DOE/EM-0365

Annual Report

of Waste Generation and Pollution Prevention Progress 1997

U.S. Department of Energy
Pollution Prevention Program

September 1998

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Center for Environmental Management Information
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Web Site Address: www.em.doe.gov

Michael Sweitzer
U.S. Department of Energy
Albuquerque Operations Office
Pennsylvania and H Streets
Albuquerque, NM 87115
Telephone 505-845-4347, FAX 505-845-6286
E-mail Address: msweitzer@doeal.gov

Office of Pollution Prevention (EM-77) Web Site Address: http://twilight.saic.com/wastemin/
Waste generation data and pollution prevention accomplishment data are searchable by reporting site and waste type.

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Preface

Department of Energy
Washington, DC 20585

Waste reduction and pollution prevention are integral elements of the Department of Energy's responsibility for environmental performance and stewardship. This sixth edition of the *Annual Report of Waste Generation and Pollution Prevention Progress* describes the Department's progress during Calendar Year 1997 toward achieving the Secretary of Energy's waste reduction goals for radioactive, hazardous, and sanitary waste from routine operations.

DOE has achieved its Complex-Wide Waste Reduction Goals for routine operations. Waste generation decreased by 61 percent in 1997 as compared to the 1993 baseline. Also in 1997, 671 waste reduction and pollution prevention projects were completed at 31 of the Department's 36 reporting sites, resulting in a cost savings of $101.5 million. Since 1996, the Department has succeeded in reducing waste by approximately 240,000 cubic meters, saving approximately $245 million through pollution prevention initiatives.

It is important to caution that increases recorded in 1997 in low-level radioactive and low-level mixed routine operations waste generation could reverse this accomplishment. It is crucial that DOE sites strive to reduce routine operations waste generation for all waste types, ensuring that the Department will maintain its progress toward its waste reduction goals through December 31, 1999.

I urge the sites to renew their efforts to reduce waste generation through pollution prevention activities. I look forward to reporting new and continued progress in 1998 and beyond.

James M. Owendoff
Acting Assistant Secretary for
Environmental Management

At a Glance

This sixth Annual Report presents and analyzes DOE Complex-wide waste generation and pollution prevention activities at 36 reporting sites from 1993 through 1997.

In May 1996, the Secretary of Energy established a 50 percent Complex-Wide Waste Reduction Goal (relative to the 1993 baseline) for routine operations radioactive and hazardous waste generation, to be achieved by December 31, 1999. Excluding sanitary waste, routine operations waste generation increased three percent from 1996 to 1997, and decreased 61 percent overall from 1993 to 1997.

DOE has achieved its Complex-Wide Waste Reduction Goals for routine operations based upon a comparison of 1997 waste generation to the 1993 baseline. However, it is important to note that increases in low-level radioactive and low-level mixed waste generation could reverse this achievement. From 1996 to 1997, low-level radioactive waste generation increased 10 percent, and low-level mixed waste generation increased slightly. It is critical that DOE sites continue to reduce routine operations waste generation for all waste types, to ensure that DOE's Complex-Wide Waste Reduction Goals are achieved by December 31, 1999.

1997 Pollution Prevention Accomplishments

- A total of 671 pollution prevention projects were completed by 31 of the 36 reporting sites.
- Pollution prevention projects resulted in a Complex-wide waste reduction of approximately 109,600 cubic meters, with a reported cost savings of approximately $101.5 million.
- Pollution prevention projects reduced radioactive waste generation by approximately 20,200 cubic meters, low-level mixed by 3,800 cubic meters, hazardous by 7,500 metric tons, and sanitary by 78,200 metric tons.
- The Albuquerque, Chicago, Oak Ridge, and Savannah River Operations Offices reported the largest total waste reduction from pollution prevention projects.
- The Albuquerque, Oakland, Oak Ridge, and Savannah River Operations Offices reported the largest total cost savings from pollution prevention projects.

1997 DOE Complex-Wide Waste Generation

- In 1997, approximately 503,700 cubic meters of waste from routine operations and cleanup/stabilization activities were generated:
  - 345,500 cubic meters of radioactive waste (68 percent)
  - 3,500 cubic meters of mixed waste (one percent)
  - 15,600 metric tons of hazardous waste (three percent)
  - 139,100 metric tons of sanitary waste (28 percent).

- Excluding sanitary waste and wastewater:
  - Routine operations waste generation increased three percent, and cleanup/stabilization waste generation increased 251 percent from 1996 to 1997.
  - Cleanup/stabilization waste generation (341,600 cubic meters) was more than 14 times greater than routine operations waste generation (23,000 cubic meters).
  - High-level and transuranic waste were generated primarily by routine operations activities.
  - Low-level radioactive, low-level mixed, and hazardous waste were generated primarily by cleanup/stabilization activities.
  - Low-level radioactive waste was the largest waste type generated, accounting for approximately 94 percent of the total routine operations and cleanup/stabilization waste generated.
- The above waste generation excludes 11e(2) byproduct material (soil or other material contaminated by extraction or concentration of uranium or thorium). The only site reporting byproduct material in 1997 was the Weldon Spring Site Remedial Action Project, which reported 46,976 cubic meters of low-level radioactive waste.

1997 Waste Generation by Operations/Field Office

- The Oak Ridge Operations Office generated the largest amount of routine operations waste (32 percent).
- The Richland Operations Office generated the largest amount of cleanup/stabilization waste (62 percent).

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Chapter 1
Introduction

Chapter One describes the purpose of the *Annual Report of Waste Generation and Pollution Prevention Progress 1997*, introduces the computerized data base for collection of waste generation and pollution prevention data, and outlines the scope of this Report.

1.1 Pollution Prevention Program Mission and Goals

The mission of the Department of Energy's (DOE) Pollution Prevention Program is to reduce, and where possible, eliminate the generation and release of DOE wastes and pollutants by implementing cost-effective pollution prevention techniques, practices, and policies. Pollution prevention objectives are addressed in various Federal laws and Executive Orders, including but not limited to the Pollution Prevention Act of 1990, the Resource Conservation and Recovery Act, Executive Order 12856 (*Federal Compliance with Right-to-Know Laws and Pollution Prevention Requirements*), and Executive Order 12873 (*Federal Acquisition, Recycling and Waste Prevention*).

DOE Complex-Wide Waste Reduction Goals were established by the Secretary of Energy in the *Pollution Prevention Program Plan 1996* (DOE/S-0118, May 3, 1996). The Plan serves as the principal cross-cutting guidance to all DOE Headquarters and field personnel, including Operations/Field Offices, laboratories, and contractor personnel, to fully implement pollution prevention programs within the DOE Complex by December 31, 1999 (Figure 1.1).

Figure 1.1
DOE Complex-Wide Waste Reduction Goals for Achievement by December 31, 1999 (Compared to the 1993 Baseline)

For Routine Operations:

- Reduce radioactive (low-level) waste generation by 50 percent.
- Reduce low-level mixed waste generation by 50 percent.
- Reduce hazardous waste generation by 50 percent.
- Reduce sanitary waste generation by 33 percent.
- Reduce total releases and offsite transfers for treatment and disposal of toxic chemicals by 50 percent.

For All Operations, Including Cleanup/Stabilization Activities:

- Recycle 33 percent of all sanitary waste.

For Affirmative Procurement:

- Increase procurement of Environmental Protection Agency-designated recycled products to 100 percent, except when items are not commercially available competitively at a reasonable price, or do not meet performance standards.

1.2 Purpose

The *Annual Report of Waste Generation and Pollution Prevention Progress* is used by DOE managers to assess progress and refine pollution prevention program activities to maximize waste reduction. This Report presents DOE Complex-wide pollution prevention accomplishments and profiles waste generation, waste reduction, and recycling efforts at the reporting Operations/Field Offices.

1.3 Computerized Data Base

Waste generation and pollution prevention data submitted by DOE reporting sites are available on the World Wide Web. Waste generation data are searchable by reporting

site, Program Secretarial Office, waste type, and year (1996 or 1997). Pollution prevention data, including waste reduced and reported cost savings, are searchable by pollution prevention activity category, reporting site, waste type, and year (1996, 1997, or 1998). DOE's Office of Pollution Prevention Web site address is: http://twilight.saic.com/wastemin/.

1.4 Scope of the Annual Report

The DOE sites have gathered and reported data on waste generation, waste reduction, reported cost savings, quantity of material recycled/reused, pollution prevention accomplishments, and Affirmative Procurement. It is important to note, that for the purpose of this Report, the following assumptions have been made:

- One cubic meter of waste is equivalent to one metric ton of waste
- Data are rounded
- Mixed waste includes low-level mixed and Toxic Substances Control Act mixed waste amounts
- Hazardous waste totals include reported Resource Conservation and Recovery Act regulated, State regulated, and Toxic Substances Control Act regulated waste amounts (refer to page F-2 for definitions)

Affirmative Procurement data (Appendix B) are reported for Fiscal Year 1997, as required by the Office of Management and Budget; all other information in this Report is reported for Calendar Year 1997. The sites are responsible for the quality of their data, and have provided explanations when their 1997 waste generation data differed from their 1996 data by more than 20 percent.

Figure 1.2
1997 Site Reporting Requirement Thresholds

A site must report waste generation and waste minimization data/information if the site generated regulated waste, and one or more of the following criteria are met:

- Generated greater than 50 cubic meters of low-level radioactive waste.
- Generated greater than one cubic meter of mixed waste (hazardous and radioactive).
- Generated more than 10 metric tons of Resource Conservation and Recovery Act regulated hazardous waste.
- Generated more than 10 metric tons of Toxic Substances Control Act regulated hazardous waste.

Data were requested from all DOE sites that met specific reporting thresholds (Figure 1.2). Thirty-six sites met these established thresholds in 1997 (Table 1.1). The exempt sites and their waste generation amounts, if provided, are listed in Table 1.2.

All reporting sites identified in the *Annual Report of Waste Generation and Pollution Prevention Progress 1996* are included in this Report, except for the Western Environmental Technology Office (excluded because it is no longer a DOE site). Two additional sites reporting in 1997 are RMI Environmental Services in Ohio, and the Federal Energy Technology Center-Pittsburgh (formerly known as the Pittsburgh Energy Technology Center, or PETC).

The Annual Report data are analyzed to assess the following: (1) DOE's overall progress toward achieving its Complex-Wide Waste Reduction Goals, (2) the contribution of each Operations/Field Office to DOE's progress toward achieving these goals, and (3) site pollution prevention achievements. The total number of pollution prevention projects implemented and their associated cost savings are also evaluated as indicators of the success of DOE's Complex-wide pollution prevention program.

This Report highlights DOE's 1997 Pollution Prevention Program, including waste generation by the DOE Complex and by individual Operations/Field Offices, and pollution prevention accomplishments. The Appendices are organized as follows: Appendix A contains data tables and bar charts illustrating Complex-wide pollution prevention accomplishments and waste generation data, Appendix B contains Affirmative Procurement data, Appendix C provides point of contact information, Appendix D contains a list of pollution prevention Web site addresses, Appendix E presents the methodology for calculating pollution prevention project High Return-on-Investment, and Appendix F provides a glossary of terms.

Table 1.1
1997 DOE Operations/ Field Offices and Reporting Sites

Albuquerque Operations Office

- Kansas City Plant
- Inhalation Toxicology Laboratory (formerly Inhalation Toxicology Research Institute)
- Los Alamos National Laboratory
- Pantex Plant
- Sandia National Laboratories/California
- Sandia National Laboratories/New Mexico
- Waste Isolation Pilot Plant

Chicago Operations Office

- Argonne National Laboratory – East
- Argonne National Laboratory – West
- Brookhaven National Laboratory
- Fermi National Accelerator Laboratory
- Princeton Plasma Physics Laboratory

Idaho Operations Office

- Idaho National Engineering and Environmental Laboratory

Nevada Operations Office

- Nevada Test Site
- North Las Vegas Facility

Oakland Operations Office

- Energy Technology Engineering Center
- Lawrence Berkeley National Laboratory
- Lawrence Livermore National Laboratory
- Stanford Linear Accelerator Center

Oak Ridge Operations Office

- East Tennessee Technology Park
- Oak Ridge National Laboratory
- Oak Ridge Y-12 Plant
- Paducah Gaseous Diffusion Plant
- Portsmouth Gaseous Diffusion Plant
- Weldon Spring Site Remedial Action Project

Ohio Field Office

- Battelle Columbus Laboratories
- Fernald Environmental Management Project
- Mound Plant
- RMI Environmental Services*
- West Valley Demonstration Project

Richland Operations Office

- Hanford Site
- Pacific Northwest National Laboratory

Rocky Flats Field Office

- Rocky Flats Environmental Technology Site

Savannah River Operations Office

- Savannah River Site

Headquarters Reporting Sites

- Federal Energy Technology Center Pittsburgh* (formerly Pittsburgh Energy Technology Center)
- Western Area Power Administration

* Site did not report in 1996 because it was below the reporting threshold.

Table 1.2
1997 Waste Generation by Exempt Sites (in Cubic Meters*)

Site/Facility	Low-Level Radioactive	Low-Level Mixed	Hazardous
Albany Research Center	0.64	0.23	4.52
Alaska Power Administration	**	0	0.45
Ames Laboratory	6.2	0.02	7.85
Bonneville Power Administration §	**	**	**
Environmental Measurements Laboratory	0	0	0.16
Federal Energy Technology Center – Morgantown	0	0	2.94
Grand Junction Projects Office	5	1	0.25
National Petroleum Technology Office §	**	**	**
National Renewable Energy Laboratory	0.001	0.001	4.16006
Naval Petroleum & Oil Shale Reserves (CO, WY, UT)	0	0	0.1
Naval Petroleum Reserve No. 1 (California)	0	0	5.58
New Brunswick Laboratory	16.03	0.2	5.54
Oak Ridge Institute for Science and Education	5	0.4	0.3
Office of Scientific and Technical Information	0	0	8.96
Southeastern Power Administration	0	0	0
Southwestern Power Administration	0	0	2.55
Strategic Petroleum Reserve Project Management Office	0	0	2
Thomas Jefferson National Accelerator Facility	0.2	0	4
Yucca Mountain Project Office	0	0	0.17
TOTAL	**33.07**	**1.85**	**49.53**

* Assuming one cubic meter is equivalent to one metric ton.
** Information not provided.

§ The Bonneville Power Administration and the National Petroleum Technology Office did not respond to the request for an exemption, and did not provide data for this Report.

Chapter 2
DOE Pollution Prevention Progress

Chapter Two discusses 1997 DOE Complex-wide pollution prevention program performance, summarizes 1997 routine operations and cleanup/stabilization waste generation, and illustrates waste generation trends in comparison to the 1993 baseline.

Complex-Wide Calendar Year 1997 Achievements

Number of Pollution Prevention Projects:	**671**
Total Waste Reduced:	**109,620 cubic meters**
Reported Cost Savings:	**$101.5 million**

Category	Performance Measure	CY 99 Goal
Radioactive Waste	60% reduction	50%
Mixed Waste	59% reduction	50%
Hazardous Waste	77% reduction	50%
Sanitary Waste	51% reduction	33%
Recycling	44% recycled*	33%
Affirmative Procurement	56% purchased	100%

* This performance measure does not include 270,111 metric tons of recycled soil from construction/excavation at the Lawerence Livermore National Laboratory.

2.1 DOE Complex-Wide Waste Reduction Goals

The DOE Complex-Wide Waste Reduction Goals call for a 50 percent reduction in routine operations waste generation compared to 1993 baseline levels for major waste types by December 31, 1999, except for sanitary waste, which is to be reduced 33 percent. In addition, a 33 percent recycling goal for all sanitary waste, including waste from cleanup/stabilization activities, must be met by December 31, 1999. Sanitary waste, the largest waste type generated, accounts for 71 percent of the total 1997 routine waste generated Complex-wide.

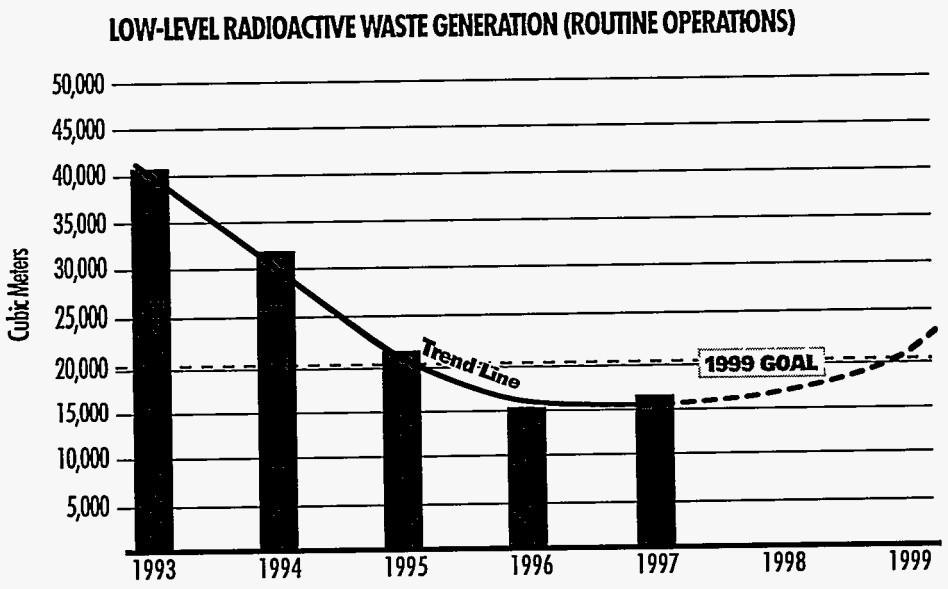
DOE has achieved its Complex-Wide Waste Reduction Goals for routine operations based upon a comparison of 1997 waste generation to the 1993 baseline. However, it is important to note that increases in low-level radioactive and low-level mixed waste generation could reverse this achievement. From 1996 to 1997, low-level radioactive waste generation increased 10 percent, and low-level mixed waste generation increased slightly. It is critical that DOE sites not rest upon prior achievements, but instead continue to reduce routine operations waste generation for all waste types, to ensure that DOE's Complex-Wide Waste Reduction Goals are achieved by December 31, 1999. Figure 2.1 illustrates DOE Complex-wide routine operations waste generation trends by waste type from 1993 through 1997.

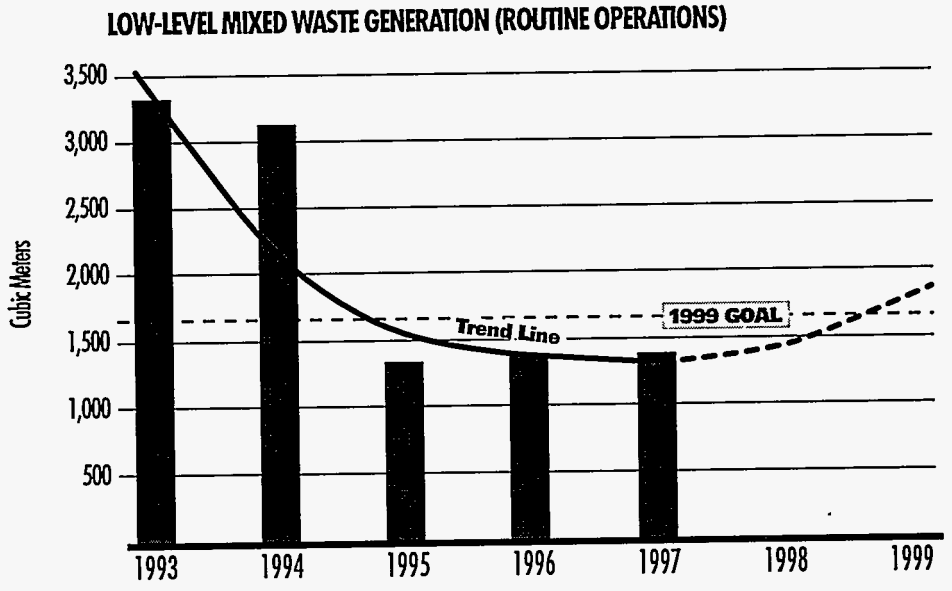
Note that accomplishments for the toxics release inventory (TRI) performance measure (*1996 Toxics Release Inventory Public Data Release*, 745-R-98-005, May 1998) are not addressed in this Report because data are not collected as part of this reporting effort. Affirmative Procurement data are also not collected as part of this reporting effort, but are presented for reference in Appendix B.

