	50	5	5250	149
				3.92 x 3.52 x 5.79 (int.)			4000	113
FY–1998:	ONLO000000007	LLW	109	8.5 x 7.92 x 19.83 (ext.)	0	0	0	0
				7.75 x 7.83 x 19.33 (int.)			0	0
			132	4.38 x 3.90 x 6.17 (ext.)	50	5	5250	149
				3.92 x 3.52 x 5.79 (int.)			4000	113

THREE – YEAR WASTE SHIPMENT FORECAST

GENERATOR: Fernald Env. Mgt. Proj. PREPARED BY: J. Rowe DATE: 04/30/96

FORECAST PERIOD	WASTE STREAM NUMBER	WASTE TYPE	CODE	CONTAINER SIZE (IN FEET)	NUMBER	NUMBER OF SHIPMENTS	TOTAL VOLUME (cubic feet)	TOTAL VOLUME (cubic meters)
FY–1996 10/1/95 to 12/30/95 (Actuals)	ONLO000000010	LLW	109	8.5 x 7.92 x 19.83 (ext.)	0	0	0	0
				7.75 x 7.83 x 19.33 (int.)			0	0
			119	3.38 x 4.77 x 6.77 (ext.)	0	0	0	0
				3.03 x 4.33 x 6.25 (int.)			0	0
FY–1996 1/1/96 to 3/31/96 (Actuals)	ONLO000000010	LLW	109	8.5 x 7.92 x 19.83 (ext.)	0	0	0	0
				7.75 x 7.83 x 19.33 (int.)			0	0
			119	3.38 x 4.77 x 6.77 (ext.)	0	0	0	0
				3.03 x 4.33 x 6.25 (int.)			0	0
FY–1996 4/1/96 to 6/30/96	ONLO000000010	LLW	109	8.5 x 7.92 x 19.83 (ext.)	0	0	0	0
				7.75 x 7.83 x 19.33 (int.)			0	0
			119	3.38 x 4.77 x 6.77 (ext.)	0	0	0	0
				3.03 x 4.33 x 6.25 (int.)			0	0
FY–1996 7/1/96 to 9/30/96	ONLO000000010	LLW	109	8.5 x 7.92 x 19.83 (ext.)	0	0	0	0
				7.75 x 7.83 x 19.33 (int.)			0	0
			119	3.38 x 4.77 x 6.77 (ext.)	0	0	0	0
				3.03 x 4.33 x 6.25 (int.)			0	0
TOTAL FY–1996	ONLO000000010	LLW	109	8.5 x 7.92 x 19.83 (ext.)	0	0	0	0
				7.75 x 7.83 x 19.33 (int.)			0	0
			119	3.38 x 4.77 x 6.77 (ext.)	0	0	0	0
				3.03 x 4.33 x 6.25 (int.)			0	0
			ALL	External			0	0
				Internal			0	0
FY–1997	ONLO000000010	LLW	109	8.5 x 7.92 x 19.83 (ext.)	15	15	20235	573
				7.75 x 7.83 x 19.33 (int.)			17595	498
			119	3.38 x 4.77 x 6.77 (ext.)	300	50	32700	926
				3.03 x 4.33 x 6.25 (int.)			24600	697
FY–1998	ONLO000000010	LLW	109	8.5 x 7.92 x 19.83 (ext.)	10	10	13490	382
				7.75 x 7.83 x 19.33 (int.)			11730	332
			119	3.38 x 4.77 x 6.77 (ext.)	300	50	32700	926
				3.03 x 4.33 x 6.25 (int.)			24600	697