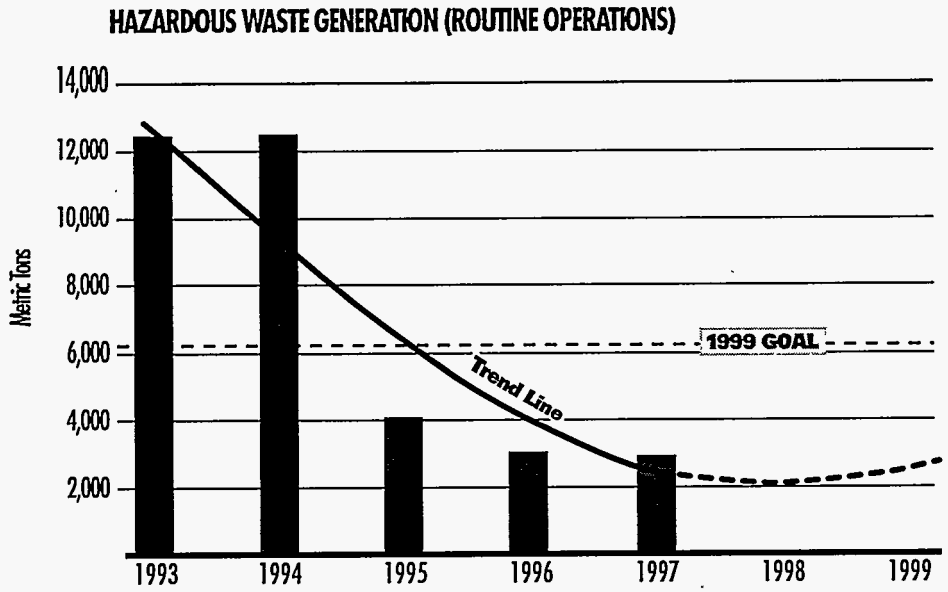
2.2 Pollution Prevention Program Performance

In 1997, 109,620 cubic meters of waste were reduced across the DOE Complex, contributing to a reported cost savings of approximately $101.5 million (Table 2.1). Of the total waste reduced in 1997, sanitary waste accounted for 71 percent, and resulted in a reported cost savings of approximately $21 million. Low-level radioactive waste

Figure 2.1
1993-1997
Complex-Wide Routine
Operations Waste
Generation Trends







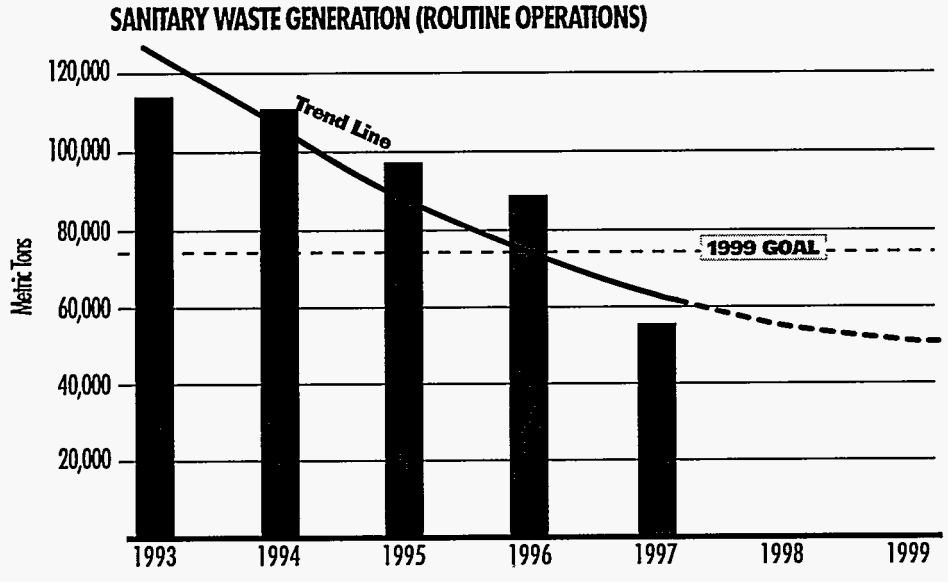


Figure 2.1 (Continued)
1993-1997
Complex-Wide Routine Operations Waste Generation Trends

accounted for 18 percent of the total waste reduced in 1997, and resulted in a reported cost savings of approximately $28 million. Hazardous waste accounted for seven percent of the total waste reduced, and resulted in a reported cost savings of approximately $32 million (Table 2.1).

Table 2.1 1997 Complex-Wide Routine Operations and Cleanup/Stabilization Waste Reduction and Reported Cost Savings

Waste Type	Waste Reduction (in Cubic Meters)	Reported Cost Savings
High-Level	7	$ 2,216,667
Transuranic	53	$ 1,496,353
Low-Level Radioactive	20,177	$ 28,173,472
Low-Level Mixed	3,759	$ 17,206,580
Hazardous	7,451	$ 31,643,579
Sanitary	78,173	$ 20,721,857
TOTAL	**109,620**	**$ 101,458,508**

In addition to site accomplishments and the continuation of the High Return-on-Investment program, in 1997 DOE conducted several key pilot programs and continued several initiatives to instill a pollution prevention ethic throughout the Complex. Chapters 3 and 4 include additional information on the Generator Set-Aside Fee Program, Re-Engineering Waste Management, the High Return-on-Investment Program, and Pollution Prevention and Energy Efficiency in Design at DOE Facilities.

2.3 Waste Generation

In 1997, the DOE Complex generated approximately 503,700 cubic meters of waste (Figure 2.2). High-level and transuranic waste accounted for less than one percent of the Complex-wide waste generation total. Most of the Complex's waste was generated by cleanup/stabilization activities (84 percent). Waste from cleanup/stabilization activities increased 147 percent from 1996 to 1997 due to contaminated soil removal and disposal, and decommissioning activities. Low-level radioactive, hazardous, and sanitary waste constituted 68 percent, three percent, and 28 percent, respectively, of the total waste generated.

Table 2.2 1993-1997 Complex-Wide Waste Generation Trends from Routine Operations Activities (in Cubic Meters)

Waste Type	1993	1994	1995	1996	1997
High-Level	1,708	2,071	2,496	2,670	1,994
Transuranic	709	546	339	302	267
Low-Level Radioactive	40,856	31,868	21,896	15,053	16,533
Low-Level Mixed	3,331	3,133	1,338	1,371	1,373
Hazardous	12,430	12,507	4,103	3,063	2,880
Total Excluding Sanitary Waste	*59,034*	*50,125*	*30,172*	*22,459*	*23,047*
Sanitary*	112,386	110,305	96,891	88,939	55,590
GRAND TOTAL	**171,420**	**160,430**	**127,063**	**111,398**	**78,637**

* In 1993, some sites optionally separated and reported sanitary waste as routine operations or cleanup/stabilization waste. Beginning in 1994, sanitary waste was required to be separated and reported as routine operations or cleanup/stabilization.

2.3.1 Waste Generation from Routine Operations Activities

Waste generated from routine operations activities consists of normal operations waste produced by any type of production operation; analytical and/or research and development laboratory operations; treatment, storage, and disposal operations; work for others; or any other periodic or recurring work that is considered ongoing in nature.

The generation of routine operations waste decreased from 1993 to 1997 by 61 percent, excluding sanitary waste (Table 2.2).

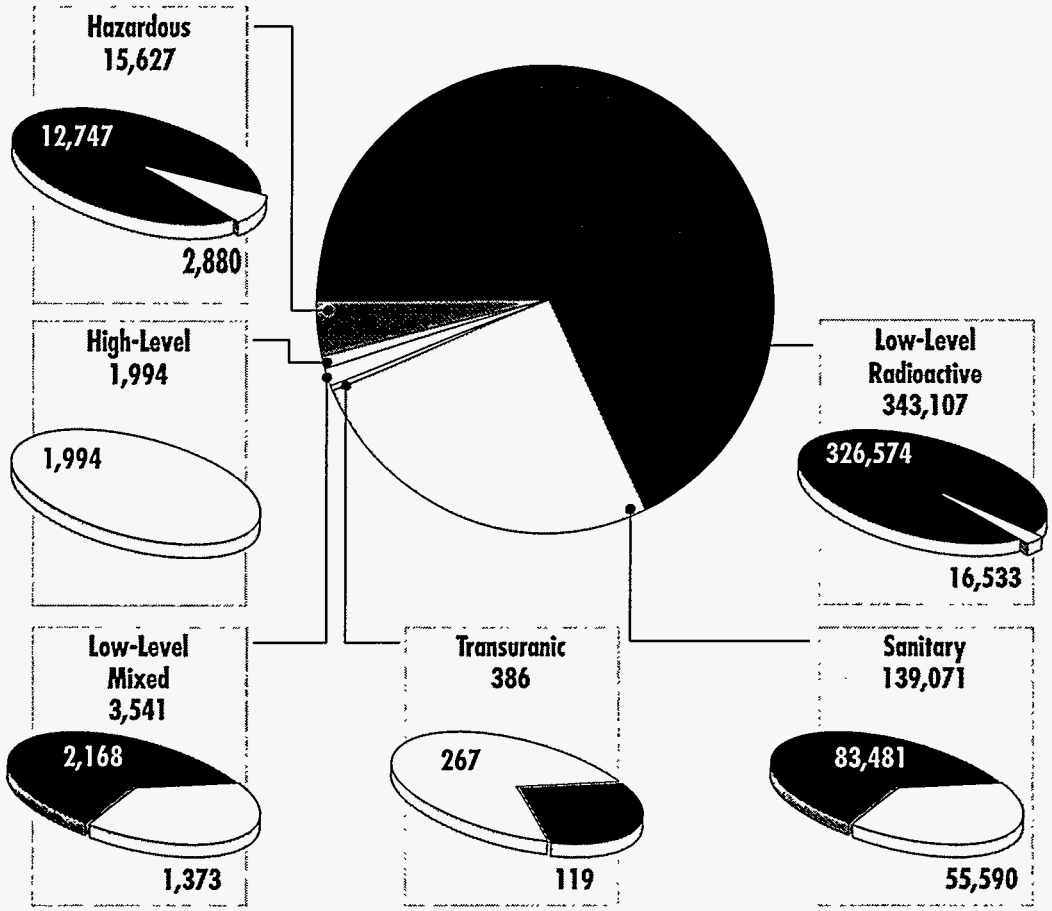


Figure 2.2
1997 Complex-Wide Waste Generation by Waste Type (in Cubic Meters)

2.3.2 Waste Generation from Cleanup/Stabilization Activities

Waste generation from cleanup/stabilization activities, including primary and secondary waste, is generated by the environmental restoration of contaminated media (e.g., soil, groundwater, surface water, sediments); stabilization of nuclear and non-nuclear (chemical) materials; and deactivation and decommissioning of facilities. A new goal for reducing secondary waste generated from cleanup/stabilization activities was established by DOE in 1997. This goal requires a 10 percent annual reduction beginning in Fiscal Year 1999.

In 1997, the 36 reporting sites generated approximately 425,100 cubic meters of waste from cleanup/stabilization activities, including sanitary waste (Table 2.3). This represents 84 percent of the total DOE waste generated Complex-wide. Waste generated from cleanup/stabilization activities increased 175 percent from 1993 to 1997, excluding sanitary waste.

From 1996 to 1997, low-level radioactive waste generated from cleanup/stabilization activities increased due to contaminated soil removal and disposal at the Hanford Site, and two environmental restoration projects with large soil excavations at the Mound Plant. Sanitary waste increased due to decommissioning activities at the Idaho National Engineering and Environmental Laboratory, and increased excavation at the Oak Ridge Y-12 Plant's Lower East Fork Poplar Creek.

Table 2.3
1993-1997
Complex-Wide Waste Generation Trends from Cleanup/Stabilization Activities (in Cubic Meters)

Waste Type	1993	1994	1995	1996	1997
High-Level*	0	0	0	0	0
Transuranic	458	214	156	202	119
Low-Level Radioactive	88,161***	42,604§	86,847§	64,971§	326,574§
Low-Level Mixed	4,533***	14,039	4,616	2,132	2,168
Hazardous	31,029	8,900	22,679	29,901	12,747
Total Excluding Sanitary Waste	*124,181*	*65,757*	*114,298*	*97,206*	*341,608*
Sanitary**	26,222	16,010	103,027	74,982	83,481
GRAND TOTAL	**150,403**	**81,767**	**217,325**	**172,188**	**425,089**

* High-level waste is not generated by cleanup/stabilization activities.

** In 1993, some sites optionally separated and reported sanitary waste as routine operations or cleanup/stabilization waste. Beginning in 1994, sanitary waste was required to be separated and reported as routine operations or cleanup/stabilization waste.

*** Includes 11e(2) byproduct material (soil or other material contaminated by extraction or concentration of uranium or thorium) at the Weldon Spring Site Remedial Action Project.

§ Excludes 11e(2) byproduct material. The only site reporting 11e(2) byproduct material in 1997 was the Weldon Spring Site Remedial Action Project, which reported 46,976 cubic meters of low-level radioactive waste.

Chapter 3
Pollution Prevention Accomplishments

Chapter Three discusses 1997 DOE Complex-wide programmatic and site pollution prevention accomplishments, including key pilot programs and new initiatives, waste reduction and reported cost savings by pollution prevention activity category, and activities in public involvement, outreach, and research and development.

3.1 Generator Set-Aside Fee Program

During Fiscal Years 1996 and 1997, three DOE Operations Offices conducted pilot projects to examine a new funding mechanism and incentive for pollution prevention activities. The Generator Set-Aside Fee pilot program assessed fees from waste generators at selected DOE sites, based upon the amount and type of waste generated. Each participating site used the funds to support projects designed to reduce waste generation. In addition to providing a source of pollution prevention funds, the pilot was designed to increase generator awareness of, and encourage accountability for, DOE's goal of reducing waste generation, and the associated costs of managing that waste.

The Generator Set-Aside Fee pilots were successful, both in terms of promoting waste reduction and in increasing generator awareness. During the pilot projects in 1996, DOE sites collected $1.9 million through the Generator Set-Aside Fee program. Using these funds, 75 pollution prevention projects were implemented. First year cost savings from Fiscal Year 1997 projects resulted in a High Return-on-Investment greater than 800 percent. If expanded Complex-wide, Generator Set-Aside Fee projects could yield an estimated $100 million in savings from a $12 million investment.

Due to the nature of the Generator Set-Aside Fee financial accounting system, funds are immediately available for project implementation, and are not restricted by normal budget planning cycles. Waste generators participating in the Generator Set-Aside Fee pilot project now realize that implementing pollution prevention projects with Generator Set-Aside Fee funds not only facilitates meeting or exceeding DOE Complex-Wide Waste Reduction Goals, but also results in operational cost savings.

3.2 Re-Engineering Waste Management

Since the Environmental Management program's creation in 1989, it has had responsibility for the cost of waste management for DOE's many mission programs. In 1995, two reports to the Environmental Management program, the National Academy of Sciences, and the Independent Technical Review Team recommended shifting the responsibility for newly generated waste back to the mission programs. The studies showed that if the waste generator paid the cost of waste management; decisionmakers would be motivated to consider alternatives that reduce waste generation. In Fiscal Year 1997, this concept was pilot tested at 14 sites across the DOE Complex to determine

what method would work best at various sites. In Fiscal Year 1998, waste management responsibility and budget targets were transferred to the mission program at the following sites: the Kansas City Plant (Defense Programs), Argonne National Laboratory-West (Nuclear Energy), Stanford Linear Accelerator Center (Energy Research), and the Fermi National Accelerator Laboratory (Energy Research). In Fiscal Year 1999, the President's budget includes transfers of scope and budget targets for Los Alamos National Laboratory (Defense Programs), the Pantex Plant (Defense Programs), and Sandia National Laboratories/New Mexico and California (Defense Programs). The Environmental Management program hopes to transition additional sites in Fiscal Year 2000, based upon the success of the program transfers to date. Preliminary indications suggest that mission program generators are seeking and implementing alternatives to reduce waste generation due to the high cost of waste handling and disposal.

3.3 High Return-on-Investment Program

The High Return-on-Investment program was initiated as a pilot project by DOE's Pollution Prevention Executive Board in 1994. The program solicited site proposals for implementation funds for activities or projects that reduce operational costs in the short-term (less than three-year payback). The program was modeled after the DOW Chemical Company's Louisiana program, and the concept is to obtain operational and waste management cost savings by investing funds in pollution prevention. In 1994, 17 projects from six DOE Operations/Field Offices were selected for funding in "Round One" of the pilot program. In 1996, an additional 22 High Return-on-Investment projects were funded from seven Operations/Field Offices in "Round Two" of the pilot. As of May 1998, the total life-cycle savings of the completed Round One and Two projects is estimated to be $53 million, approximately ten times the initial investment. The High Return-on-Investment program is a DOE Headquarters managed and directed program, with pilot project funds distributed project-by-project. The High Return-on-Investment pilot project successfully demonstrated that the High Return-on-Investment concept works.

Beginning in 1996, Headquarters involvement in High Return-on-Investment projects was phased out, and Operations/Field Offices and sites may implement their own versions of the program. For 1997, 122 projects received funding. High Return-on-Investment projects are developed and funded by site budgets or generator set-aside fees, based upon site needs.

3.4 Pollution Prevention and Energy Efficiency in Design at DOE Facilities

The incorporation of pollution prevention and energy efficiency in the design of a facility ("P2 in Design") has the potential for significant cost savings. DOE's P2 in Design program began in Fiscal Year 1995, and over the past three years, over 25 project teams have been trained, and electronic tracking systems and guidance documents have been distributed throughout the DOE Complex. Although millions of dollars in avoided costs are documented, pollution prevention and energy efficiency concepts are not systematically applied to the design of DOE's new facilities or to facility modifications.

To address this shortcoming, the Secretary of Energy designated the Office of Field Management as the lead for institutionalizing the Complex-wide P2 in Design program, and tasked the Office with developing an Implementation Plan that all Departmental elements could support. Under the direction of the Secretary, P2 in Design will become a fundamental part of the Life-Cycle Asset Management process at each site in the DOE Complex. Each DOE organization that acquires a new facility or modifies an existing facility will be required to use Life-Cycle Asset Management principles to maximize beneficial pollution prevention and energy efficiency opportunities during design. By making pollution prevention and energy efficiency a routine part of all facility design activities, DOE will significantly reduce the environmental costs of a facility over its lifetime.

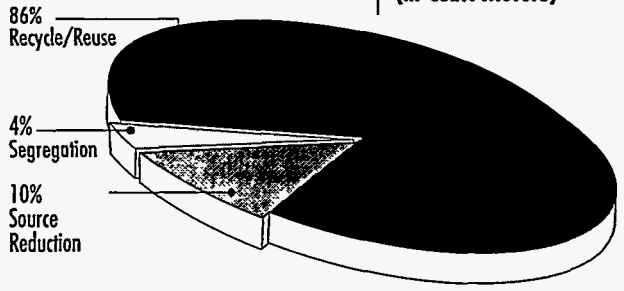
3.5 Accomplishments and Reported Cost Savings by Pollution Prevention Activity Category

In 1997, 30 DOE sites collectively reported 671 pollution prevention projects, with a total waste reduction of approximately 109,600 cubic meters. Descriptions of these pollution prevention projects can be accessed on the Office of Pollution Prevention Web site at http://twilight.saic.com/wastemin/. Note that projects that are primarily waste treatment or solely physical volume reduction (e.g., compaction, repackaging of waste, reduction of bulk liquid wastes, and process wastewater treatment) are excluded. Training, pollution prevention opportunity assessments, award fee, and outreach activities are also excluded. Additionally, projects that did not result in a quantifiable waste reduction are not included in this Report.

For the purpose of this Report, pollution prevention projects are grouped into three activity categories: source reduction, segregation, and recycle/reuse. Source reduction projects reduce pollution or waste generated at the source, segregation projects separate materials and/or wastestreams for potential reuse, and recycle/reuse projects extract useful materials from generated wastestreams.

Figure 3.1 illustrates waste reduction by pollution prevention activity category for the DOE Complex. Eighty-six percent of the total 1997 waste reduction is attributed to recycle/reuse projects. The largest contributors to the recycle/reuse waste reduction include 14,000 metric tons of flyash from the Oak Ridge Y-12 Steam Plant (used as fill material for the Oak Ridge Y-12 landfill), 13,000 metric tons of coal from runoff basins at the Savannah River Site (diverted from the sanitary landfill and recycled as road base), and 9,000 cubic meters of low-level radioactive waste at the East Tennessee Technology Park (associated with the recycling of metal and concrete rubble from the demolition of six cooling towers).

Figure 3.1
1997 Complex-Wide Waste Reduction by Pollution Prevention Activity Category (in Cubic Meters)

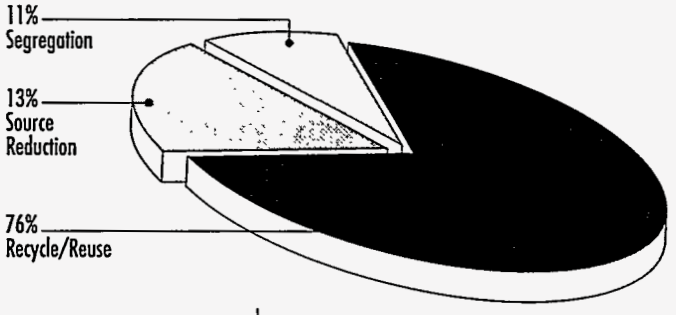


Total Waste Reduction = 109,620 Cubic Meters

In addition to the environmental benefits realized from pollution prevention projects, significant financial benefits are also realized. Pollution prevention projects in 1997 resulted in a total reported cost savings of approximately $101.5 million.

Figure 3.2 illustrates reported cost savings from waste reduction by pollution prevention activity category for the DOE Complex. Over three-quarters of the total reported cost savings in 1997 resulted from recycle/reuse projects. The largest contributors to these cost savings include a pollution prevention project at the Los Alamos National Laboratory, where water was used as a dust suppressant at an Arizona landfill, with a reported cost savings of $21 million; a Lawrence Berkeley National Laboratory project involving the recycling of concrete shielding blocks for use in the Brookhaven National Laboratory's new Relativistic Heavy Ion Collider, with a reported cost savings of $14 million; and a Savannah River Site project that recycled coal from runoff basins for use as road base, with a reported cost savings of $11 million.

Figure 3.2
1997 Complex-Wide Waste Reduction Reported Cost Savings by Pollution Prevention Activity Category



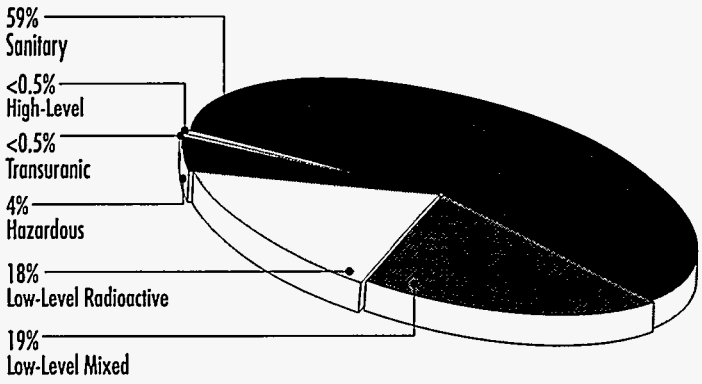
Total Reported Cost Savings = $101,458,508

Figures 3.3 through 3.5 illustrate waste reduction by waste type for each pollution prevention activity category for the DOE Complex. Approximately 60 percent of the waste reduced from source reduction projects involved sanitary waste. The largest contributor to sanitary waste reduction was a project at the Pantex Plant, which replaced an air compressor cooling tower system, reducing sanitary waste by 5,700 metric tons.

Ninety-three percent of the waste reduced from segregation projects involved low-level radioactive waste. The largest contributors include a High Return-on-Investment project to decontaminate waste metals at the Los Alamos National Laboratory, which reduced waste by 700 cubic meters. Another High Return-on-Investment project at the Sandia National Laboratories/New Mexico reduced waste by 700 cubic meters using the Segmented Gate System that separates contaminated soil from clean soil. At the Savannah River Site, a total of 600 cubic meters of low-level radioactive waste was reduced from the decontamination and subsequent reuse of equipment at the M-Area Settling Basin, and the segregation of low-level radioactive and sanitary wastestreams at the Central Laboratory.

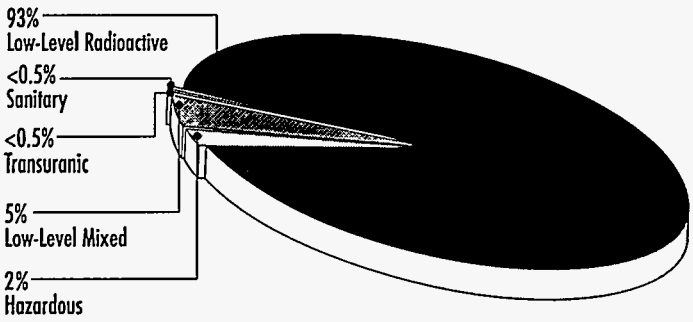
Figures 3.6 through 3.8 illustrate reported cost savings from waste reduction by waste type for each pollution prevention activity category for the DOE Complex. Twenty-eight percent of the total reported cost savings from source reduction projects involved low-level radioactive waste, and 23 percent involved low-level mixed waste. The Savannah River Site was the largest contributor to low-level radioactive waste cost savings due to numerous source reduction projects, with a reported cost savings of approximately $1.5 million. The Savannah River Site was also the largest contributor to low-level mixed waste cost savings due to a project that minimized blowdown waste from the site's quench recirculation tank, with a reported cost savings of $1.4 million.

Approximately 60 percent of the total reported cost savings attributed to segregation projects involved low-level mixed waste. The Los Alamos National Laboratory was the largest contributor with three projects, each with a reported cost savings of more than $1 million. These projects include use of a mobile lead decontamination trailer for removing surface contamination from lead sheets, decontamination of lead-lined glove



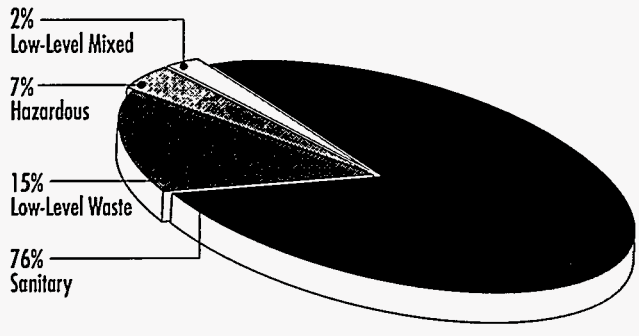
Total Waste Reduced from Source Reduction Projects = 10,646 Cubic Meters

Figure 3.3
1997 Complex-Wide Waste Reduction from Source Reduction Projects by Waste Type



Total Waste Reduced from Segregation Projects = 4,205 Cubic Meters

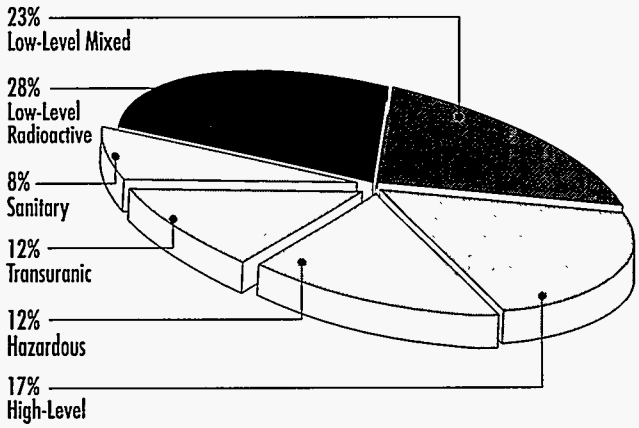
Figure 3.4
1997 Complex-Wide Waste Reduction from Segregation Projects by Waste Type



Total Waste Reduced from Recycle/Reuse Projects = 94,769 Cubic Meters

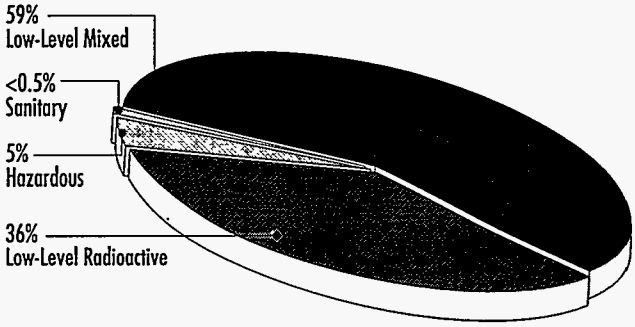
Figure 3.5
1997 Complex-Wide Waste Reduction from Recycle/Reuse Projects by Waste Type

Figure 3.6
1997 Complex-Wide
Source Reduction
Reported Cost Savings
by Waste Type



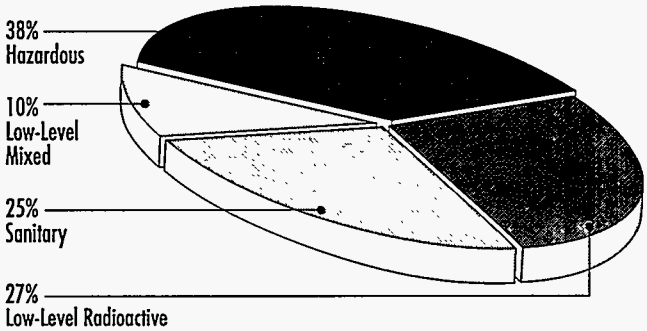
Total Reported Cost Savings from Source Reduction Projects = $12,689,069

Figure 3.7
1997 Complex-Wide
Segregation
Reported Cost Savings
by Waste Type



Total Reported Cost Savings from Segregation Projects = $11,102,971

Figure 3.8
1997 Complex-Wide
Recycle/Reuse
Reported Cost Savings
by Waste Type



Total Reported Cost Savings from Recycle/Reuse Projects = $77,666,468

boxes, and separation of low-level mixed waste from piping and other components at the Los Alamos Neutron Science Center.

3.6 Pollution Prevention Project Activities – Proven Performers

Pollution prevention projects yield waste reduction and financial benefits. A multi-year review of pollution prevention projects implemented across the DOE Complex reveals certain activities where significant returns are realized from the application of proven concepts. Table 3.1 identifies these pollution prevention project activities applicable to DOE operations with proven high returns. These projects encompass a wide array of operations, including industrial manufacturing, maintenance, and research, as well as remediation and decommissioning activities. Many of these technologies and practices have relatively low implementation costs. Sites are encouraged to aggressively implement these activities in their operations to the extent practicable. Table 3.1 also identifies waste types reduced by these projects, as well as some sites where implementation has proven successful.

The pollution prevention project activities identified in Table 3.1 have the potential to significantly reduce long-term costs. Although these pollution prevention project activities are implemented for the primary purpose of reducing waste, their financial benefits typically extend beyond avoided waste management costs. The total savings from these project activities may include significant contributions resulting from improved efficiency; reduced labor; reductions in personal protective equipment usage; reduced raw material, utility, and supply usage; and reduced maintenance activities. The financial benefits of pollution prevention projects are wide-reaching, often affecting multiple organizations within a single site. Complex-wide, the implementation of these projects will have a tremendous impact on DOE's ability to reduce waste and associated waste management costs.

For more information on pollution prevention project activities, please refer to the Point of Contact list in Appendix C.

3.7 Public Involvement, Outreach, and Research and Development

The DOE Complex conducted 671 pollution prevention projects in 1997. This total does not include opportunity assessments, public awareness, research and development, training, or outreach activities. Although such activities do not result in quantifiable waste reductions or cost savings, they are critical in promoting pollution prevention, and are encouraged and supported by DOE. Activities demonstrating public involvement, outreach, and research and development within the DOE Complex in 1997 include:

Albuquerque Operations

- An exhibit on the Kansas City Plant's affirmative procurement program, "We Buy Recycled," was displayed at the Missouri Small Business Conference in June.

Table 3.1
Pollution Prevention Project Activities Recommended for Application Across the DOE Complex

Pollution Prevention Project Activity	Waste Type(s) Reduced	Relative Implementation Cost	Savings Potential [1]	Example Sites with Proven Successful Application
Radioactive Materials Management Area Roll-back	Transuranic, Low-Level Radioactive	Low—Moderate [2]	High	Savannah River Site, Hanford Site, Los Alamos National Laboratory, Oak Ridge Y-12 Plant, Oak Ridge National Laboratory
"Green is Clean"/ Segregation/Salvage	Low-Level Radioactive, Low-Level Mixed	Low	High	Savannah River Site, Hanford Site, Los Alamos National Laboratory, Fernald Environmental Management Project
Micro-scale Chemistry/ Sampling Techniques	Low-Level Radioactive, Low-Level Mixed, Hazardous	Low	High	Pacific Northwest National Laboratory, Argonne National Laboratory – East, Princeton Plasma Physics Laboratory, New Brunswick Laboratory
Procedure Change/ Pre-job Briefings/ Administrative Controls/ Management Focus	Transuranic, Low-Level Radioactive, Low-Level Mixed, Hazardous, Sanitary	Low	High	Los Alamos National Laboratory, Savannah River Site
Segmented Gate System for Contaminated Soil Characterization/Segregation	Low-Level Radioactive, Hazardous	Low [3]	High	Sandia National Laboratories/ New Mexico, Fernald Environmental Management Project
Solvent Substitution (parts washer, etc.)	Low-Level Mixed, Hazardous	Low	High	Los Alamos National Laboratory, Brookhaven National Laboratory, Sandia National Laboratories/ New Mexico
Digital Photography/Imaging	Hazardous	Moderate—High	High	Oak Ridge National Laboratory, Pantex Plant, Brookhaven National Laboratory, Lawrence Livermore National Laboratory
Utilization of Launderable Protective Clothing	Low-Level Radioactive	Low	High	Fernald Environmental Management Project, Savannah River Site, Los Alamos National Laboratory
Cooling Tower Cover Modifications	Hazardous, Sanitary	Moderate	High	Lawrence Livermore National Laboratory
Material Exchange/ Clearinghouse	Low-Level Radioactive, Hazardous, Sanitary	Low	High	Los Alamos National Laboratory, Savannah River Site, Hanford Site, Oak Ridge National Laboratory

[1] The savings potential for these activities is influenced by mission needs and economies of scale.
[2] Cost varies with size of area reduced and extent of contamination present.
[3] Assumes equipment is leased.

- Albuquerque's pollution prevention committee participated in the New Mexico State Fair. Approximately 300 handouts on pollution prevention were distributed to the public, and a collage of information on the **Waste Isolation Pilot Plant's** role in pollution prevention was displayed.

Chicago Operations

- The **Argonne National Laboratory – East** is helping government agencies find ways to remediate sites contaminated with hazardous materials. A pilot program has shown that feeding molasses to native bacteria in TNT-contaminated soil could be a simple and cost-effective alternative for a cleanup project across the country.

- Since 1992, Argonne's Center for Transportation Research has been involved in the testing and development of alternative fuels for vehicles. In 1997, the **Argonne National Laboratory – East** partnered with Northern Illinois Gas to establish a Compressed Natural Gas fueling facility adjacent to the Laboratory.

Idaho Operations

- The **Idaho National Engineering and Environmental Laboratory's** Excellence Award Program includes pollution prevention as a category to recognize employees for innovative suggestions to reduce waste volume and/or toxicity of wastestreams. During the second quarter of Fiscal Year 1997, one suggestion identified a reuse opportunity for shipping crates that would save $10,000 annually.

- The **Idaho National Engineering and Environmental Laboratory** Pollution Prevention Unit assisted in establishing a city-wide household hazardous waste pickup day at the local sanitary waste transfer station. More than 450 citizens were able to dispose of hazardous waste that normally would have been sent to the sanitary landfill.

Oakland Operations

- Pollution prevention practices have been incorporated into all Oakland Operations site waste generator training programs.

- The Oakland Operations Office and the **Lawrence Berkeley National Laboratory** teamed to make $25,000 available to the City of Berkeley for construction of an energy-efficient straw bale building for the Shorebird Nature Center at the Berkeley Marina. The building will host educational programs and will provide continued outreach to the Berkeley community through volunteer efforts by Laboratory scientists and staff.

Oak Ridge Operations

- In December, at the **East Tennessee Technology Park**, a quarterly pollution prevention council meeting was held in conjunction with a tour of the Ijams Nature Center. The tour allowed council members to inspect the Ijams Conservation Cottage, which was built using recycled content materials. The Ijams exhibit illustrates that recycling, reusing, and conserving materials really works, and a pollution prevention award plaque was presented to Ijams in recognition of their efforts to enhance consumer awareness of the need to reduce, reuse, and recycle.

- The **Oak Ridge Y-12 Plant's** pollution prevention program received the Oak Ridge Environmental Quality Award for its exemplary efforts to help preserve the natural environment, enhance the cityscape, and contribute to the quality of life in Oak Ridge, Tennessee. The award was presented to the Oak Ridge Y-12 Plant and Dunn Diversified Industries, a non-profit organization that hires adults with disabilities, for their collaborative recycling campaigns, including the Library Book Recycling Project, Carbon Forms Project, and excessing of approximately $6-11 million worth of hand tools.

Richland Operations

- Maintenance and Inspection contractor training courses were updated to include a pollution prevention module, if applicable. A pollution prevention training module and checklist were provided in conjunction with the National Environmental Policy Act training during January, and the pollution prevention training module in the **Hanford Site's** general employee training procedure was revised.

For more information on these public involvement, outreach, and research and development activities, please refer to the Point of Contact list in Appendix C.

Chapter 4 Operations/Field Office Pollution Prevention Progress

Chapter Four summarizes 1997 DOE Complex-wide waste generation, waste reduction, and recycling data, and presents 1997 Operations/Field Office waste generation and waste reduction data. Each Operations/Field Office mission is identified, pollution prevention performance and accomplishments are summarized for each reporting site, and waste generation data by Program Secretarial Office and waste type are reported.

4.1 DOE Complex-Wide Waste Generation and Pollution Prevention Accomplishments

There are 10 Operations/Field Offices within the DOE Complex: Albuquerque, Chicago, Idaho, Nevada, Oakland, Oak Ridge, Ohio, Richland, Rocky Flats, and Savannah River. All 10 Operations/Field Offices and Headquarters oversee sites that reported radioactive, hazardous, and sanitary waste generation in 1997.

Table 4.1
1997 Waste Generation, Waste Reduction, and Reported Cost Savings by Operations/Field Office

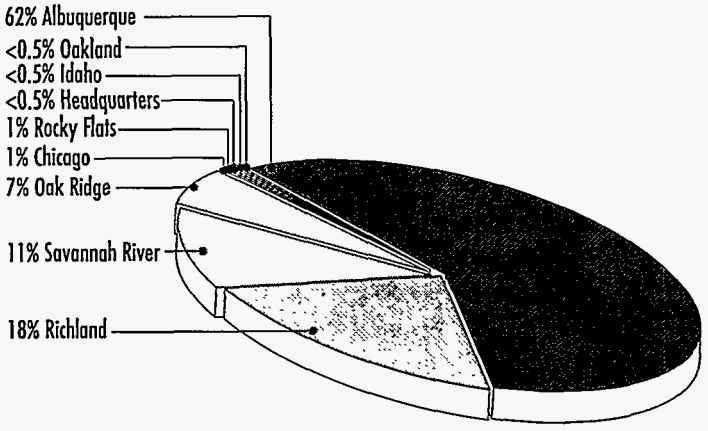
Operations/Field Office	Waste Generation (Cubic Meters)	Waste Reduction (Cubic Meters)	Reported Cost Savings (from Waste Reduction)
Albuquerque	26,827	24,393	$36,138,105
Chicago	17,656	13,101	$1,672,199
Idaho	43,493	3,064	$5,988,670
Nevada	7,269	863	$3,191,785
Oakland	10,541	4,422	$14,744,350
Oak Ridge	56,882	29,708	$14,455,980
Ohio	50,647	1,784	$349,675
Richland	266,607	8,023	$6,221,773
Rocky Flats	6,104	1,967	$137,697
Savannah River	15,873	18,235	$18,485,899
Headquarters	1,827	4,061	$72,375
TOTAL	**503,726**	**109,620**	**$101,458,508**

Table 4.1 illustrates 1997 waste generation, waste reduction, and reported cost savings by Operations/Field Office. Figures 4.1 through 4.3 depict 1997 waste reduction by Operation/Field Office from source reduction, segregation, and recycle/reuse projects, respectively. Tables 4.2 and 4.3 present waste generation by Operation/Field Office for routine operations and cleanup/stabilization activities, respectively.

Albuquerque, Chicago, Oak Ridge, and Savannah River represent the Operations Offices that reduced the most waste in 1997. The top contributors to reported cost savings within the DOE Complex in 1997 were the Albuquerque, Oakland, Oak Ridge, and Savannah River Operations Offices. The Chicago, Idaho, Nevada, and Richland Operations Offices also significantly contributed to reported cost savings within the DOE Complex. In total, the DOE Operations/Field Offices have contributed to approximately $101.5 million of savings in 1997 due to their activities in pollution prevention.

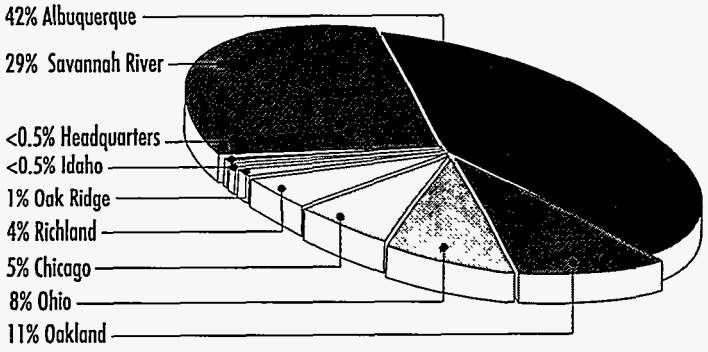
The Albuquerque Operations Office reduced the most waste in the source reduction activity category, accounting for 62 percent of the total 1997 waste reduction. For segregation, the Albuquerque and Savannah River Operations Offices were the largest contributors, accounting for 42 and 29 percent, respectively, of the total 1997 waste reduction. For recycle/reuse, the Oak Ridge Operations Office was the largest contributor, accounting for approximately 31 percent of the total 1997 waste reduction.

Figure 4.1
1997 Waste Reduction by Operations/Field Office from Source Reduction Projects



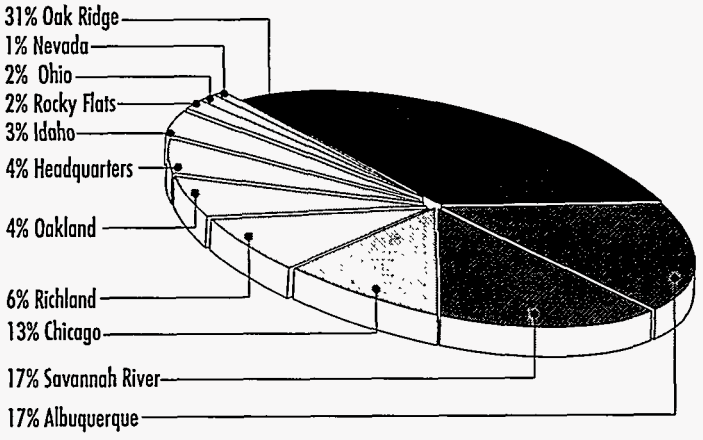
Total Waste Reduced by Source Reduction Projects = 10,646 Cubic Meters

Figure 4.2
1997 Waste Reduction by Operations/Field Office from Segregation Projects



Total Waste Reduced by Segregation Projects = 4,205 Cubic Meters

Figure 4.3
1997 Waste Reduction by Operations/Field Office from Recycle/Reuse Projects



Total Waste Reduced by Recycle/Reuse Projects = 94,769 Cubic Meters

Table 4.2
1997 Routine Operations Waste Generation by Operations/Field Office and Waste Type (in Cubic Meters)

ROUTINE OPERATIONS

Operations/Field Office	High-Level	Transuranic	Low-Level Radioactive	Low-Level Mixed	Hazardous	Sanitary
Albuquerque	0	94	661	21	571	11,339
Chicago	0	4	979	31	1,609	3,260
Idaho	0	0	2,196	48	68	2,768
Nevada	0	0	0	0	11	2,278
Oakland	0	2	83	20	321	3,516
Oak Ridge	0	6	2,431	545	47	22,180
Ohio	0	0	2,428	140	53	1,253
Richland	0	3	853	248	43	1,181
Rocky Flats	0	39	284	34	13	3,429
Savannah River	1,994	119	6,618	286	55	2,769
Headquarters	0	0	0	0	89	1,617
TOTAL	**1,994**	**267**	**16,533**	**1,373**	**2,880**	**55,590**

Table 4.3
1997 Cleanup/Stabilization Waste Generation by Operations/Field Office and Waste Type (in Cubic Meters)

CLEANUP/STABILIZATION

Operations/Field Office	High-Level*	Transuranic	Low-Level Radioactive	Low-Level Mixed	Hazardous	Sanitary
Albuquerque	0	8	3,579	158	4,917	5,479
Chicago	0	0	556	339	5,608	5,270
Idaho	0	0	855	78	34	37,446
Nevada	0	0	4,919	3	11	47
Oakland	0	0	1,897	28	1,658	3,016
Oak Ridge	0	<0.5	2,656§	1,161	120	27,736
Ohio	0	0	45,377	18	0	1,378
Richland	0	20	262,508	280	253	1,218
Rocky Flats	0	91	1,780	97	42	295
Savannah River	0	0	2,447	6	2	1,577
Headquarters	0	0	0	0	102	19
TOTAL	**0**	**119**	**326,574**	**2,168**	**12,747**	**83,481**

* No high-level waste was generated in the cleanup/stabilization waste category

§ Excludes 11e(2) byproduct material (soil or other material contaminated by extraction or concentration or uranium or thorium). The only site reporting byproduct material in 1997 was the Weldon Spring Site Remedial Action Project, which reported 46,976 cubic meters of low-level radioactive waste.

4.2 DOE Complex-Wide Recycling Activities

Approximately 63 percent of the pollution prevention projects reported in 1997 involved recycling activities. Recycling activities are traditionally associated with sanitary waste; however, radioactive and hazardous waste reductions also result from recycling activities. Fifty-three percent of the recycling projects reported in 1997 reduced sanitary waste. By contrast, 11 percent and 36 percent of the recycling projects reduced radioactive and hazardous waste, respectively. Examples of recyclable materials are listed below, and a breakdown of materials recycled in 1997 is presented in Table 4.4.

- Paper Products - office and mixed paper, corrugated cardboard, newspaper, phone books, magazines
- Scrap Metals - stainless steel, copper, iron, aluminum, aluminium cans, lead, zinc, and other types of metals not clarified
- Precious Metals - silver, gold, platinum, and other types of metals not clarified
- Automotive - batteries, engine oils, and tires
- Other - glass, plastic, styrofoam, toner cartridges, food waste, concrete, wood, engine coolant, and any other items that do not fit into the previous categories

Please note that data may have been rounded in the following pages of this Chapter, and the Program Secretarial Office waste generation pie charts do not include sanitary waste.