THREE – YEAR WASTE SHIPMENT FORECAST

GENERATOR: Fernald Env. Mgt. Proj. PREPARED BY: J. Rowe DATE: 04/30/96

FORECAST PERIOD	WASTE STREAM NUMBER	WASTE TYPE	CODE	CONTAINER SIZE (IN FEET)	NUMBER	NUMBER OF SHIPMENTS	TOTAL VOLUME (cubic feet)	TOTAL VOLUME (cubic meters)
FY–1996 10/1/95 to 12/30/95 (Actuals)	ONLO000000011	LLW	109	8.5 x 7.92 x 19.83 (ext.)	0	0	0	
				7.75 x 7.83 x 19.33 (int.)			0	
			119	3.38 x 4.77 x 6.77 (ext.)	0	0	0	
				3.03 x 4.33 x 6.25 (int.)			0	
FY–1996 1/1/96 to 3/31/96 (Actuals)	ONLO000000011	LLW	109	8.5 x 7.92 x 19.83 (ext.)	0	0	0	
				7.75 x 7.83 x 19.33 (int.)			0	
			119	3.38 x 4.77 x 6.77 (ext.)	0	0	0	
				3.03 x 4.33 x 6.25 (int.)			0	
FY–1996 4/1/96 to 6/30/96	ONLO000000011	LLW	109	8.5 x 7.92 x 19.83 (ext.)	0	0	0	
				7.75 x 7.83 x 19.33 (int.)			0	
			119	3.38 x 4.77 x 6.77 (ext.)	0	0	0	
				3.03 x 4.33 x 6.25 (int.)			0	
FY–1996 7/1/96 to 9/30/96	ONLO000000011	LLW	109	8.5 x 7.92 x 19.83 (ext.)	0	0	0	
				7.75 x 7.83 x 19.33 (int.)			0	
			119	3.38 x 4.77 x 6.77 (ext.)	0	0	0	
				3.03 x 4.33 x 6.25 (int.)			0	
TOTAL FY–1996	ONLO000000011	LLW	109	8.5 x 7.92 x 19.83 (ext.)	0	0	0	
				7.75 x 7.83 x 19.33 (int.)			0	
			119	3.38 x 4.77 x 6.77 (ext.)	0	0	0	
				3.03 x 4.33 x 6.25 (int.)			0	
			ALL	External			0	
				Internal			0	
FY–1997	ONLO000000011	LLW	109	8.5 x 7.92 x 19.83 (ext.)	15	15	20235	57
				7.75 x 7.83 x 19.33 (int.)			17610	49
			119	3.38 x 4.77 x 6.77 (ext.)	0	0	0	
				3.03 x 4.33 x 6.25 (int.)			0	
FY–1998	ONLO000000011	LLW	109	8.5 x 7.92 x 19.83 (ext.)	5	5	6745	19
				7.75 x 7.83 x 19.33 (int.)			5870	16
			119	3.38 x 4.77 x 6.77 (ext.)	0	0	0	
				3.03 x 4.33 x 6.25 (int.)			0	