Table 4.4
1997 DOE Recycling Activities by Operations/Field Office (in Metric Tons)

Operations/Field Office	Paper Products	Metals†	Automotive	Other*	Other Explanations	TOTAL**
Albuquerque	1,035	5,507	218	17,746	construction debris, excess equipment, office furniture, waste containers, antifreeze, asphalt, concrete	24,506
Chicago	1,327	1,628	64	15,840	dirt, rubble and debris, concrete, wood	18,859
Idaho	232	867	84	5,550	food waste, concrete, wood	6,733
Nevada	279	252	117	216	chemicals, resin, vehicle filters, pillows, mercury switches	864
Oakland	649	2,659	78	275,135§	construction dirt, engine oils, antifreeze, solvents, empty containers, asphalt, concrete	278,521
Oak Ridge	1,042	707	219	18,252	light bulbs, compressed gas, computer tapes, flyash, resin, freon, scrap furniture	20, 220
Ohio	220	585	24	1,802	chemicals, asphalt, metal and plastic drums, scrap lumber	2,631
Richland	624	3,991	128	1,073	asphalt, cement, software, activated carbon, boxes, fluorescent light tubes	5,816
Rocky Flats	252	1,313	36	170	furniture, bicycles, oil and fuel filters, engine coolant, wood	1,771
Savannah River	655	1,480	23	13,280	furniture, antifreeze, fluorescent light tubes, chemicals, coal	15,438
Headquarters	95	1,050	30	3,140	wood poles & crossarms, mineral oil, gravel, asphalt	4,315
TOTAL	**6,410**	**20,039**	**1,021**	**352,204**		**379,674**

† Scrap metals and precious metal quantities are added together in the "metals" column.

* Other materials may include: plastic, styrofoam, glass, toner cartridges, food/garden waste, concrete, wood, fluorescent light tubes, coolant, filters, solvents, photographic materials, ground circuit boards, chemicals, small animal exposure tubes, paint adhesives, brick, non-process wastewater, furniture/office equipment, engine coolant, and flyash.

** Quantities are estimates that have been rounded to the nearest whole number, assuming that one cubic meter is equivalent to one metric ton. Materials sent offsite for handling to be recycled by another party are not included in these estimates.

§ Includes 270,111 metric tons of recycled soil from construction/excavation at the Lawrence Livermore National Laboratory.

Albuquerque Operations Office Calendar Year 1997 Achievements

Number of Pollution Prevention Projects: 106

Total Waste Reduced: 24,400 cubic meters

Reported Cost Savings: $36.1 million

Category	Performance Measure	CY 99 Goal
Radioactive Waste	71% reduction	50%
Mixed Waste	64% reduction	50%
Hazardous Waste	77% reduction	50%
Sanitary Waste	49% reduction	33%
Recycling	59% recycled	33%
Affirmative Procurement	27% purchased	100%

Figure 4.4
1997 Albuquerque Operations Office Pollution Prevention Waste Reduction by Waste Category (in Cubic Meters)

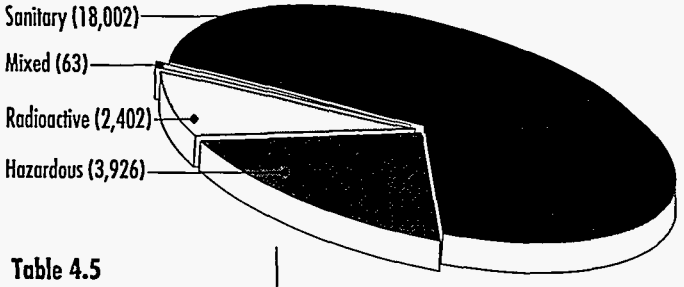


Table 4.5
1997 Albuquerque Operations Office Pollution Prevention Accomplishments by Site

Site Name; Location	Number of Pollution Prevention Projects	Waste Reduction (Cubic Meters)	Reported Cost Savings (Thousands)
Kansas City Plant; Kansas City, MO	19	3,008	$212
Los Alamos National Laboratory; Los Alamos, NM	65	14,478	$33,823
Pantex Plant; Amarillo, TX	7	5,709	$197
Sandia National Laboratories/New Mexico; Albuquerque, NM	10	1,064	$1,866
Waste Isolation Pilot Plant; Carlsbad, NM	5	133	$40

4.3 Albuquerque Operations Office

The Albuquerque Operations Office provides field level Federal management to assure effective, efficient, safe, and secure accomplishment of DOE's national defense, environmental quality, science and technology, technology transfer and commercialization, and national energy objectives.

4.3.1 Pollution Prevention Performance

In 1997, approximately 24,400 cubic meters of waste were reduced at the Albuquerque Operations Office's five reporting sites through implementation of pollution prevention projects (Figure 4.4). As a result, the Albuquerque Operations Office reduced the cost of operations by approximately $36.1 million.

4.3.2 Pollution Prevention Accomplishments

The Albuquerque Operations Office reported 106 pollution prevention projects in 1997, accounting for approximately 22 percent of the waste reduction within the DOE Complex (Table 4.5). Figure 4.5 compares waste reduction by pollution prevention activity category, and Figure 4.6 compares reported cost savings by pollution prevention activity category, for 1996 and 1997. Examples of pollution prevention projects completed in 1997 include:

- Non-nuclear reconfiguration of the Nuclear Weapons Complex at the **Kansas City Plant** resulted in the redesign of a chemical cleaning process to incorporate in-line treatment of the water using an ion exchange resin. The treated water is recycled back into the process, totally eliminating the wastestream. Low-level radioactive waste was reduced by approximately 273 cubic meters, with a reported cost savings of $5,450.

- AlliedSignal's Industrial Wastewater Pretreatment Facility is the **Kansas City Plant's** largest user of chemicals. In addition to calcium hydroxide, sulfuric acid, and hydrogen peroxide, smaller

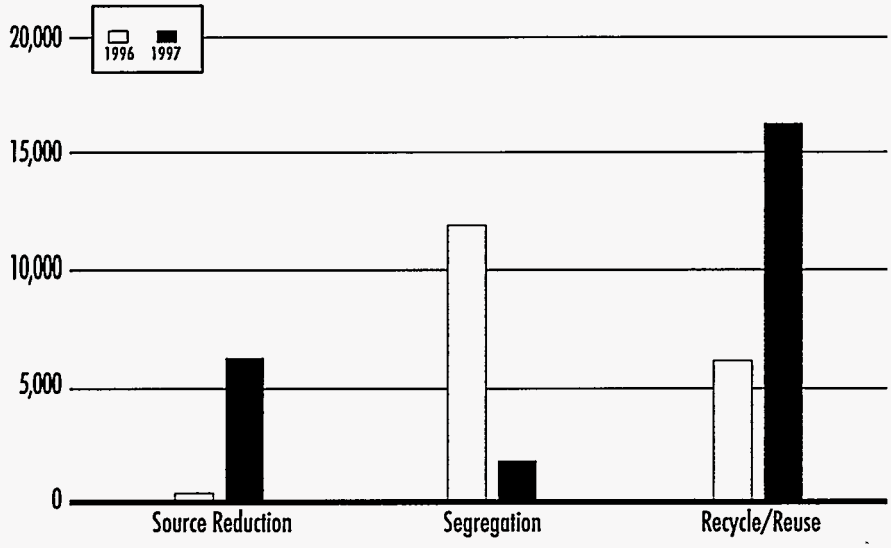


Figure 4.5
1996-1997 Albuquerque Operations Office Waste Reduction by Pollution Prevention Activity Category (in Cubic Meters)

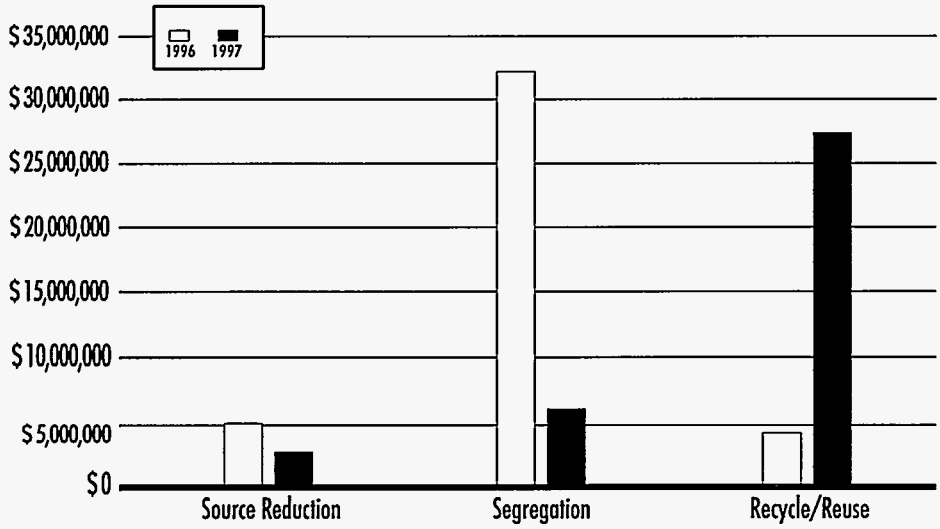


Figure 4.6
1996-1997 Albuquerque Operations Office Reported Cost Savings by Pollution Prevention Activity Category (in Dollars)

quantities of other chemicals are used to precipitate metals from industrial water and remove chlorinated hydrocarbons from groundwater. Wherever possible, excess or out-of-shelf-life weapons grade production materials are substituted for the standard treatment chemicals. This avoids disposal costs, and also reduces the quantity of purchased chemicals. Approximately two metric tons of hazardous waste were reduced in 1997, for a reported cost savings of $6,290.

- The **Kansas City Plant** developed a new electroless copper deposition (plating) process used in the manufacture of printed circuit boards. The new process generated six metric tons of concentrated acid liquid waste, and 340 cubic meters of dilute acid waste. A reduction of three metric tons of hazardous waste was achieved, for a reported cost savings of $8,300.

- The **Los Alamos National Laboratory** developed a recirculating water system to reuse final-stage rinse water from etching/stripping activities during printed circuit board production. The new system reduced hazardous waste by 20 metric tons, for a reported cost savings of $194,000.

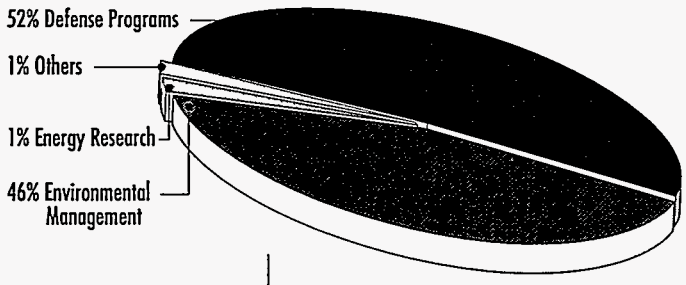
- The **Sandia National Laboratories/New Mexico** leased the Segmented Gate System to screen environmental restoration soils for radioactive contamination at Environmental Restoration Site #1. The system physically separates and segregates radioactive material from soil, reducing the amount of material requiring disposal. As a result, 684 cubic meters of low-level radioactive waste were reduced, saving a reported $684,000 in disposal costs.

- The **Sandia National Laboratories/New Mexico** implemented a two-phased approach to optimize steam plant operations. Phase 1 involved reprogramming boiler control operations in order to maximize efficiency and increase operational flexibility. Phase 2 involved tuning the system to optimize boiler operations and improve fuel efficiency, in addition to evaluating other cost effective solutions for additional emissions reductions. Cost savings of $65,000 were reported, along with increased boiler efficiency, which reduced fuel usage by 23 percent (30.4 tons of air pollutants). [Note: This activity was not counted as a pollution prevention accomplishment in this Report, as air pollutant projects are excluded from this reporting effort.]

4.3.3 Waste Generation

The total waste generated by Albuquerque Operations Office reporting sites was approximately 26,800 cubic meters in 1997, accounting for approximately five percent of DOE's overall waste generation. Waste generated by the Albuquerque Operations Office in 1997 is primarily attributed to Defense Programs and Environmental Management (Figure 4.7). Sanitary waste generation of approximately 16,800 metric tons accounted for 63 percent of all waste generated by this operations office, and 12 percent of all sanitary waste generated by the DOE Complex (Figure 4.8).

Figure 4.7
1997 Albuquerque Operations Office Waste Generation by Program Secretarial Office



Routine operations produced approximately 92 percent of the total transuranic waste generated by the Albuquerque Operations Office. Approximately 99 percent of this waste was generated at the Los Alamos National Laboratory. Routine operations transuranic waste generation increased 16 percent from 1996 to 1997 at the Los Alamos National Laboratory due to new work performed by the Chemical Science and Technology Division, and additional waste processes at the Laboratory. Routine operations sanitary waste generation increased slightly from 1996 to 1997 at the Los Alamos National Laboratory and the Pantex Site.

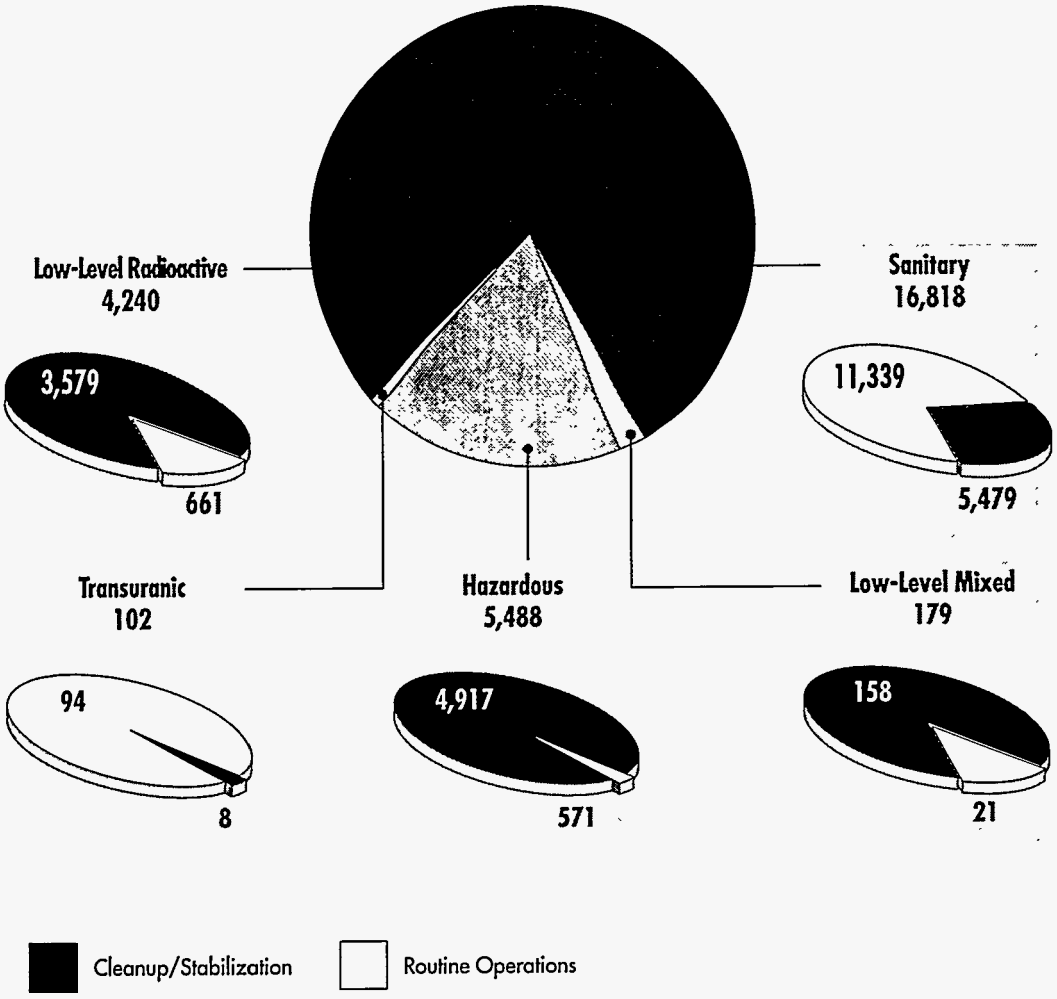


Figure 4.8
1997 Albuquerque Operations Office Waste Generation by Waste Type (in Cubic Meters)

Chicago Operations Office Calendar Year 1997 Achievements

Number of Pollution Prevention Projects: 79

Total Waste Reduced: 13,100 cubic meters

Reported Cost Savings: $1.7 million

Category	Performance Measure	CY 99 Goal
Radioactive Waste	28% reduction	50%
Mixed Waste	80% reduction	50%
Hazardous Waste	58% reduction	50%
Sanitary Waste	46% reduction	33%
Recycling	69% recycled	33%
Affirmative Procurement	31% purchased	100%

Figure 4.9 1997 Chicago Operations Office Pollution Prevention Waste Reduction by Waste Category (in Cubic Meters)

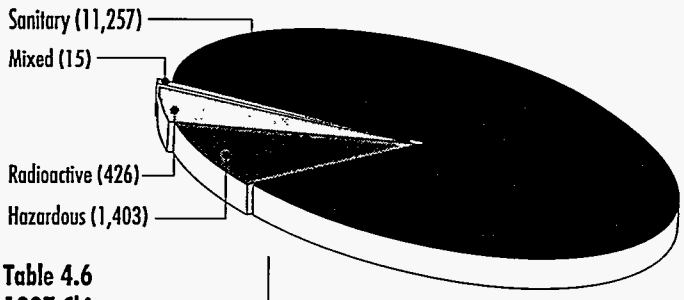


Table 4.6 1997 Chicago Operations Office Pollution Prevention Accomplishments by Site

Site Name; Location	Number of Pollution Prevention Projects	Waste Reduction (Cubic Meters)	Reported Cost Savings (Thousands)
Argonnne National Laboratory – East; Argonne, IL	35	10,839	$687
Argonnne National Laboratory – West; Idaho Falls, ID	32	1,729	$154
Brookhaven National Laboratory; Upton, NY	2	2	$26
Fermi National Accelerator Laboratory; Batavia, IL	4	326	$197
Princeton Plasma Physics Laboratory; Princeton, NJ	6	205	$609

4.4 Chicago Operations Office

The Chicago Operations Office is responsible for energy research, development, and construction, including the administration of operating contracts for five of the nation's major government-owned laboratories.

4.4.1 Pollution Prevention Performance

In 1997, approximately 13,100 cubic meters of waste were reduced at the Chicago Operations Office's five reporting sites through implementation of pollution prevention projects (Figure 4.9). As a result, the Chicago Operations Office reduced the cost of operations by approximately $1.7 million.

4.4.2 Pollution Prevention Accomplishments

The Chicago Operations Office reported 79 pollution prevention projects in 1997, accounting for 12 percent of the waste reduction within the DOE Complex (Table 4.6). Figure 4.10 compares waste reduction by pollution prevention activity category, and Figure 4.11 compares reported cost savings by pollution prevention activity category, for 1996 and 1997. Examples of pollution prevention projects completed in 1997 include:

- The **Argonne National Laboratory – East** disposed of 15 out-of-service criticality detectors. The detectors were disassembled, and the majority of the components were free-released. The project resulted in a reduction of approximately one metric ton of hazardous waste, for a reported cost savings of approximately $29,000.

- The **Argonne National Laboratory – East** crushed oil filters to extract motor oil. The scrap metal from the filters was recycled onsite, and the used motor oil was recycled by Safety Kleen. Approximately 11 metric tons of hazardous waste was reduced, for a reported cost savings of $2,500.

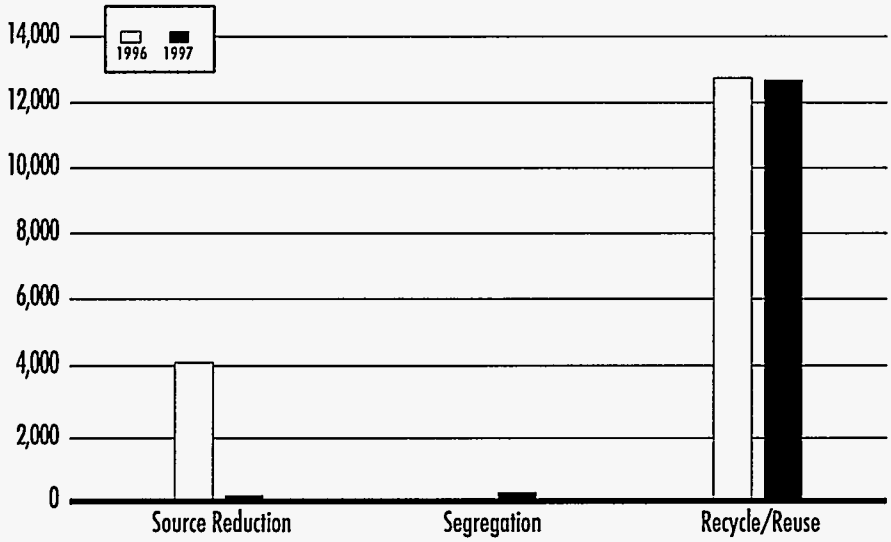


Figure 4.10 1996-1997 Chicago Operations Office Waste Reduction by Pollution Prevention Activity Category (in Cubic Meters)

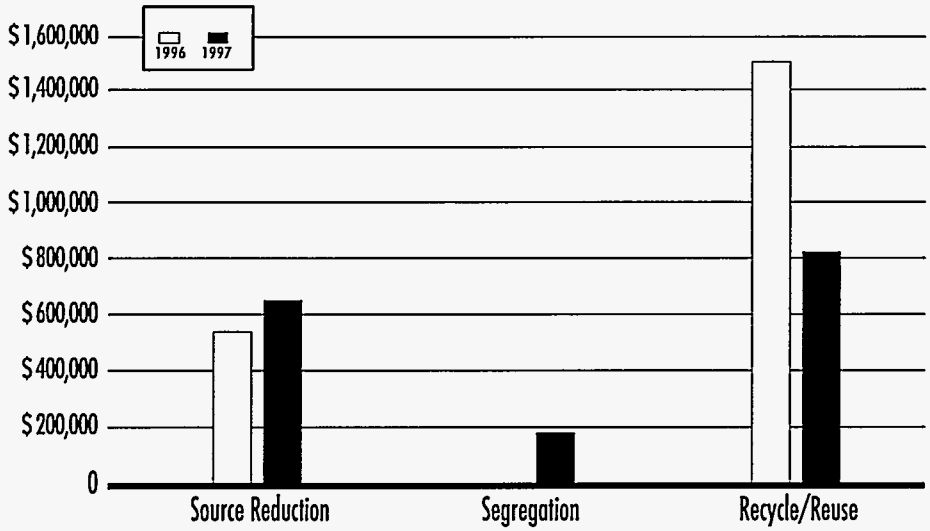


Figure 4.11 1996-1997 Chicago Operations Office Reported Cost Savings by Pollution Prevention Activity Category (in Dollars)

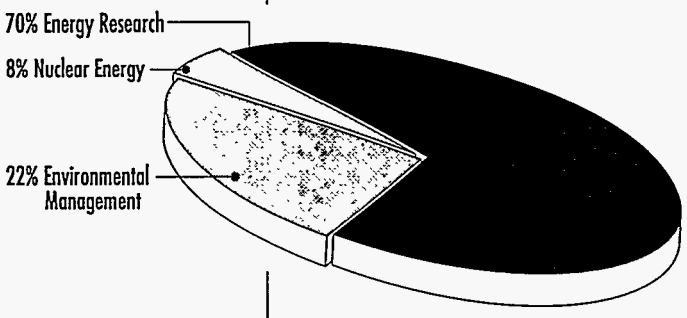
- The **Argonne National Laboratory – East** converted the Building 200 chill water system from a 50/50 ethylene glycol/water solution system to an integrated system that uses water from the central chill water plant and no ethylene glycol. As part of this environmental project, 57 cubic meters of ethylene glycol were removed and replaced with water. This project eliminated approximately one metric ton of hazardous waste, for a reported cost savings of $20,000.