THREE – YEAR WASTE SHIPMENT FORECAST

GENERATOR: Fernald Env. Mgt. Proj. PREPARED BY: J. Rowe DATE: 04/30/96

FORECAST PERIOD	WASTE STREAM NUMBER	WASTE TYPE	CODE	CONTAINER SIZE (IN FEET)	NUMBER	NUMBER OF SHIPMENTS	TOTAL VOLUME (cubic feet)	TOTAL VOLUME (cubic meters)
FY–1996 10/1/95 to 12/30/95 (Actuals)	ONLO000000012	LLW	109	8.5 x 7.92 x 19.83 (ext.)	0	0	0	0
				7.75 x 7.83 x 19.33 (int.)			0	0
			131	3.77 x 4.63 x 6.92 (ext.)	0	0	0	0
				3.42 x 4.33 x 6.58 (int.)			0	0
FY–1996 1/1/96 to 3/31/96 (Actuals)	ONLO000000012	LLW	109	8.5 x 7.92 x 19.83 (ext.)	0	0	0	0
				7.75 x 7.83 x 19.33 (int.)			0	0
			131	3.77 x 4.63 x 6.92 (ext.)	0	0	0	0
				3.42 x 4.33 x 6.58 (int.)			0	0
FY–1996 4/1/96 to 6/30/96	ONLO000000012	LLW	109	8.5 x 7.92 x 19.83 (ext.)	0	0	0	0
				7.75 x 7.83 x 19.33 (int.)			0	0
			131	3.77 x 4.63 x 6.92 (ext.)	30	6	3600	102
				3.42 x 4.33 x 6.58 (int.)			2910	82
FY–1996 7/1/96 to 9/30/96	ONLO000000012	LLW	109	8.5 x 7.92 x 19.83 (ext.)	0	0	0	0
				7.75 x 7.83 x 19.33 (int.)			0	0
			131	3.77 x 4.63 x 6.92 (ext.)	300	100	36000	1019
				3.42 x 4.33 x 6.58 (int.)			29100	824
TOTAL FY–1996	ONLO000000012	LLW	109	8.5 x 7.92 x 19.83 (ext.)	0	0	0	0
				7.75 x 7.83 x 19.33 (int.)			0	0
			131	3.77 x 4.63 x 6.92 (ext.)	330	205	39600	1121
				3.42 x 4.33 x 6.58 (int.)			32010	906
			ALL	External			39600	1121
				Internal			32010	906
FY–1997	ONLO000000012	LLW	109	8.5 x 7.92 x 19.83 (ext.)	0	0	0	0
				7.75 x 7.83 x 19.33 (int.)			0	0
			131	3.77 x 4.63 x 6.92 (ext.)	900	100	108000	3058
				3.42 x 4.33 x 6.58 (int.)			87300	2472
FY–1998	ONLO000000012	LLW	109	8.5 x 7.92 x 19.83 (ext.)	0	0	0	0
				7.75 x 7.83 x 19.33 (int.)			0	0
			131	3.77 x 4.63 x 6.92 (ext.)	0	0	0	0
				3.42 x 4.33 x 6.58 (int.)			0	0

THREE – YEAR WASTE SHIPMENT FORECAST

GENERATOR: Fernald Env. Mgt. Proj. PREPARED BY: J. Rowe DATE: 04/30/96

FORECAST PERIOD	WASTE STREAM NUMBER	WASTE TYPE	CODE	CONTAINER SIZE (IN FEET)	NUMBER	NUMBER OF SHIPMENTS	TOTAL VOLUME (cubic feet)	TOTAL VOLUME (cubic meters)
FY–1996 10/1/95 to 12/30/95 (Actuals)	ONLO000000014	LLW	109	8.5 x 7.92 x 19.83 (ext.)	0	0	0	0
				7.75 x 7.83 x 19.33 (int.)			0	0
			100	5.00 x 4.70 x 4.90 (ext.)	0	0	0	0
				4.50 x 4.20 x 4.40 (int.)			0	0
FY–1996 1/1/96 to 3/31/96 (Actuals)	ONLO000000014	LLW	109	8.5 x 7.92 x 19.83 (ext.)	0	0	0	0
				7.75 x 7.83 x 19.33 (int.)			0	0
			100	5.00 x 4.70 x 4.90 (ext.)	0	0	0	0
				4.50 x 4.20 x 4.40 (int.)			0	0
FY–1996 4/1/96 to 6/30/96	ONLO000000014	LLW	109	8.5 x 7.92 x 19.83 (ext.)	0	0	0	0
				7.75 x 7.83 x 19.33 (int.)			0	0
			100	5.00 x 4.70 x 4.90 (ext.)	0	0	0	0
				4.50 x 4.20 x 4.40 (int.)			0	0
FY–1996 7/1/96 to 9/30/96	ONLO000000014	LLW	109	8.5 x 7.92 x 19.83 (ext.)	0	0	0	0
				7.75 x 7.83 x 19.33 (int.)			0	0
			100	5.00 x 4.70 x 4.90 (ext.)	0	0	0	0
				4.50 x 4.20 x 4.40 (int.)			0	0
TOTAL FY–1996	ONLO000000014	LLW	109	8.5 x 7.92 x 19.83 (ext.)	0	0	0	0
				7.75 x 7.83 x 19.33 (int.)			0	0
			100	5.00 x 4.70 x 4.90 (ext.)	0	0	0	0
				4.50 x 4.20 x 4.40 (int.)			0	0
			ALL	External			0	0
				Internal			0	0
FY–1997	ONLO000000014	LLW	109	8.5 x 7.92 x 19.83 (ext.)	0	0	0	0
				7.75 x 7.83 x 19.33 (int.)			0	0
			100	5.00 x 4.70 x 4.90 (ext.)	8	4	848	24
				4.50 x 4.20 x 4.40 (int.)			592	17
FY–1998	ONLO000000014	LLW	109	8.5 x 7.92 x 19.83 (ext.)	0	0	0	0
				7.75 x 7.83 x 19.33 (int.)			0	0
			100	5.00 x 4.70 x 4.90 (ext.)	20	10	2300	65
				4.50 x 4.20 x 4.40 (int.)			1660	47