- The **Princeton Plasma Physics Laboratory** operated the Drum Bubbler Tritium Processing System with full-time processing of the vacuum vessel for tritium removal. This device avoided the use of Disposable Molecular Sieve Beds and operation of the Tritium Processing System. This prevented the potential release of approximately six cubic meters of tritium, for a reported cost savings of $500,000.

4.4.3 Waste Generation

The total waste generated by Chicago Operations Office reporting sites was approximately 17,700 cubic meters in 1997, accounting for approximately four percent of DOE's overall waste generation. Waste generated by the Chicago Operations Office in 1997 is primarily attributed to Environmental Management and Energy Research (Figure 4.12). Sanitary waste generation of approximately 8,500 metric tons accounted for 48 percent of all waste generated by this operations office, and six percent of all sanitary waste generated by the DOE Complex (Figure 4.13).

Figure 4.12
1997 Chicago Operations Office Waste Generation by Program Secretarial Office



Routine operations produced approximately 64 percent of the total low-level radioactive waste generated by the Chicago Operations Office. Approximately 50 percent of this waste was generated at the Brookhaven National Laboratory. Routine operations low-level radioactive waste generation increased slightly from 1996 to 1997 at the Brookhaven National Laboratory. Routine operations low-level mixed waste generation increased from six cubic meters to 25 cubic meters from 1996 to 1997 at the Argonne National Laboratory – East due to waste generated from ongoing processing of radioactive-contaminated alkali metals. Routine operations hazardous waste generation increased 53 percent from 1996 to 1997 at the Brookhaven National Laboratory due to laboratory clean-outs and spill clean-ups. In addition, a slight increase in routine operations hazardous waste generation occurred at the Argonne National Laboratory – East, and a slight increase in routine operations sanitary waste generation occurred at the Argonne National Laboratory – West from 1996 to 1997.

Cleanup/stabilization low-level mixed waste generation increased by 337 cubic meters in 1997 at the Argonne National Laboratory – West due to the shutdown of the Experimental Breeder Reactor-II. The shutdown meant that the sodium in the reactor had to be declared waste.

Cleanup/stabilization sanitary waste generation increased by 5,270 metric tons in 1997 at the Argonne National Laboratory – East due to construction and demolition waste.

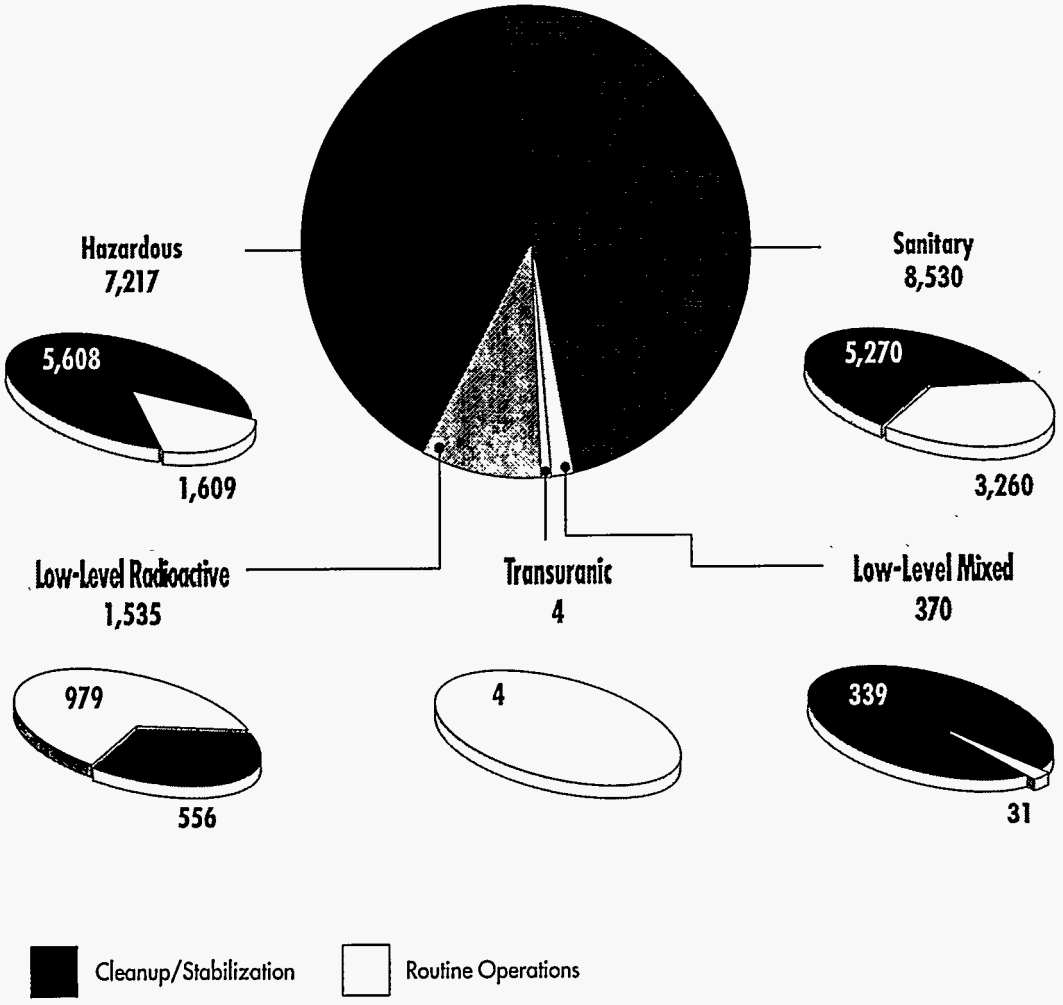


Figure 4.13
1997 Chicago Operations Office Waste Generation by Waste Type (in Cubic Meters)

Idaho Operations Office
Calendar Year 1997 Achievements

Number of Pollution Prevention Projects:	**13**
Total Waste Reduced:	**3,100 cubic meters**
Reported Cost Savings:	**$6 million**

Category	Performance Measure	CY 99 Goal
Radioactive Waste	28% reduction	50%
Mixed Waste	78% increase	50%
Hazardous Waste	89% reduction	50%
Sanitary Waste	39% reduction	33%
Recycling	14% recycled	33%
Affirmative Procurement	72% purchased	100%

Figure 4.14
1997 Idaho Operations Office Pollution Prevention Waste Reduction by Waste Category (in Cubic Meters)

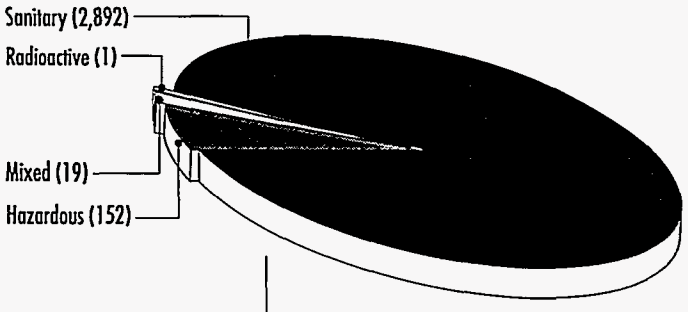


Table 4.7
1997 Idaho Operations Office Pollution Prevention Accomplishments by Site

Site Name; Location	Number of Pollution Prevention Projects	Waste Reduction (Cubic Meters)	Reported Cost Savings (Thousands)
Idaho National Engineering and Environmental Laboratory; Idaho Falls, ID	13	3,064	$5,989

4.5 Idaho Operations Office

The Idaho Operations Office is responsible for the administration and management of assigned programs; alternate energy technology development and demonstration projects; chemical processing operations and demonstration; environmental restoration and waste management operations; and nuclear reactor safety research, development, and demonstration.

4.5.1 Pollution Prevention Performance

In 1997, approximately 3,100 cubic meters of waste were reduced at the Idaho Operations Office's one reporting site through implementation of pollution prevention projects (Figure 4.14). As a result, the Idaho Operations Office reduced the cost of operations by $6 million.

4.5.2 Pollution Prevention Accomplishments

The Idaho Operations Office reported 13 pollution prevention projects in 1997, accounting for approximately three percent of the waste reduction within the DOE Complex (Table 4.7). Figure 4.15 compares waste reduction by pollution prevention activity category, and Figure 4.16 compares reported cost savings by pollution prevention activity category, for 1996 and 1997. Examples of pollution prevention projects completed in 1997 include:

- The **Idaho National Engineering and Environmental Laboratory** exceeded the Resource Conservation and Recovery Act 75 percent recycling requirements by recycling lead scrap, lead acid batteries, and silver scrap. The recycling effort reduced 116 metric tons of hazardous waste, for a reported cost savings of $2.3 million.

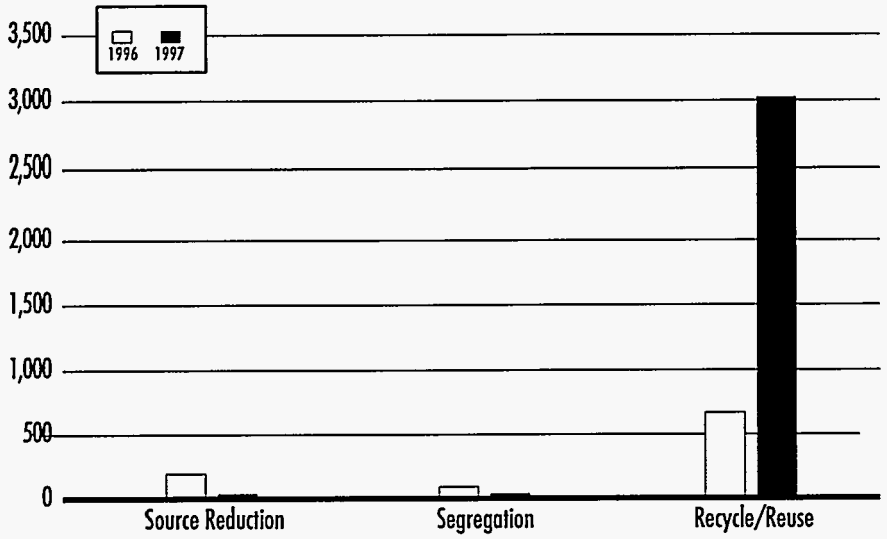


Figure 4.15 1996-1997 Idaho Operations Office Waste Reduction by Pollution Prevention Activity Category (in Cubic Meters)

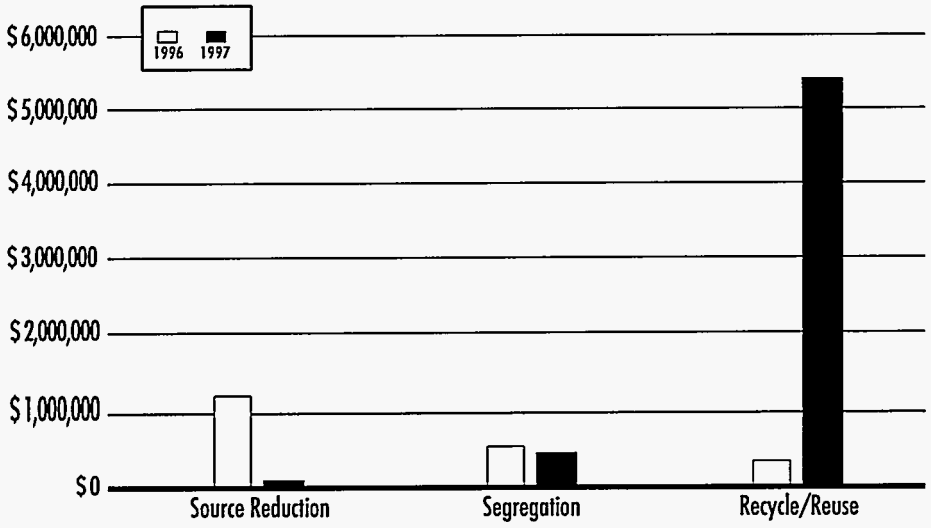


Figure 4.16 1996-1997 Idaho Operations Office Reported Cost Savings by Pollution Prevention Activity Category (in Dollars)

- The Idaho National Engineering and Environmental Laboratory's Radioactive Waste Management Complex utilized contaminated lead as shielding for remote-handled transuranic waste. The project reduced approximately three cubic meters of low-level mixed waste, for a reported cost savings of $776,000.

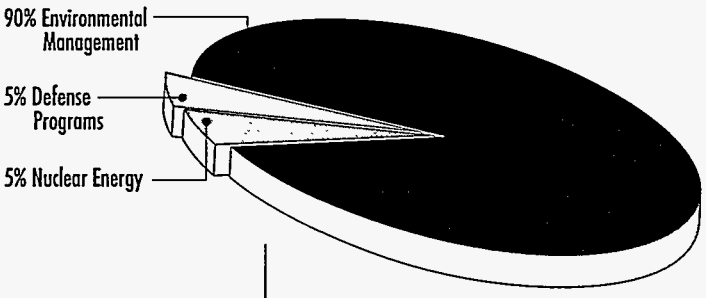
- The Test Area North Cask Salvage Project at the Idaho National Engineering and Environmental Laboratory segregated clean lead for recycling, reducing 16 cubic meters of low-level mixed waste, for a reported cost savings of $464,000.

- The Idaho National Engineering and Environmental Laboratory's Coal Fired Steam Generation Facility converted approximately 34 metric tons of sanitary office waste into a fuel, for a reported cost savings of $308,000.

4.5.3 Waste Generation

The total waste generated by the Idaho Operations Office's one reporting site was approximately 43,500 cubic meters in 1997, accounting for approximately nine percent of DOE's overall waste generation. Waste generated by the Idaho Operations Office in 1997 is primarily attributed to Environmental Management (Figure 4.17). Sanitary waste generation of approximately 40,200 metric tons accounted for 92 percent of all waste generated by this operations office, and 29 percent of all sanitary waste generated by the DOE Complex (Figure 4.18).

Figure 4.17 1997 Idaho Operations Office Waste Generation by Program Secretarial Office



Routine operations produced approximately 72 percent of the total low-level radioactive waste generated by the Idaho Operations Office. Routine operations low-level radioactive waste generation increased 26 percent from 1996 to 1997 at the Idaho National Engineering and Environmental Laboratory due to preparation for the start-up of the New Waste Calcining Facility, which resulted in increased generation of personal protective equipment waste, tool waste, and debris. Routine operations hazardous waste generation increased 79 percent from 1996 to 1997 at the Idaho National Engineering and Environmental Laboratory because a greater quantity of waste was identified, characterized, and shipped, and electrical maintenance activities increased.

Low-level radioactive, low-level mixed, and sanitary waste generated from cleanup/stabilization activities increased from 1996 to 1997 at the Idaho National Engineering and Environmental Laboratory due to increased decommissioning projects. Waste generation increased 113 percent, 105 percent, and 32 percent, respectively, for these waste types.

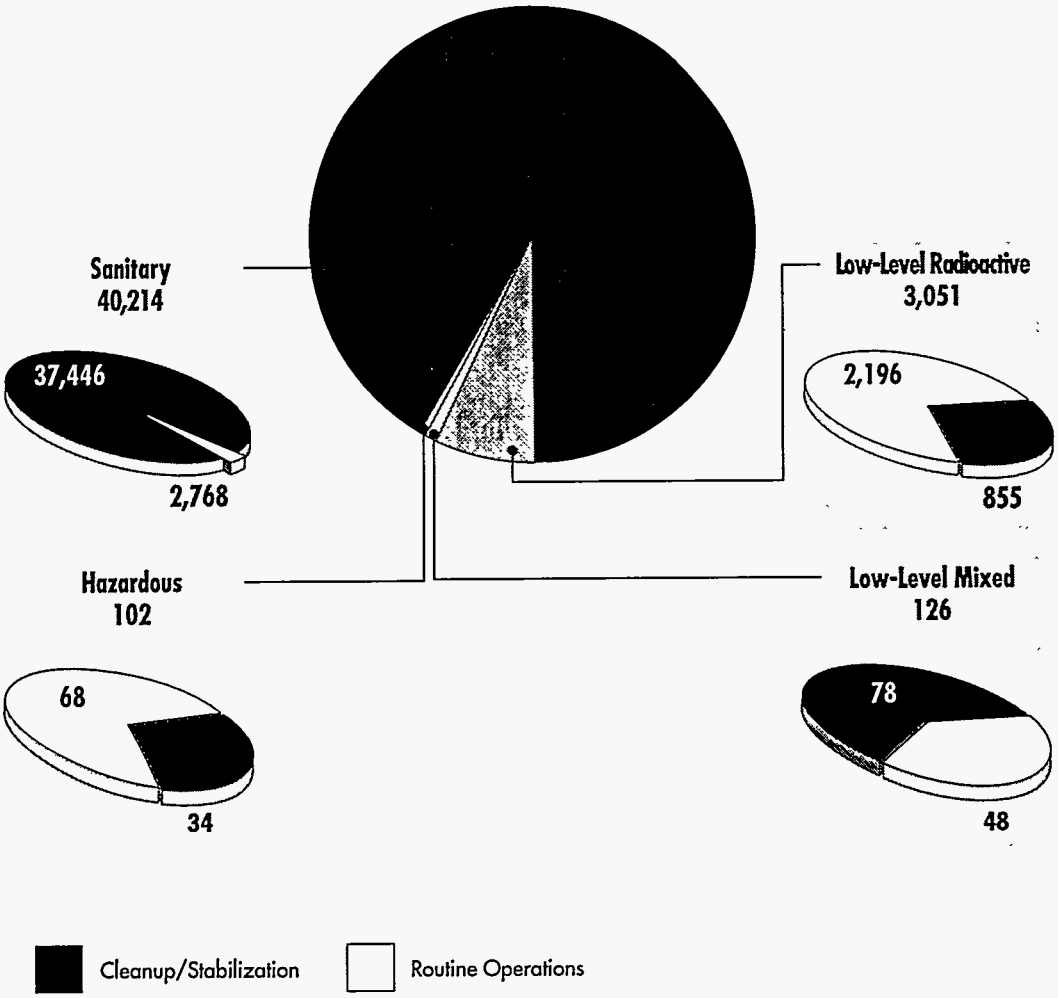


**Figure 4.18
1997 Idaho
Operations Office
Waste Generation
by Waste Type
(in Cubic Meters)**

Nevada Operations Office Calendar Year 1997 Achievements

Number of Pollution Prevention Projects: 25

Total Waste Reduced: 860 cubic meters

Reported Cost Savings: $3.2 million

Category	Performance Measure	CY 99 Goal
Hazardous Waste	99.7% reduction	50%
Sanitary Waste	83% reduction	33%
Recycling	27% recycled	33%
Affirmative Procurement	83% purchased	100%

Figure 4.19 1997 Nevada Operations Office Pollution Prevention Waste Reduction by Waste Category (in Cubic Meters)

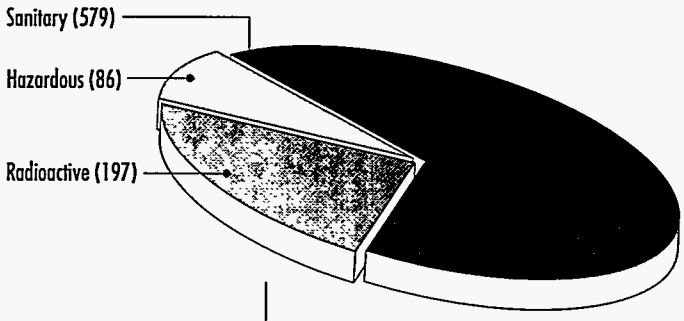


Table 4.8 1997 Nevada Operations Office Pollution Prevention Accomplishments by Site

Site Name; Location	Number of Pollution Prevention Projects	Waste Reduction (Cubic Meters)	Reported Cost Savings (Thousands)
Nevada Test Site; Mercury, NV	19	571	$3,140
North Las Vegas Facility; North Las Vegas, NV	6	292	$52

4.6 Nevada Operations Office

The Nevada Operations Office provides support for national security, crisis management, energy, environmental management, science and technology development, and environmental cleanup in the Pacific area.

4.6.1 Pollution Prevention Performance

In 1997, approximately 860 cubic meters of waste were reduced at the Nevada Operations Office's two reporting sites through implementation of pollution prevention projects (Figure 4.19). As a result, the Nevada Operations Office reduced the cost of operations by $3.2 million.

4.6.2 Pollution Prevention Accomplishments

The Nevada Operations Office reported 25 pollution prevention projects in 1997, accounting for approximately one percent of the waste reduction within the DOE Complex (Table 4.8). Figure 4.20 compares waste reduction by pollution prevention activity category, and Figure 4.21 compares reported cost savings by pollution prevention activity category, for 1996 and 1997. Examples of pollution prevention projects completed in 1997 include:

- The Nevada Test Site filtered fuels to remove water and particulates so the stored fuels could be used. Hazardous waste was reduced by approximately one metric ton, for a reported cost savings of approximately $11,800.
- The Nevada Test Site recycled 6-volt, 12-volt, and commercial batteries offsite. This reduced hazardous waste by 39 metric tons, for a reported cost savings of $3,400.
- The Nevada Test Site recycled uranium-bearing material. This reduced low-level radioactive waste by 197 cubic meters, for a reported cost savings of $3 million.

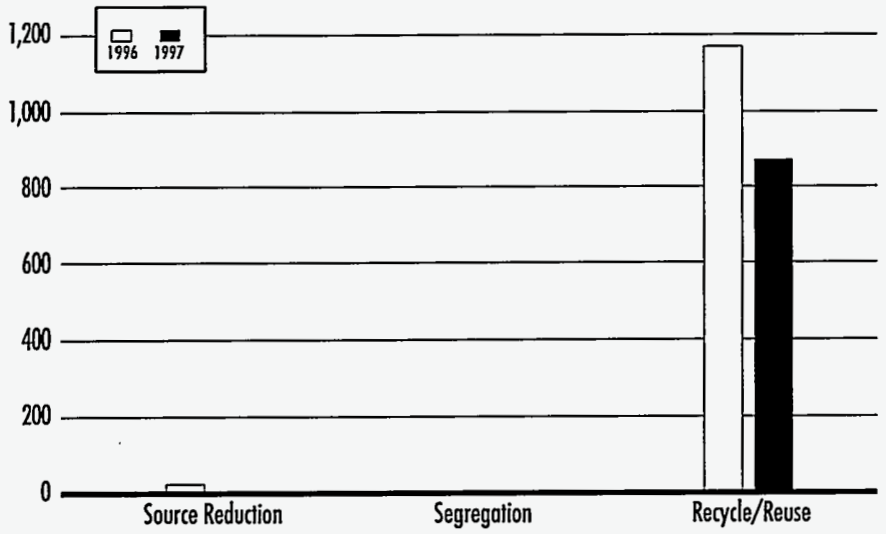


Figure 4.20 1996-1997 Nevada Operations Office Waste Reduction by Pollution Prevention Activity Category (in Cubic Meters)

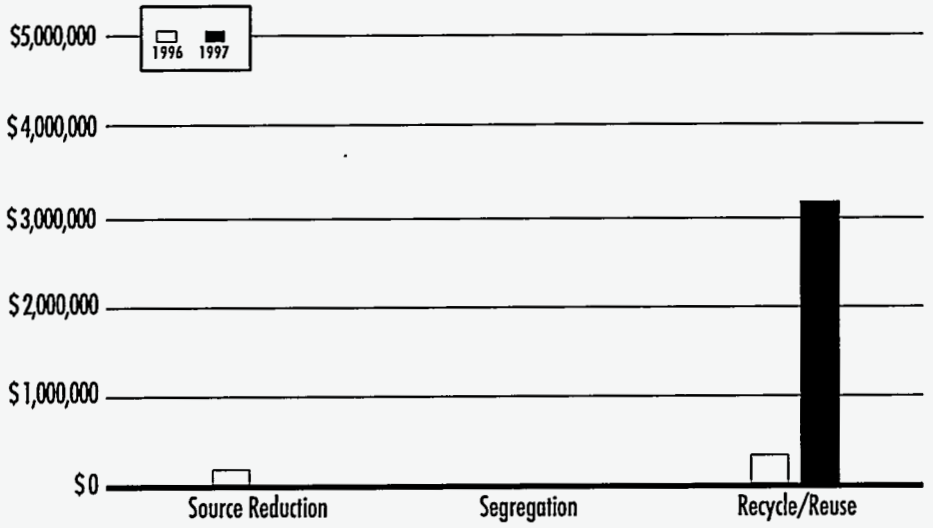


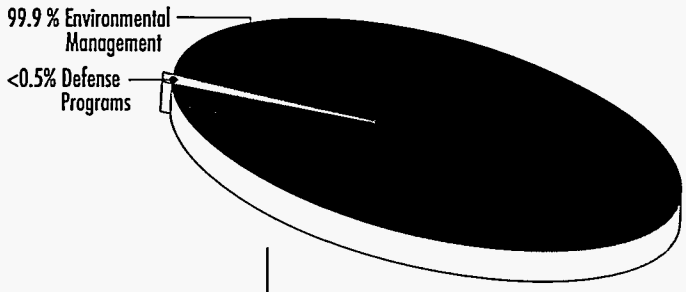
Figure 4.21 1996-1997 Nevada Operations Office Reported Cost Savings by Pollution Prevention Activity Category (in Dollars)

- The **North Las Vegas Facility**, which transferred 32 different chemicals and products destined for disposal, reduced hazardous waste by approximately one metric ton, for a reported cost savings of $30,000.

4.6.3 Waste Generation

The total waste generated by Nevada Operations Office reporting sites was approximately 7,300 cubic meters in 1997, accounting for approximately one percent of DOE's overall waste generation. Waste generated by the Nevada Operations Office in 1997 is primarily attributed to Environmental Management (Figure 4.22). Sanitary waste generation of approximately 2,300 metric tons accounted for 32 percent of all waste generated by this operations office, and two percent of all sanitary waste generated by the DOE Complex (Figure 4.23).

Figure 4.22 1997 Nevada Operations Office Waste Generation by Program Secretarial Office



Routine operations produced approximately 98 percent of the total sanitary waste generated by the Nevada Operations Office. Approximately 53 percent of this waste was generated at the North Las Vegas Facility. Routine operations sanitary waste generation increased 79 percent from 1996 to 1997 at the North Las Vegas Facility due to the construction and start-up of the Nevada Support Facility.

Cleanup/stabilization low-level waste generation increased 208 percent from 1996 to 1997 at the Nevada Test Site due to a major soil remediation project, Clean Slates 1. Cleanup/stabilization sanitary waste generation increased by 47 metric tons in 1997 at the Nevada Operations Office.

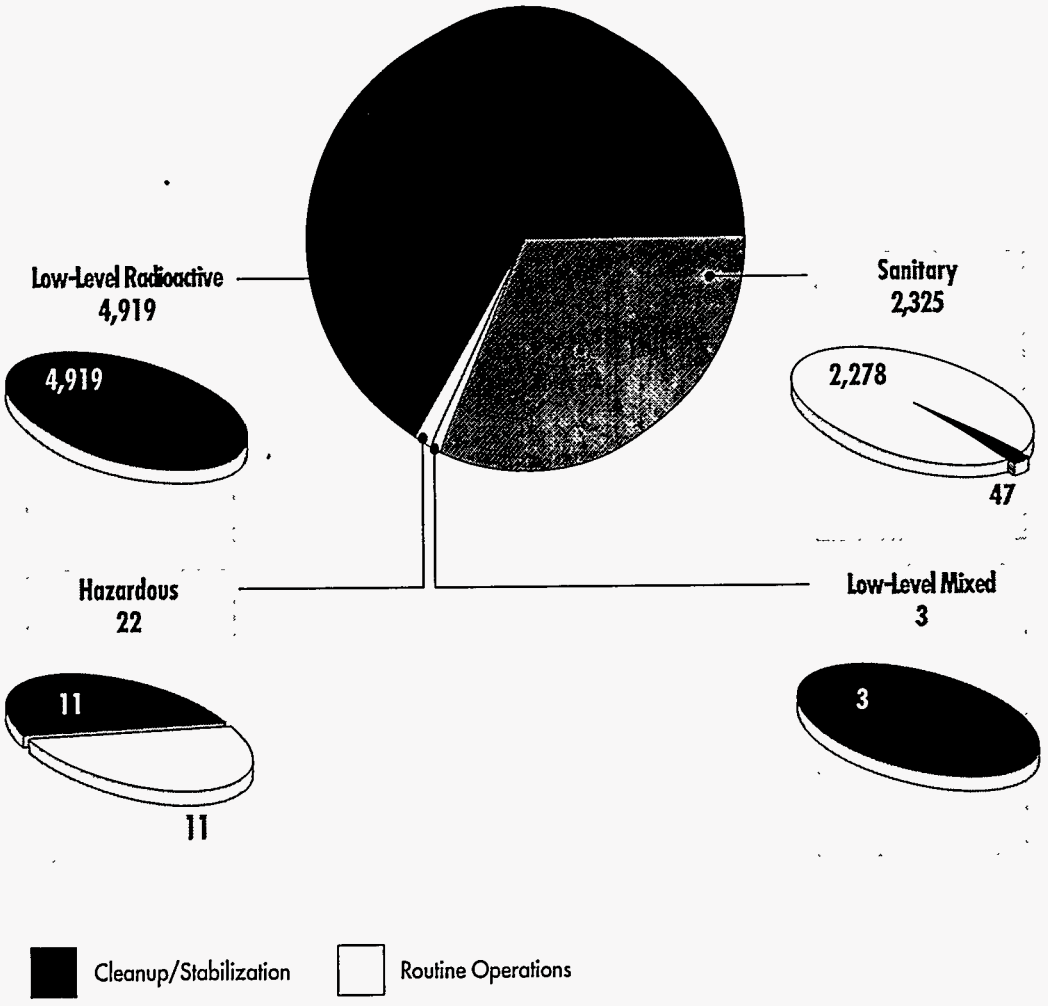


Figure 4.23
1997 Nevada Operations Office Waste Generation by Waste Type (in Cubic Meters)

Oakland Operations Office Calendar Year 1997 Achievements

Number of Pollution Prevention Projects: 15

Total Waste Reduced: 4,400 cubic meters

Reported Cost Savings: $14.7 million

Category	Performance Measure	CY 99 Goal
Radioactive Waste	58% reduction	50%
Mixed Waste	80% reduction	50%
Hazardous Waste	66% reduction	50%
Sanitary Waste	66% reduction	33%
Recycling	98% recycled	33%
Affirmative Procurement	49% purchased	100%

Figure 4.24 1997 Oakland Operations Office Pollution Prevention Waste Reduction by Waste Category (in Cubic Meters)

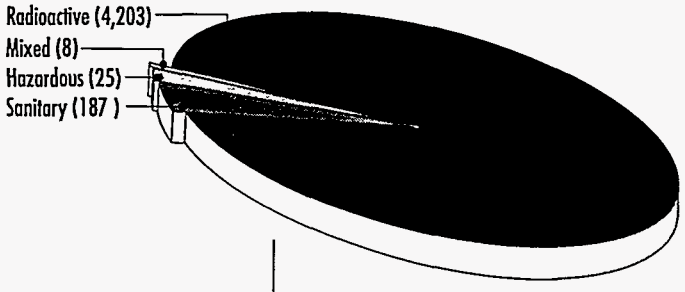


Table 4.9 1997 Oakland Operations Office Pollution Prevention Accomplishments by Site

Site Name; Location	Number of Pollution Prevention Projects	Waste Reduction (Cubic Meters)	Reported Cost Savings (Thousands)
Energy Technology Engineering Center; Canoga Park, CA	5	650	$371
Lawrence Berkeley National Laboratory; Berkeley, CA	6	3,745	$14,269
Lawrence Livermore National Laboratory; Livermore, CA	2	1	$80
Stanford Linear Accelerator Center; Stanford, CA	2	25	$24

4.7 Oakland Operations Office

The Oakland Operations Office serves the public by managing world-class national research and development facilities, including the administration of operating contracts for the nation's government-owned laboratories and facilities.

4.7.1 Pollution Prevention Performance

In 1997, approximately 4,400 cubic meters of waste were reduced at the Oakland Operations Office's four reporting sites through implementation of pollution prevention projects (Figure 4.24). As a result, the Oakland Operations Office reduced the cost of operations by approximately $14.7 million.

4.7.2 Pollution Prevention Accomplishments

The Oakland Operations Office reported 15 pollution prevention projects in 1997, accounting for four percent of the waste reduction within the DOE Complex (Table 4.9). Figure 4.25 compares waste reduction by pollution prevention activity category, and Figure 4.26 compares reported cost savings by pollution prevention activity category, for 1996 and 1997. Examples of pollution prevention projects completed in 1997 include:

- The Analytical Measurements Laboratory at the Lawrence Berkeley National Laboratory implemented new segregation practices, reducing generation of tritiated silica gel. This reduced approximately one cubic meter of low-level mixed waste, for a reported cost savings of $19,000.
- The Lawrence Livermore National Laboratory installed a camera-based digital image acquisition system for the transmission electron microscope. The system eliminated the need for developer and fixer, and reduced the number of images needed by approximately 50 percent. This new system reduced hazardous waste by one metric ton, for a reported cost savings of $38,000.

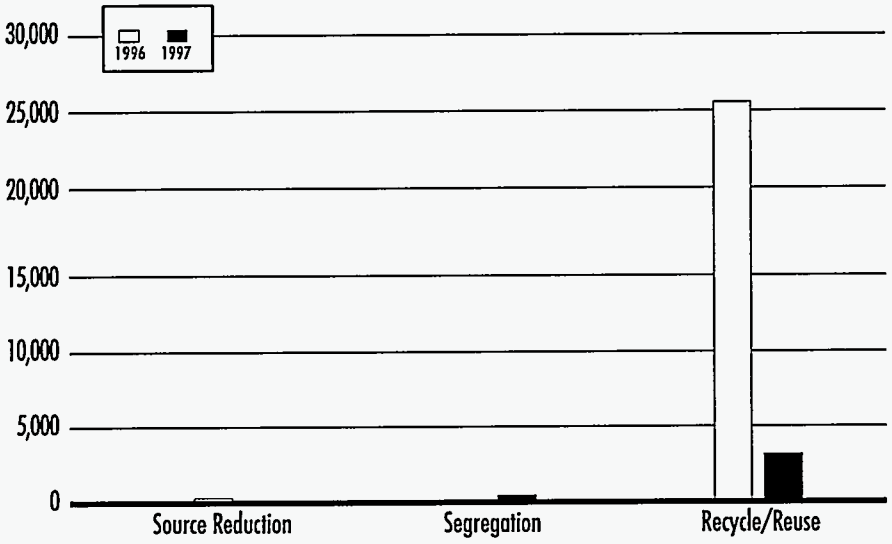


Figure 4.25 1996-1997 Oakland Operations Office Waste Reduction by Pollution Prevention Activity Category (in Cubic Meters)

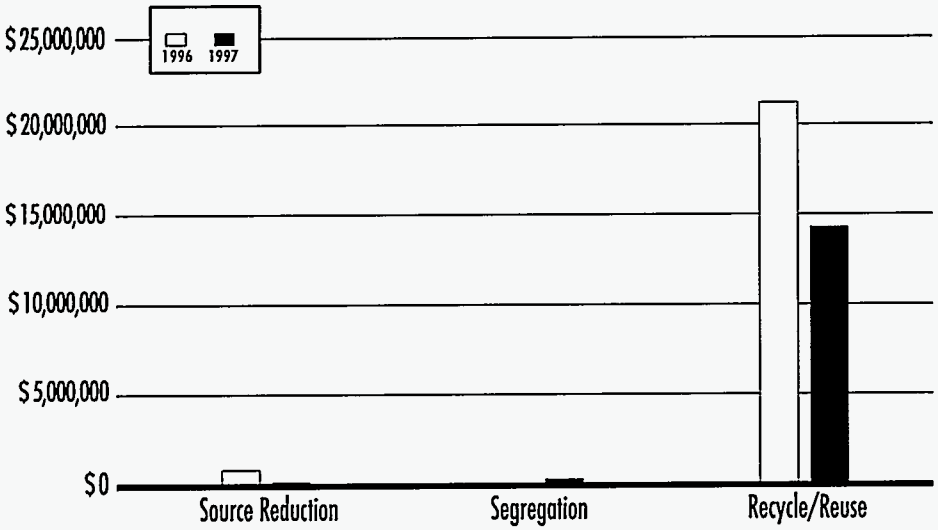


Figure 4.26 1996-1997 Oakland Operations Office Reported Cost Savings by Pollution Prevention Activity Category (in Dollars)

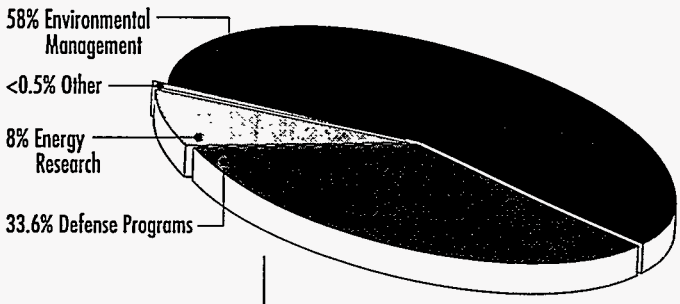
4.7.3 Waste Generation

The total waste generated by Oakland Operations Office reporting sites was approximately 10,500 cubic meters in 1997, accounting for approximately two percent of DOE's overall waste generation total. Waste generation by the Oakland Operations Office in 1997 is primarily attributed to Defense Programs and Environmental Management (Figure 4.27). Sanitary waste generation of approximately 6,500 metric tons accounted for 62 percent of all waste generated by this operations office, and approximately five percent of all sanitary waste generated by the DOE Complex (Figure 4.28).

Routine operations produced approximately 42 percent of the total low-level mixed waste generated by the Oakland Operations Office. Approximately 95 percent of this waste was generated at the Lawrence Livermore National Laboratory. Routine operations low-level radioactive waste generation increased slightly from 1996 to 1997 at the Lawrence Berkeley National Laboratory.

Cleanup/stabilization low-level radioactive waste generation increased 324 percent from 1996 to 1997 at the Energy Technology Engineering Center due to increased decommissioning activities. Cleanup/stabilization low-level radioactive waste generation increased slightly at the Lawrence Livermore National Laboratory, the Lawrence Berkeley National Laboratory, and the Stanford Linear Accelerator Center from 1996 to 1997.

Figure 4.27
1997 Oakland Operations Office Waste Generation by Program Secretarial Office



Cleanup/stabilization hazardous waste generation increased 163 percent from 1996 to 1997 at the Lawrence Livermore National Laboratory due to excavation of buried capacitors and transformers. Cleanup/stabilization hazardous waste generation increased from six metric tons to 34 metric tons from 1996 to 1997 at the Energy Technology Engineering Center due to increased remediation activities.

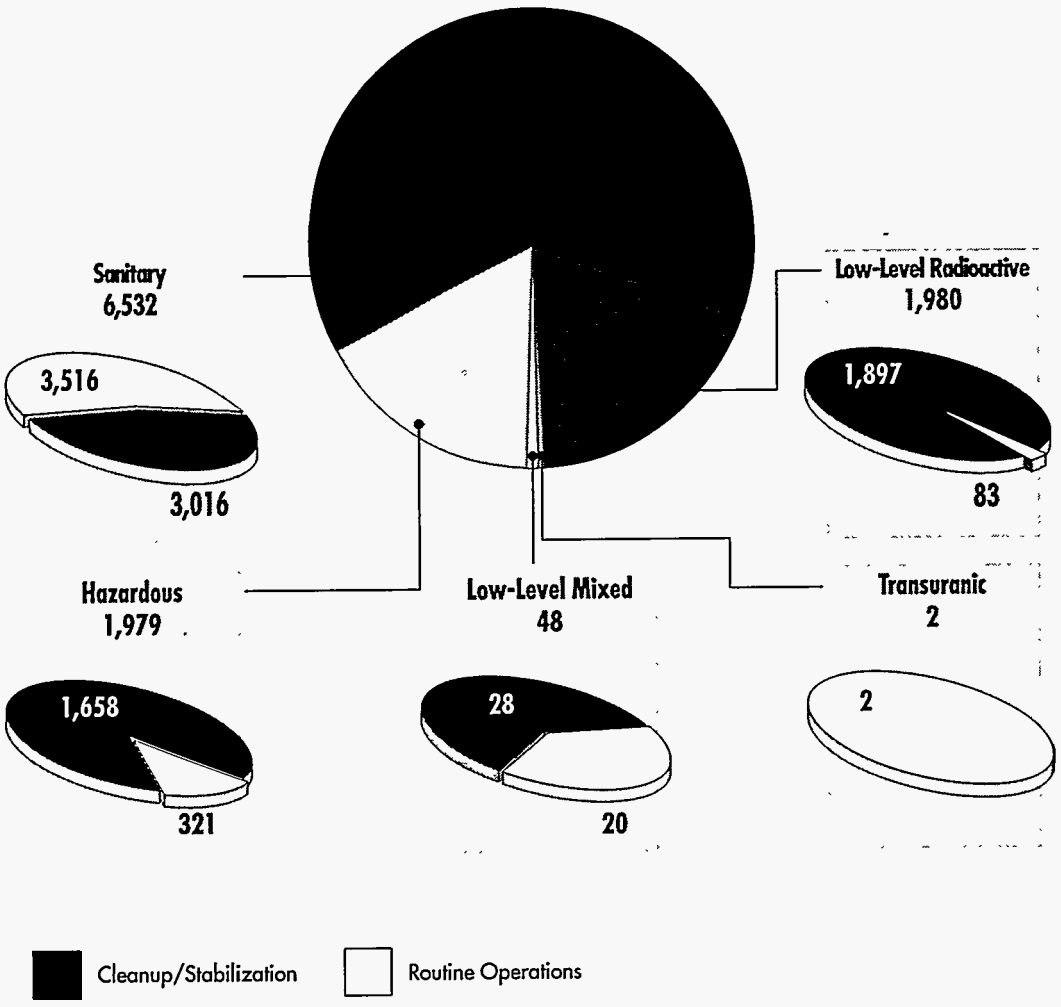


Figure 4.28
1997 Oakland Operations Office Waste Generation by Waste Type (in Cubic Meters)

Oak Ridge Operations Office Calendar Year 1997 Achievements

Number of Pollution Prevention Projects: 111

Total Waste Reduced: 29,700 cubic meters

Reported Cost Savings: $14.5 million

Category	Performance Measure	CY 99 Goal
Radioactive Waste	69% reduction	50%
Mixed Waste	70% reduction	50%
Hazardous Waste	20% reduction	50%
Sanitary Waste	15% reduction	33%
Recycling	29% recycled	33%
Affirmative Procurement	62% purchased	100%

Figure 4.29 1997 Oak Ridge Operations Office Pollution Prevention Waste Reduction by Waste Category (in Cubic Meters)

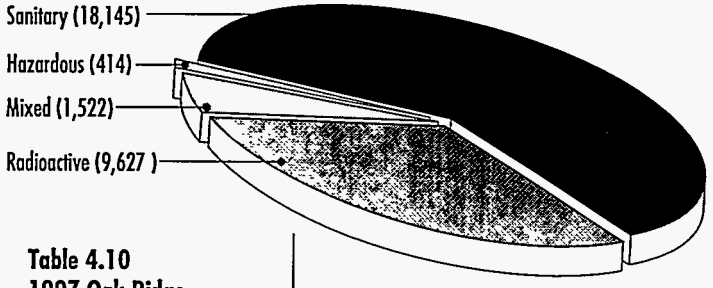


Table 4.10 1997 Oak Ridge Operations Office Pollution Prevention Accomplishments by Site

Site Name; Location	Number of Pollution Prevention Projects	Waste Reduction (Cubic Meters)	Reported Cost Savings (Thousands)
East Tennessee Technology Park; Oak Ridge, TN	44	11,396	$10,963
Oak Ridge National Laboratory; Oak Ridge, TN	16	2,644	$945
Oak Ridge Y-12 Plant; Oak Ridge, TN	38	14,978	$2,251
Paducah Gaseous Diffusion Plant; Paducah, KY	6	225	$271
Portsmouth Gaseous Diffusion Plant; Piketon, OH	1	1	$27
Weldon Spring Site Remedial Action Project; St. Charles, MO	6	464	Not Available

4.8 Oak Ridge Operations Office

The Oak Ridge Operations Office provides weapons component dismantlement, maintains the nation's inventory of enriched uranium and lithium, conducts a diversified research and development program on a variety of energy technologies, performs environmental management activities, oversees nuclear safety for enrichment facilities, and provides technical assistance training.