THREE – YEAR WASTE SHIPMENT FORECAST

GENERATOR: Fernald Env. Mgt. Proj. PREPARED BY: J. Rowe DATE: 04/30/96

FORECAST PERIOD	WASTE STREAM NUMBER	WASTE TYPE	CODE	CONTAINER SIZE (IN FEET)	NUMBER	NUMBER OF SHIPMENTS	TOTAL VOLUME (cubic feet)	TOTAL VOLUME (cubic meters)
FY–1996 10/1/95 to 12/30/95 (Actuals)	ONLO000000015	LLW	109	8.5 x 7.92 x 19.83 (ext.) 7.75 x 7.83 x 19.33 (int.)	0	0	0 0	
			105	1.92 x 4.00 x 7.00 (ext.) 1.67 x 3.60 x 6.60 (int.)	0	0	0 0	
FY–1996 1/1/96 to 3/31/96 (Actuals)	ONLO000000015	LLW	109	8.5 x 7.92 x 19.83 (ext.) 7.75 x 7.83 x 19.33 (int.)	0	0	0 0	
			105	1.92 x 4.00 x 7.00 (ext.) 1.67 x 3.60 x 6.60 (int.)	0	0	0 0	
FY–1996 4/1/96 to 6/30/96	ONLO000000015	LLW	109	8.5 x 7.92 x 19.83 (ext.) 7.75 x 7.83 x 19.33 (int.)	0	0	0 0	
			105	1.92 x 4.00 x 7.00 (ext.) 1.67 x 3.60 x 6.60 (int.)	200	50	11200 8000	31 22
FY–1996 7/1/96 to 9/30/96	ONLO000000015	LLW	109	8.5 x 7.92 x 19.83 (ext.) 7.75 x 7.83 x 19.33 (int.)	0	0	0 0	
			105	1.92 x 4.00 x 7.00 (ext.) 1.67 x 3.60 x 6.60 (int.)	200	50	11200 8000	31 22
TOTAL FY–1996	ONLO000000015	LLW	109	8.5 x 7.92 x 19.83 (ext.) 7.75 x 7.83 x 19.33 (int.)	0	0	0 0	
			105	1.92 x 4.00 x 7.00 (ext.) 1.67 x 3.60 x 6.60 (int.)	400	100	22400 16000	63 45
			ALL	External Internal			22400 16000	63 45
FY–1997	ONLO000000015	LLW	109	8.5 x 7.92 x 19.83 (ext.) 7.75 x 7.83 x 19.33 (int.)	0	0	0 0	
			105	1.92 x 4.00 x 7.00 (ext.) 1.67 x 3.60 x 6.60 (int.)	450	70	25200 18000	71 51
FY–1998	ONLO000000015	LLW	109	8.5 x 7.92 x 19.83 (ext.) 7.75 x 7.83 x 19.33 (int.)	0	0	0 0	
			105	1.92 x 4.00 x 7.00 (ext.) 1.67 x 3.60 x 6.60 (int.)	100	20	5600 4000	15 11