4.8.1 Pollution Prevention Performance

In 1997, approximately 29,700 cubic meters of waste were reduced at the Oak Ridge Operations Office's six reporting sites through implementation of pollution prevention projects (Figure 4.29). As a result, the Oak Ridge Operations Office reduced the cost of operations by $14.5 million.

4.8.2 Pollution Prevention Accomplishments

The Oak Ridge Operations Office reported 111 pollution prevention projects in 1997, accounting for approximately 27 percent of the waste reduction within the DOE Complex (Table 4.10). Figure 4.30 compares waste reduction by pollution prevention activity category, and Figure 4.31 compares reported cost savings by pollution prevention activity category, for 1996 and 1997. Examples of pollution prevention projects completed in 1997 include:

- The East Tennessee Technology Park purchased new ion chromatography instruments for the analytical laboratories, which utilize new microbore technology to reduce the amount of solution needed to maintain continuous flow through the separation column. In addition, two new state-of-the-art detectors with self-regenerating suppressors will further reduce the amount of acid reagent needed by the laboratory, and the amount of sulfuric acid waste generated. The new

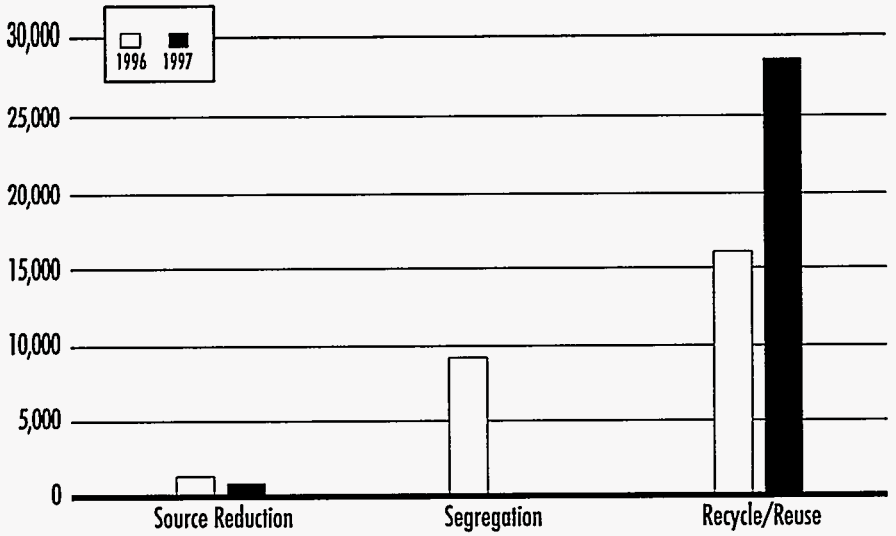


Figure 4.30
1996-1997 Oak Ridge Operations Office Waste Reduction by Pollution Prevention Activity Category (in Cubic Meters)

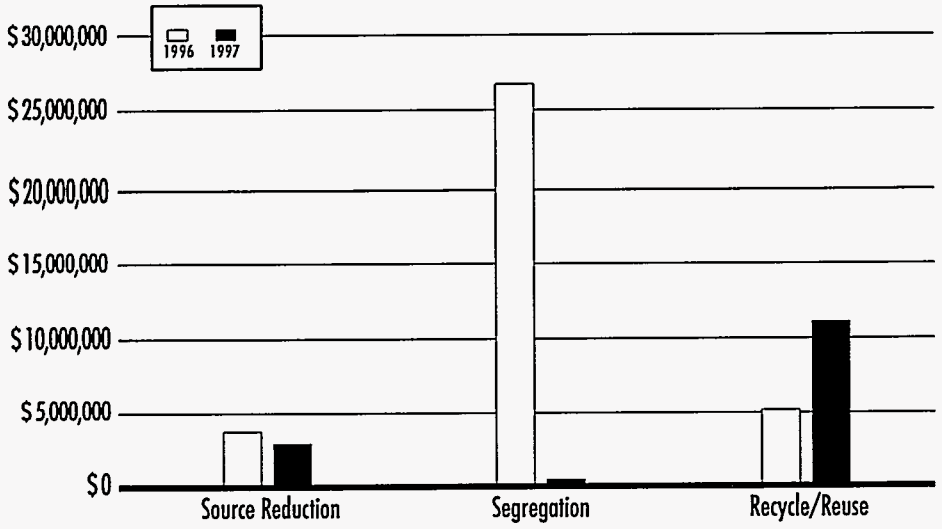


Figure 4.31
1996-1997 Oak Ridge Operations Office Reported Cost Savings by Pollution Prevention Activity Category (in Dollars)

instruments reduced approximately three cubic meters of low-level mixed waste, for a reported cost savings of $33,000.

- The East Tennessee Technology Park inherited approximately three million pounds of epoxy resin. The resin was advertised for six years, until an offsite buyer was found. Shipments to the buyer began in October 1996, and concluded in June 1997. This project reduced 17 cubic meters of low-level radioactive waste and 1,377 cubic meters of low-level mixed waste, for a total reported cost savings of $6.2 million.

- The Oak Ridge National Laboratory reused flyash from its Steam Plant as a component in the manufacture of cement. This project reduced 1,749 metric tons of hazardous waste, for a reported disposal cost savings of $98,000.

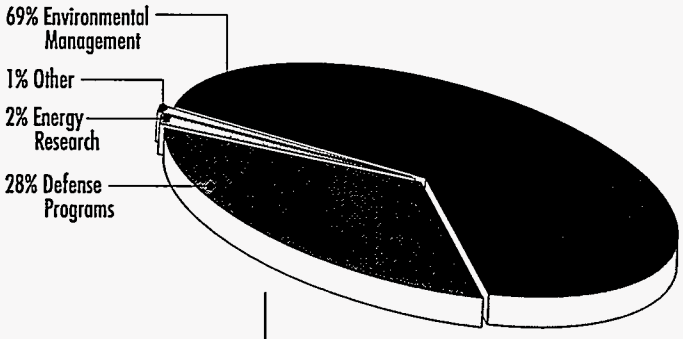
- The **Oak Ridge Y-12 Plant** developed a chromatographic resin procedure to allow the Analytical Services Organization to separate neptunium and thorium sequentially in one column. The process completely eliminated the nitric/methanol wastestream, and reduced the acid stream by 46 percent. Approximately one metric ton of hazardous waste was reduced, for a reported cost savings of $103,000.

- The **East Tennessee Technology Park's** camera cooling system at the Toxic Substances Control Act Incinerator was upgraded by re-routing the secondary combustion chamber's camera cooling water directly to the kiln area camera, reducing the use of cooling water by 50 percent. The modification, which switched the flow of water from series to parallel, was possible because the temperature rise was suitably low for each camera. This project reduced low-level mixed waste by 3,773 cubic meters, for a reported cost savings of $205,300. [Note: This activity was not counted as a pollution prevention accomplishment in this Report, as wastewater projects are excluded from this reporting effort.]

4.8.3 Waste Generation

The total waste generated by Oak Ridge Operations Office reporting sites was approximately 56,900 cubic meters in 1997, accounting for 11 percent of DOE's overall waste generation. Waste generated by the Oak Ridge Operations Office in 1997 is primarily attributed to Defense Programs and Environmental Management (Figure 4.32). Sanitary waste generation of approximately 49,900 metric tons accounted for 88 percent of all waste generated by this operations office, and 36 percent of all sanitary waste generated by the DOE Complex (Figure 4.33).

Figure 4.32 1997 Oak Ridge Operations Office Waste Generation by Program Secretarial Office



Routine operations produced approximately 48 percent of the total low-level radioactive waste generated by the Oak Ridge Operations Office. Approximately 68 percent of this waste was generated at the Oak Ridge Y-12 Plant. Routine operations low-level radioactive waste generation increased 113 percent from 1996 to 1997 at the Oak Ridge Y-12 Plant due to consolidation of operations and facility maintenance.

Routine operations low-level mixed waste generation increased 26 percent from 1996 to 1997 at the Oak Ridge Y-12 Plant due to consolidation of operations. Routine low-level mixed waste generation increased 154 percent from 1996 to 1997 at the East Tennessee Technology Park due to vitrification of pond waste and Central Neutralization Facility sludge at the New Transportable Vitrification Facility. Routine operations low-level mixed waste generation also increased slightly from 1996 to 1997 at the Oak Ridge National Laboratory.

Routine operations hazardous waste generation increased 161 percent from 1996 to 1997 at the Oak Ridge Operations Office due to the reclassification of wastes at the Oak Ridge Y-12 Plant, the Oak Ridge National Laboratory, and the East Tennessee Technology Park.

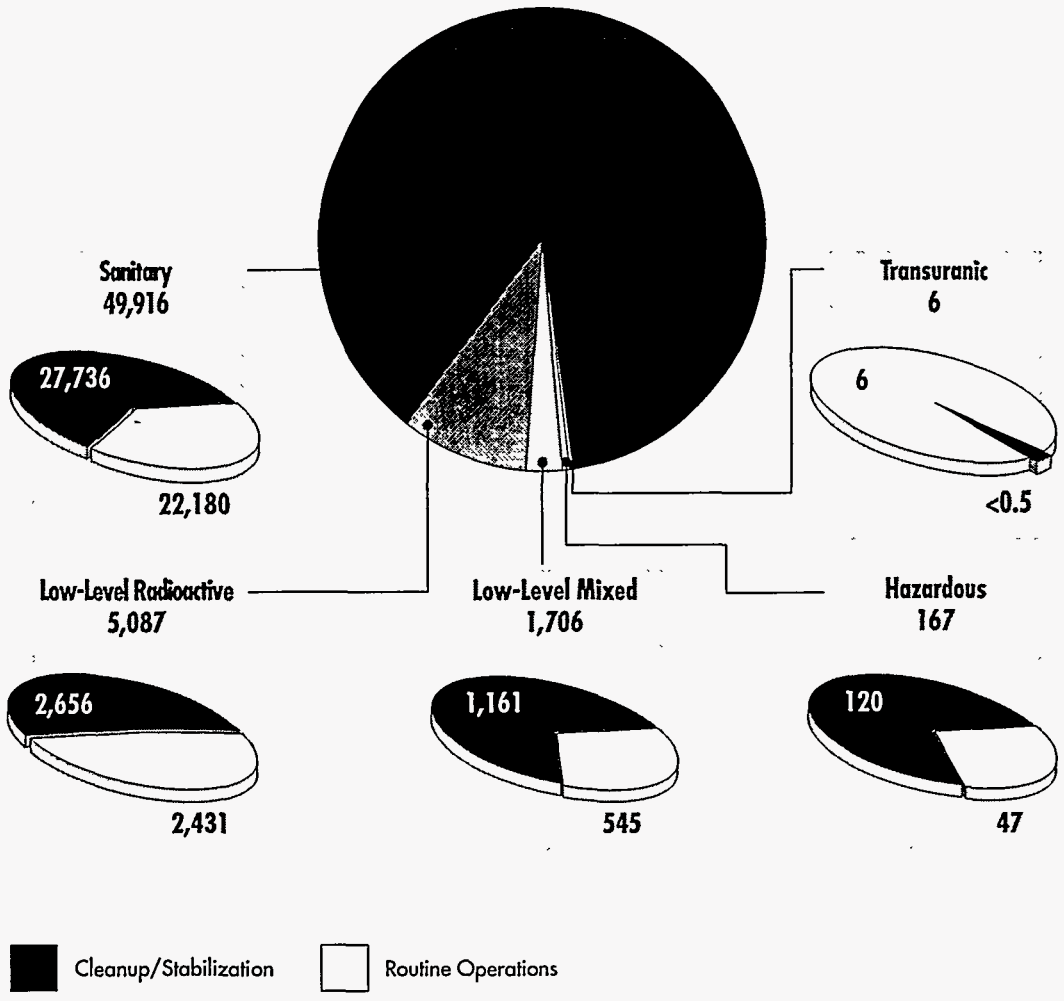


Figure 4.33
1997 Oak Ridge Operations Office Waste Generation by Waste Type (in Cubic Meters)

Cleanup/stabilization low-level radioactive waste generation increased 400 percent from 1996 to 1997 at the Paducah Site due to several projects that increased scrap metal generation.

Cleanup/stabilization low-level mixed waste generation increased by 264 percent from 1996 to 1997 at the Oak Ridge Y-12 Plant due to waste generated from the West End Tank Farm sludge removal project. Cleanup/stabilization low-level mixed waste generation increased slightly from 1996 to 1997 at the Oak Ridge National Laboratory and the Weldon Spring Site Remedial Action Project.

Cleanup/stabilization hazardous waste generation increased slightly from 1996 to 1997 at the East Tennessee Technology Park, the Weldon Spring Site Remedial Action Project, the Oak Ridge Y-12 Plant, and the Oak Ridge National Laboratory. Cleanup/stabilization hazardous waste generation increased by 58 metric tons at the Portsmouth Gaseous Diffusion Plant in 1997 due to reclassification of waste.

Cleanup/stabilization sanitary waste generation increased 98 percent from 1996 to 1997 at the Oak Ridge Operations Office. The Oak Ridge Y-12 Plant was the largest contributor to this increase due to excavation of material from the Lower East Fork Poplar Creek.

Ohio Field Office
Calendar Year 1997 Achievements

Number of Pollution Prevention Projects:	**25**
Total Waste Reduced:	**1,800 cubic meters**
Reported Cost Savings:	**$350,000**

Category	Performance Measure	CY 99 Goal
Radioactive Waste	59% reduction	50%
Mixed Waste	233% increase	50%
Hazardous Waste	50% reduction	50%
Sanitary Waste	70% reduction	33%
Recycling	50% recycled	33%
Affirmative Procurement	85% purchased	100%

Figure 4.34
1997 Ohio Field Office Pollution Prevention Waste Reduction by Waste Category (in Cubic Meters)

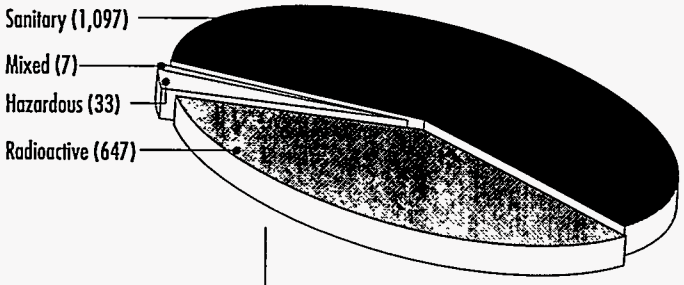


Table 4.11
1997 Ohio Field Office Pollution Prevention Accomplishments by Site

Site Name; Location	Number of Pollution Prevention Projects	Waste Reduction (Cubic Meters)	Reported Cost Savings (Thousands)
Battelle Columbus Laboratories; Columbus, OH	6	491	$280
Fernald Environmental Management Project; Fernald, OH	5	331	$2.6
West Valley Demonstration Project; West Valley, NY	14	962	$67

4.9 Ohio Field Office

The Ohio Field Office provides administrative, financial, and technical support to Area Offices, allowing the Area Offices to complete their environmental restoration, waste management, and economic development activities in support of DOE's Complex-Wide Waste Reduction Goals.

4.9.1 Pollution Prevention Performance

In 1997, approximately 1,800 cubic meters of waste were reduced at the Ohio Field Office's three reporting sites through implementation of pollution prevention projects (Figure 4.34). As a result, the Ohio Field Office reduced the cost of operations by approximately $350,000.

4.9.2 Pollution Prevention Accomplishments

The Ohio Field Office reported 25 pollution prevention projects in 1997, accounting for approximately two percent of the waste reduction within the DOE Complex (Table 4.11). Figure 4.35 compares waste reduction by pollution prevention activity category, and Figure 4.36 compares reported cost savings by pollution prevention activity category, for 1996 and 1997. Examples of pollution prevention projects completed in 1997 include:

- The Battelle Columbus Laboratories characterized, segregated, and radiologically free-released 257 cubic meters of soil, water, and trash for municipal disposal. This procedure reduced 266 cubic meters of low-level radioactive waste, for a reported cost savings of $177,000.

- The Fernald Environmental Management Project reutilized approximately 145 metric tons of solid, non-hazardous chemicals from an original inventory of approximately 227 metric tons. Several local non-profit organizations, schools, and manufacturers benefited from this effort.

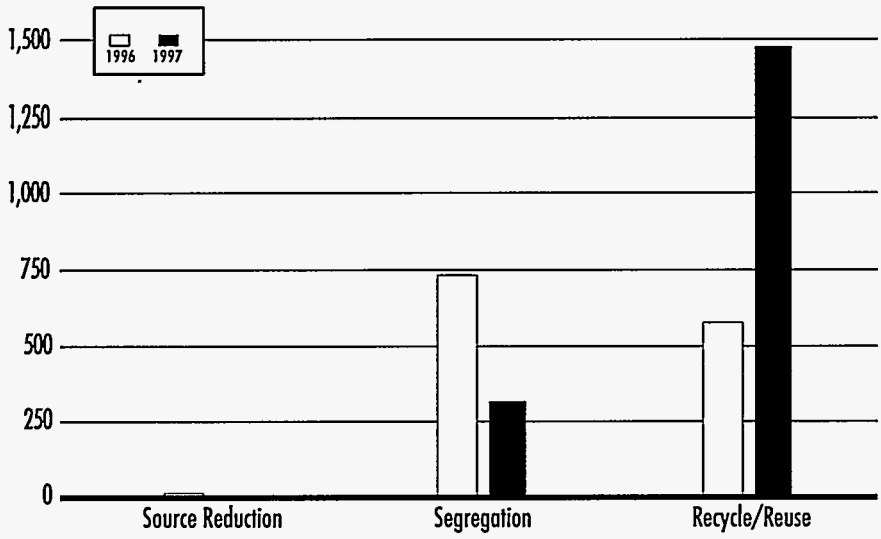


Figure 4.35
1996-1997 Ohio Field Office Waste Reduction by Pollution Prevention Activity Category (in Cubic Meters)

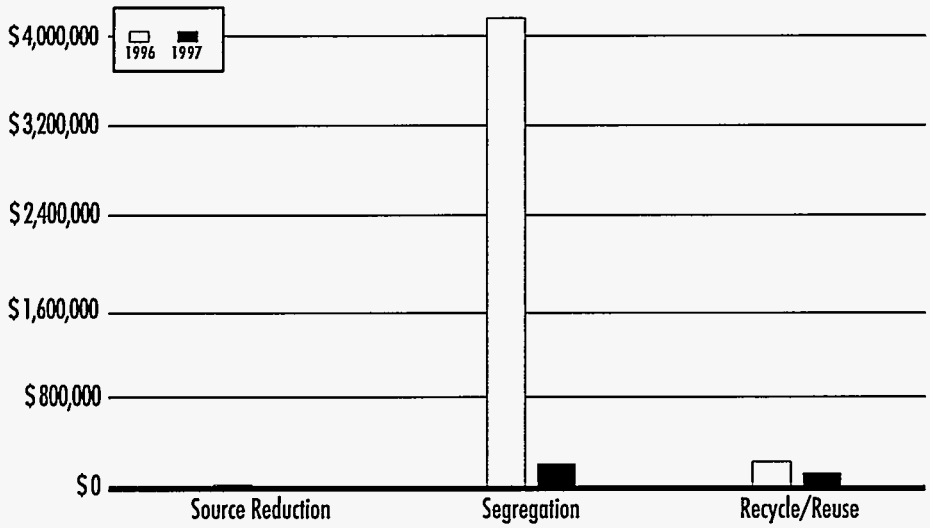


Figure 4.36
1996-1997 Ohio Field Office Reported Cost Savings by Pollution Prevention Activity Category (in Dollars)

- Approximately 17,000 aerosol cans were processed through the Aerosol Can Puncturing Facility at the **Fernald Environmental Management Project.** Six thousand aerosol cans were sent to a local recycling vendor, and the remainder were disposed. This resulted in a waste reduction of approximately 59 cubic meters of low-level radioactive waste.

- The **Fernald Environmental Management Project** processed copper motor windings for reuse through the Manufacturing Sciences Corporation in Oak Ridge, Tennessee, reducing 30 metric tons of hazardous waste.

4.9.3 Waste Generation

The total waste generated by Ohio Field Office reporting sites was approximately 50,600 cubic meters in 1997, accounting for approximately 10 percent of DOE's overall waste generation. Waste generated by the Ohio Field Office in 1997 is primarily attributed to Environmental Management. Low-level radioactive waste generation of approximately 47,800 cubic meters accounted for 94 percent of all waste generated by this field office, and 14 percent of all low-level radioactive waste generated by the DOE Complex (Figure 4.37).

Routine operations produced approximately 89 percent of the total low-level mixed waste generated by the Ohio Field Office. Approximately 91 percent of this waste was generated at the Fernald Environmental Management Project. Routine operations low-level radioactive waste generation increased 50 percent from 1996 to 1997 at the Fernald Environmental Management Project due to accelerated activities at the site. Routine operations low-level radioactive waste generation increased 103 percent from 1996 to 1997 at the West Valley Demonstration Project due to increased groundwater treatment activities, vitrification operations, laboratory analyses, and sampling operations associated with waste characterization and disposal.