THREE – YEAR WASTE SHIPMENT FORECAST

GENERATOR: Fernald Env. Mgt. Proj. PREPARED BY: J. Rowe DATE: 04/30/96

FORECAST PERIOD	WASTE STREAM NUMBER	WASTE TYPE	CODE	CONTAINER SIZE (IN FEET)	NUMBER	NUMBER OF SHIPMENTS	TOTAL VOLUME (cubic feet)	TOTAL VOLUME (cubic meters
FY–1996 10/1/95 to 12/30/95 (Actuals)	ONLO000000016	LLW	109	8.5 x 7.92 x 19.83 (ext.)	0	0	0	
				7.75 x 7.83 x 19.33 (int.)			0	
			124	85 GALLON (ext.)	0	0	0	
				55 GALLON (int.)			0	
FY–1996 1/1/96 to 3/31/96 (Actuals)	ONLO000000016	LLW	109	8.5 x 7.92 x 19.83 (ext.)	0	0	0	
				7.75 x 7.83 x 19.33 (int.)			0	
			124	85 GALLON (ext.)	0	0	0	
				55 GALLON (int.)			0	
FY–1996 4/1/96 to 6/30/96	ONLO000000016	LLW	109	8.5 x 7.92 x 19.83 (ext.)	0	0	0	
				7.75 x 7.83 x 19.33 (int.)			0	
			124	85 GALLON (ext.)	90	2	1272	3
				55 GALLON (int.)			666	1
FY–1996 7/1/96 to 9/30/96	ONLO000000016	LLW	109	8.5 x 7.92 x 19.83 (ext.)	0	0	0	
				7.75 x 7.83 x 19.33 (int.)			0	
			124	85 GALLON (ext.)	90	2	1272	3
				55 GALLON (int.)			666	1
TOTAL FY–1996	ONLO000000016	LLW	109	8.5 x 7.92 x 19.83 (ext.)	0	0	0	
				7.75 x 7.83 x 19.33 (int.)			0	
			124	85 GALLON (ext.)	180	4	2543	7
				55 GALLON (int.)			1332	3
			ALL	External			2543	7
				Internal			1332	3
FY–1997	ONLO000000016	LLW	109	8.5 x 7.92 x 19.83 (ext.)	0	0	0	
				7.75 x 7.83 x 19.33 (int.)			0	
			124	85 GALLON (ext.)	0	0	0	
				55 GALLON (int.)			0	
FY–1998	ONLO000000016	LLW	109	8.5 x 7.92 x 19.83 (ext.)	0	0	0	
				7.75 x 7.83 x 19.33 (int.)			0	
			124	85 GALLON (ext.)	0	0	0	
				55 GALLON (int.)			0	

THREE – YEAR WASTE SHIPMENT FORECAST

GENERATOR: Fernald Env. Mgt. Proj. PREPARED BY: J. Rowe DATE: 04/30/96

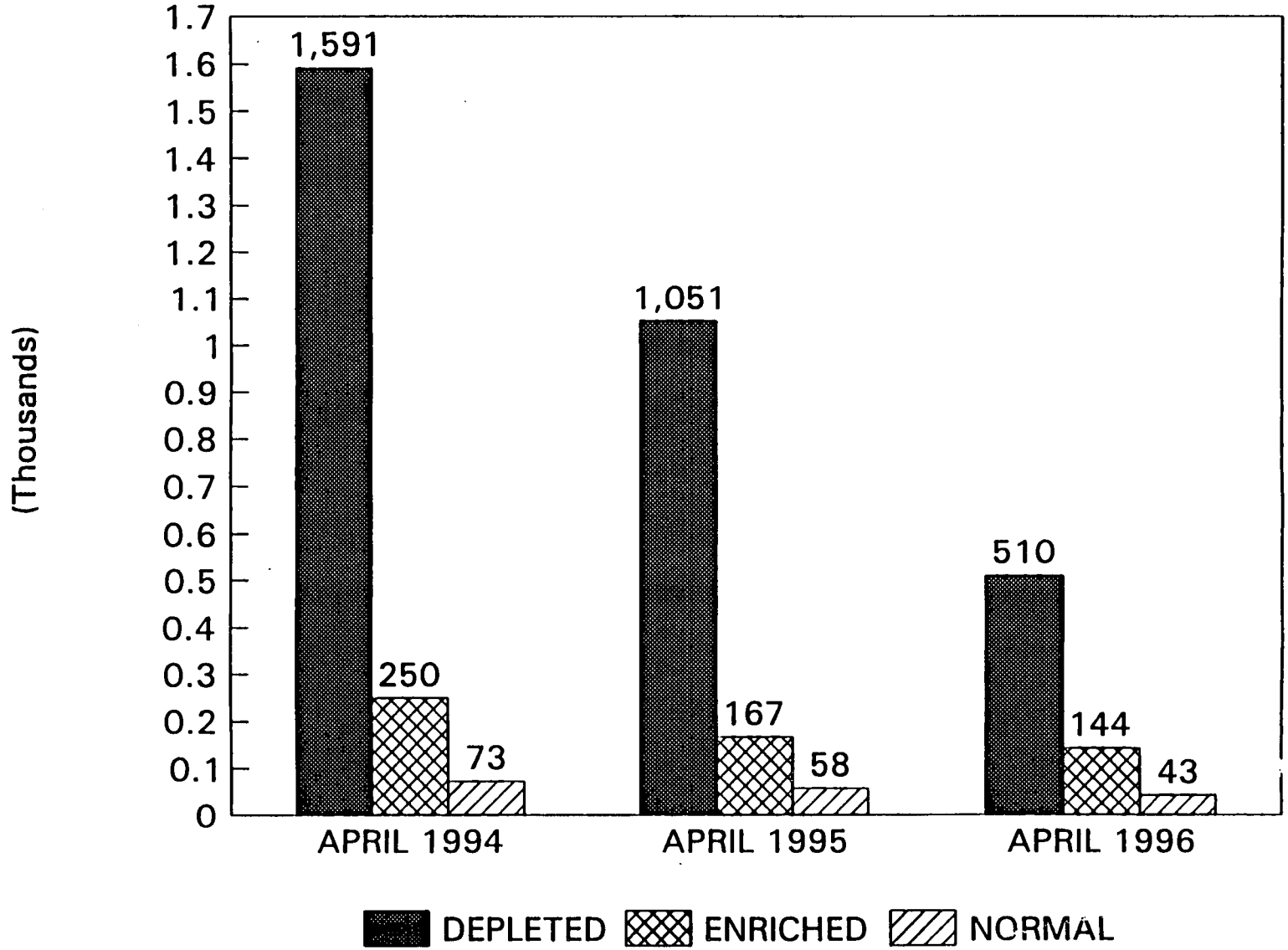
FORECAST PERIOD	WASTE STREAM NUMBER	WASTE TYPE	CODE	CONTAINER SIZE (IN FEET)	NUMBER	NUMBER OF SHIPMENTS	TOTAL VOLUME (cubic feet)	TOTAL VOLUME (cubic meters)
FY–1996 10/1/95 to 12/30/95 (Actuals)	SUMMARY	LLW	ALL ALL	External Internal			2696 2232	76 63
FY–1996 1/1/96 to 3/31/96	SUMMARY	LLW	ALL ALL	External Internal			105771 91202	2995 2583
FY–1996 4/1/96 to 6/30/96	SUMMARY	LLW	ALL ALL	External Internal			103365 86706	2927 2455
FY–1996 7/1/96 to 9/30/96	SUMMARY	LLW	ALL ALL	External Internal			97870 76644	2771 2170
TOTAL FY–1996	SUMMARY	LLW	ALL ALL	External Internal			309701 256784	8770 7271
FY–1997	SUMMARY	LLW	ALL ALL	External Internal			597556 484001	16921 13705
FY–1998	SUMMARY	LLW	ALL ALL	External Internal			482741 399236	13670 11305

- ATTACHMENT 4 -
FEMP URANIUM WASTE INVENTORY

The following bar chart shows the FEMP uranium waste inventory declining from 1994-1996. Depleted, enriched, and normal uranium inventories are presented in metric tons.

FEMP URANIUM WASTE INVENTORY

METRIC TONS URANIUM



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