Routine operations low-level mixed waste generation increased from 12 cubic meters to 128 cubic meters from 1996 to 1997 at the Fernald Environmental Management Project due to the Organic Extraction Project and the Waste Performance Objective Criteria Project. Routine operations low-level mixed waste generation increased slightly from 1996 to 1997 at the West Valley Demonstration Project.

Cleanup/stabilization low-level radioactive waste generation increased from 1,900 cubic meters to 33,600 cubic meters from 1996 to 1997 at the Mound Plant due to large soil excavations associated with two environmental restoration projects. Sanitary waste generated from cleanup/stabilization activities increased slightly from 1996 to 1997 at the Mound Plant.

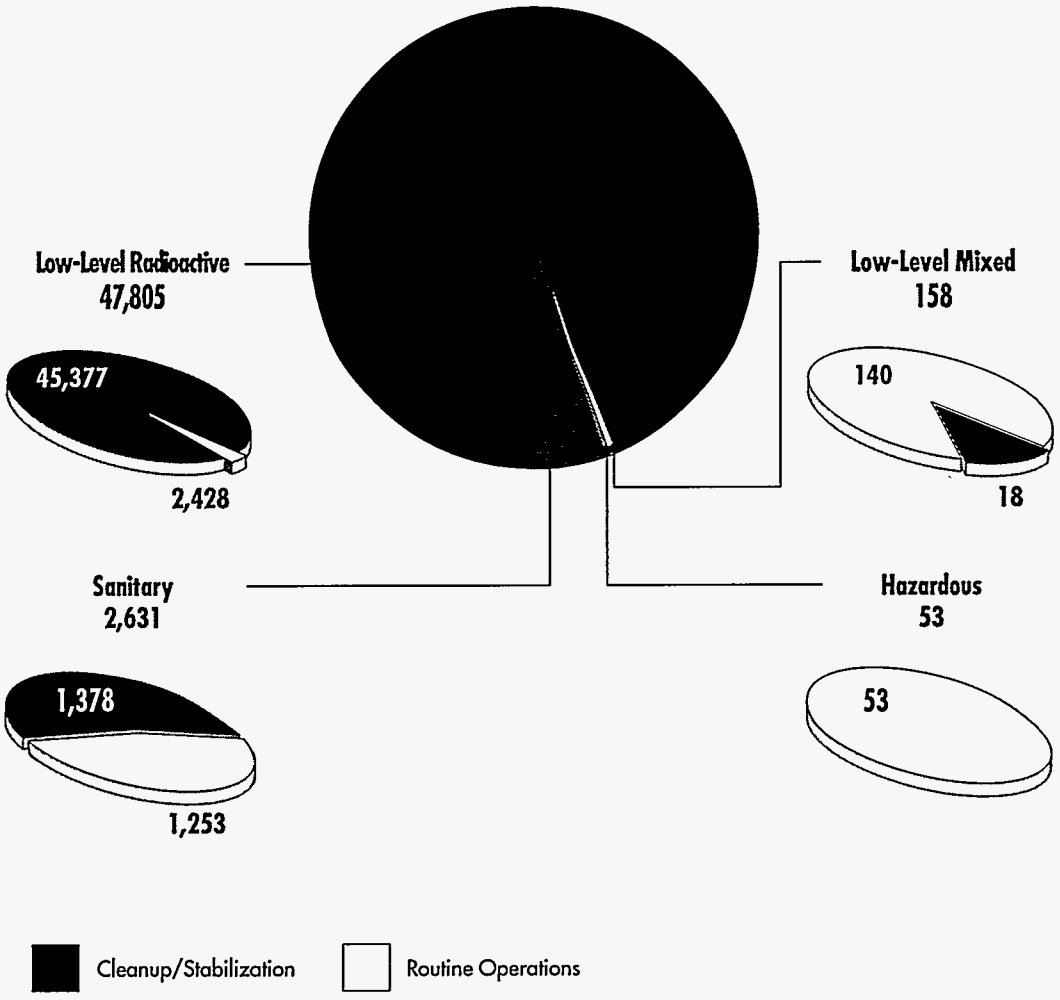


Figure 4.37
1997 Ohio Field Office Waste Generation by Waste Type (in Cubic Meters)

Richland Operations Office Calendar Year 1997 Achievements

Number of Pollution Prevention Projects: 123

Total Waste Reduced: 8,000 cubic meters

Reported Cost Savings: $6.2 million

Category	Performance Measure	CY 99 Goal
Radioactive Waste	78% reduction	50%
Mixed Waste	50% reduction	50%
Hazardous Waste	80% reduction	50%
Sanitary Waste	83% reduction	33%
Recycling	71% recycled	33%
Affirmative Procurement	82% purchased	100%

Figure 4.38 1997 Richland Operations Office Pollution Prevention Waste Reduction by Waste Category (in Cubic Meters)

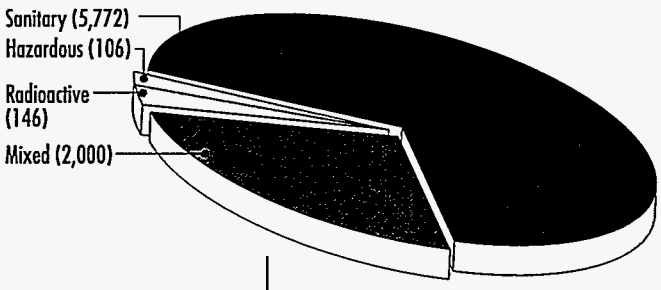


Table 4.12 1997 Richland Operations Office Pollution Prevention Accomplishments by Site

Site Name; Location	Number of Pollution Prevention Projects	Waste Reduction (Cubic Meters)	Reported Cost Savings (Thousands)
Hanford Site; Richland, WA	102	7,773	$5,685
Pacific Northwest National Laboratory; Richland, WA	21	250	$536

4.10 Richland Operations Office

The Richland Operations Office manages waste products by researching, developing, applying, and commercializing technologies in waste management and environmental restoration. Engineering, scientific, and research programs are conducted for environmental restoration, tank waste remediation, waste management, nuclear energy, and energy research.

4.10.1 Pollution Prevention Performance

In 1997, approximately 8,000 cubic meters of waste were reduced at the Richland Operations Office's two reporting sites through implementation of pollution prevention projects (Figure 4.38). As a result, the Richland Operations Office reduced the cost of operations by approximately $6.2 million.

4.10.2 Pollution Prevention Accomplishments

The Richland Operations Office reported 123 pollution prevention projects in 1997, accounting for approximately seven percent of the waste reduction within the DOE Complex (Table 4.12). Figure 4.39 compares waste reduction by pollution prevention activity category, and Figure 4.40 compares reported cost savings by pollution prevention activity category, for 1996 and 1997. Examples of pollution prevention projects completed in 1997 include:

- The Hanford Site cleaned approximately 131,235 square meters of radiological contaminated areas, which enabled easier access for personnel by reducing the personal protective equipment required for entry. Low-level radioactive waste was reduced by three cubic meters, for a reported cost savings of $125,000.

- The Pacific Northwest National Laboratory distilled and reused formalin, alcohol, xylene, and methanol, which reduced hazardous waste by approximately four metric tons, for a reported cost savings of $29,000.

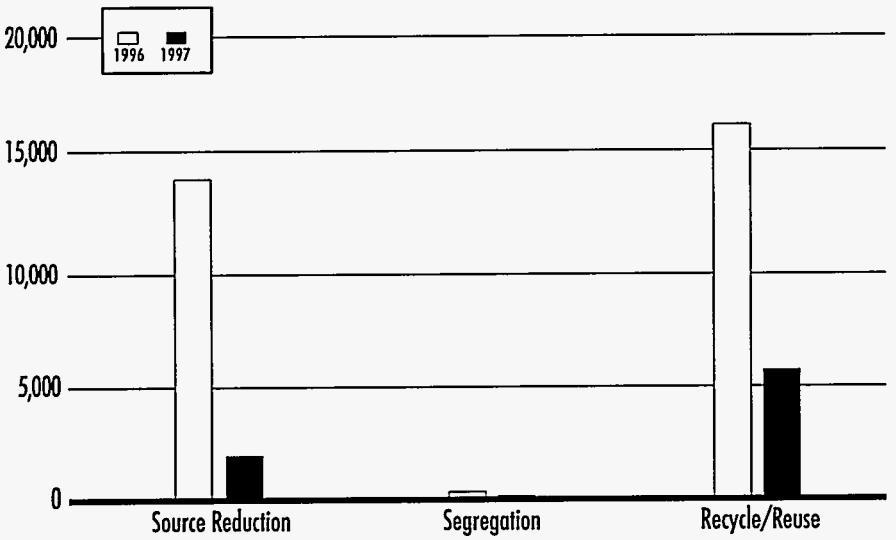


Figure 4.39
1996-1997 Richland Operations Office Waste Reduction by Pollution Prevention Activity Category (in Cubic Meters)

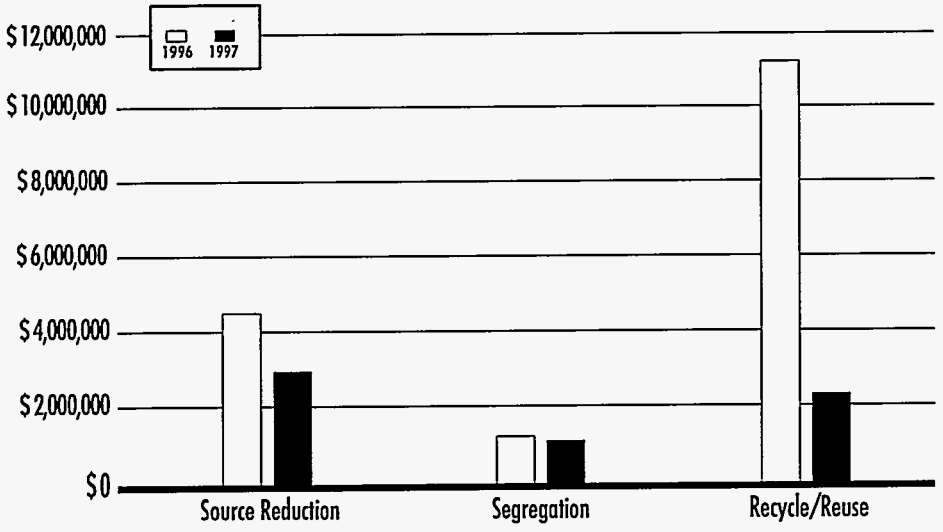


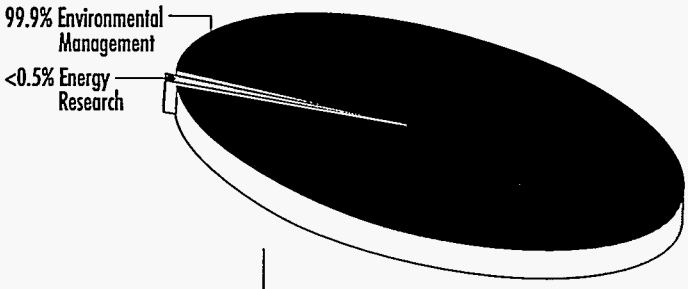
Figure 4.40
1996-1997 Richland Operations Office Reported Cost Savings by Pollution Prevention Activity Category (in Dollars)

- A closed-loop cooling system for cesium and strontium capsule storage pool cells began operation at the Hanford Site's Waste Encapsulation/Storage Facility. The system replaced the old single-pass system, and recirculates the cooling water to maximize cooling capacity. A low-level mixed waste reduction of 2.5 million cubic meters was achieved, for a reported cost savings of $6.8 million. [Note: This activity was not counted as a pollution prevention accomplishment in this Report, as wastewater projects are excluded from this reporting effort.]

4.10.3 Waste Generation

The total waste generated by Richland Operations Office reporting sites was approximately 266,600 cubic meters in 1997, accounting for approximately 53 percent of DOE's overall waste generation. Waste generated by the Richland Operations Office in 1997 is primarily attributed to Environmental Management (Figure 4.41). Low-level radioactive waste generation of approximately 263,400 cubic meters accounted for 99 percent of all waste generated by this operations office, and 77 percent of all low-level radioactive waste generated by the DOE Complex (Figure 4.42).

Figure 4.41
1997 Richland Operations Office Waste Generation by Program Secretarial Office



Routine operations produced approximately 47 percent of the total low-level mixed waste generated by the Richland Operations Office. Approximately 94 percent of this waste was generated at the Hanford Site. Routine operations transuranic waste generation increased slightly from 1996 to 1997 at the Richland Operations Office.

Cleanup/stabilization low-level radioactive waste generation increased 730 percent and low-level mixed radioactive waste generation increased 52 percent at the Hanford Site from 1996 to 1997, due to increased environmental restoration and disposal activities, respectively.

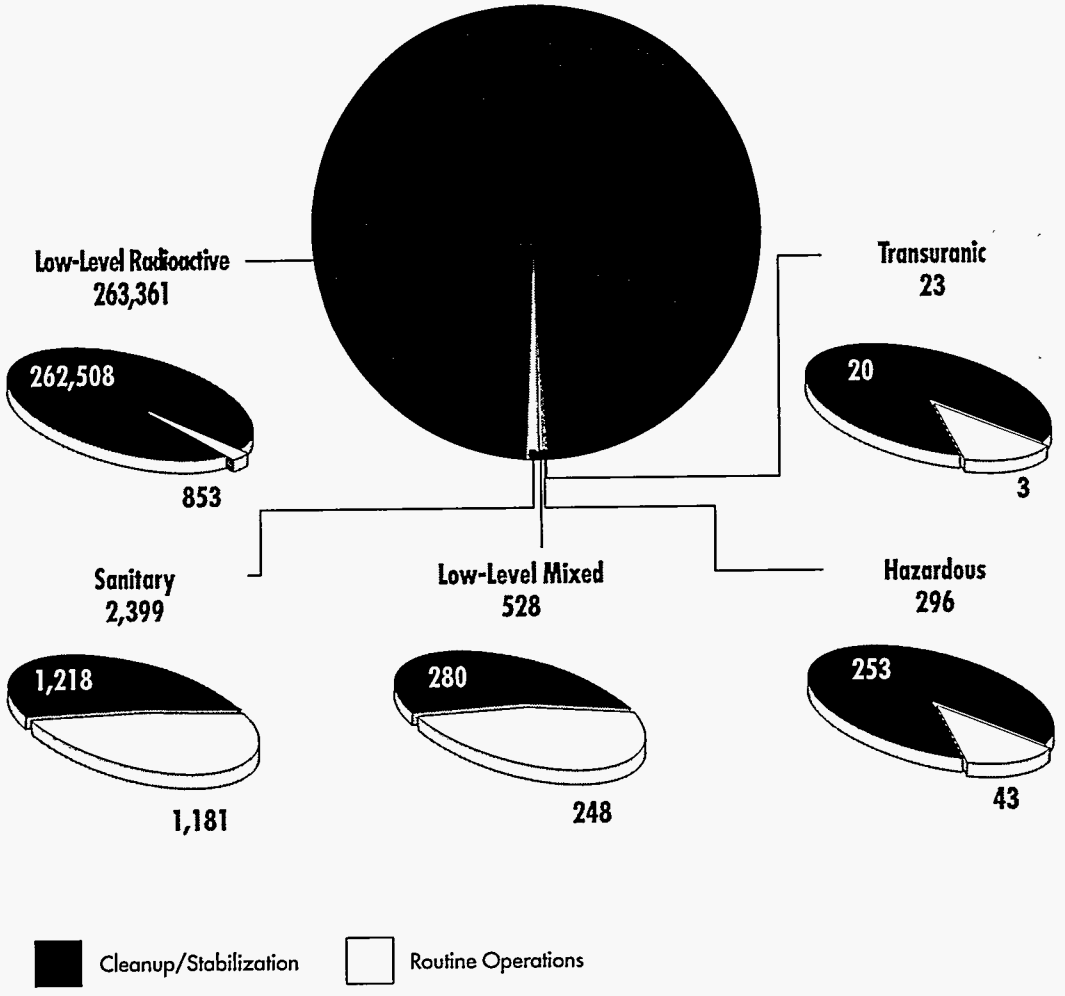


Figure 4.42
1997 Richland Operations Office Waste Generation by Waste Type (in Cubic Meters)

Rocky Flats Field Office
Calendar Year 1997 Achievements

Number of Pollution Prevention Projects:	**28**
Total Waste Reduced:	**2,000 cubic meters**
Reported Cost Savings:	**$138,000**

Category	Performance Measure	CY 99 Goal
Radioactive Waste	59% reduction	50%
Mixed Waste	93% reduction	50%
Hazardous Waste	62% reduction	50%
Sanitary Waste	7% increase	33%
Recycling	32% recycled	33%
Affirmative Procurement	81% purchased	100%

4.11 Rocky Flats Field Office

The Rocky Flats Field Office manages wastes and materials, environmental cleanup operations, and conversion of the Rocky Flats Environmental Technology Site to beneficial reuse.

4.11.1 Pollution Prevention Performance

In 1997, approximately 2,000 cubic meters of waste were reduced at the Rocky Flats Field Office's one reporting site through implementation of pollution prevention projects (Figure 4.43). As a result, the Rocky Flats Field Office reduced the cost of operations by approximately $138,000.

4.11.2 Pollution Prevention Accomplishments

The Rocky Flats Field Office reported 28 pollution prevention projects in 1997, accounting for two percent of the waste reduction within the DOE Complex (Table 4.13). Figure 4.44 compares waste reduction by pollution prevention activity category, and Figure 4.45 compares reported cost savings by pollution prevention activity category, for 1996 and 1997. Examples of pollution prevention projects completed in 1997 include:

- The Rocky Flats Environmental Technology Site recycling programs for cardboard, food waste, furniture, glass, bicycles, paper, food containers, plastic, tires, toner cartridges, engine coolant, and wood reduced 473 metric tons of sanitary waste, for a reported cost savings of $28,000.

- The Rocky Flats Environmental Technology Site recycled 1,198 metric tons of sanitary scrap metal and 120 cubic meters of low-level radioactive scrap metal, for a reported cost savings of $70,200 and $15,000, respectively.

Figure 4.43
1997 Rocky Flats Field Office Pollution Prevention Waste Reduction by Waste Category (in Cubic Meters)

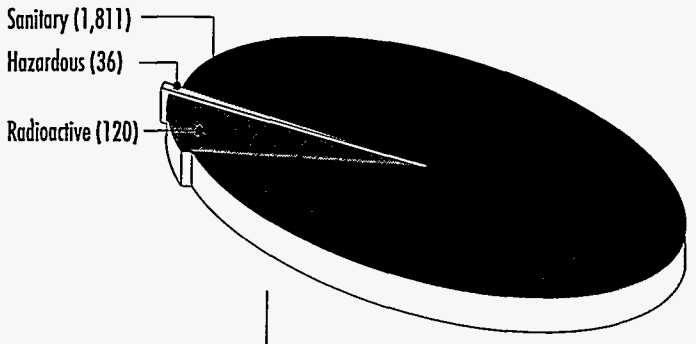


Table 4.13
1997 Rocky Flats Field Office Pollution Prevention Accomplishments by Site

Site Name; Location	Number of Pollution Prevention Projects	Waste Reduction (Cubic Meters)	Reported Cost Savings (Thousands)
Rocky Flats Environmental Technology Site; Golden, CO	28	1,967	$138

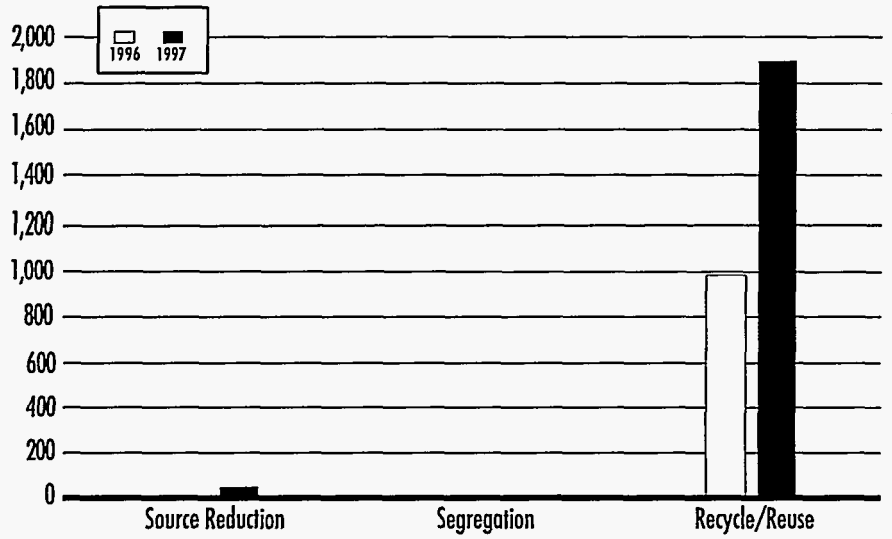


Figure 4.44
1996-1997 Rocky Flats Field Office Waste Reduction by Pollution Prevention Activity Category (in Cubic Meters)

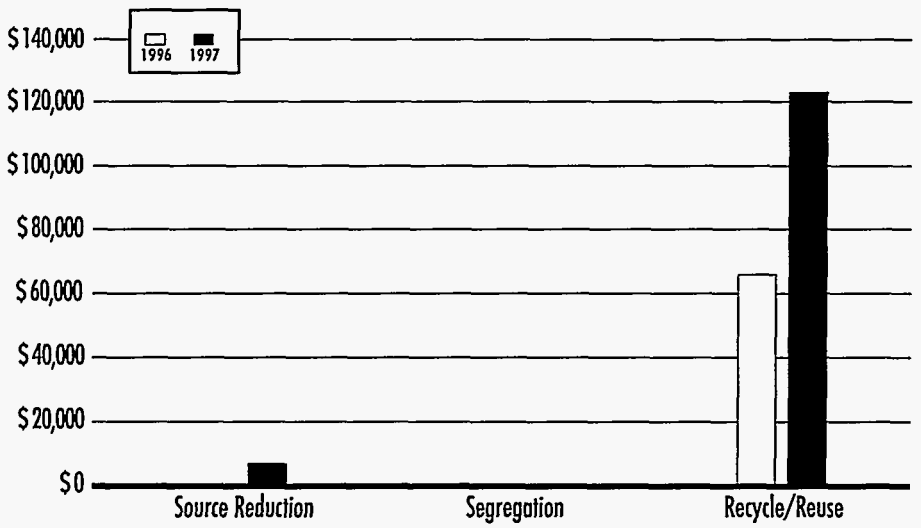
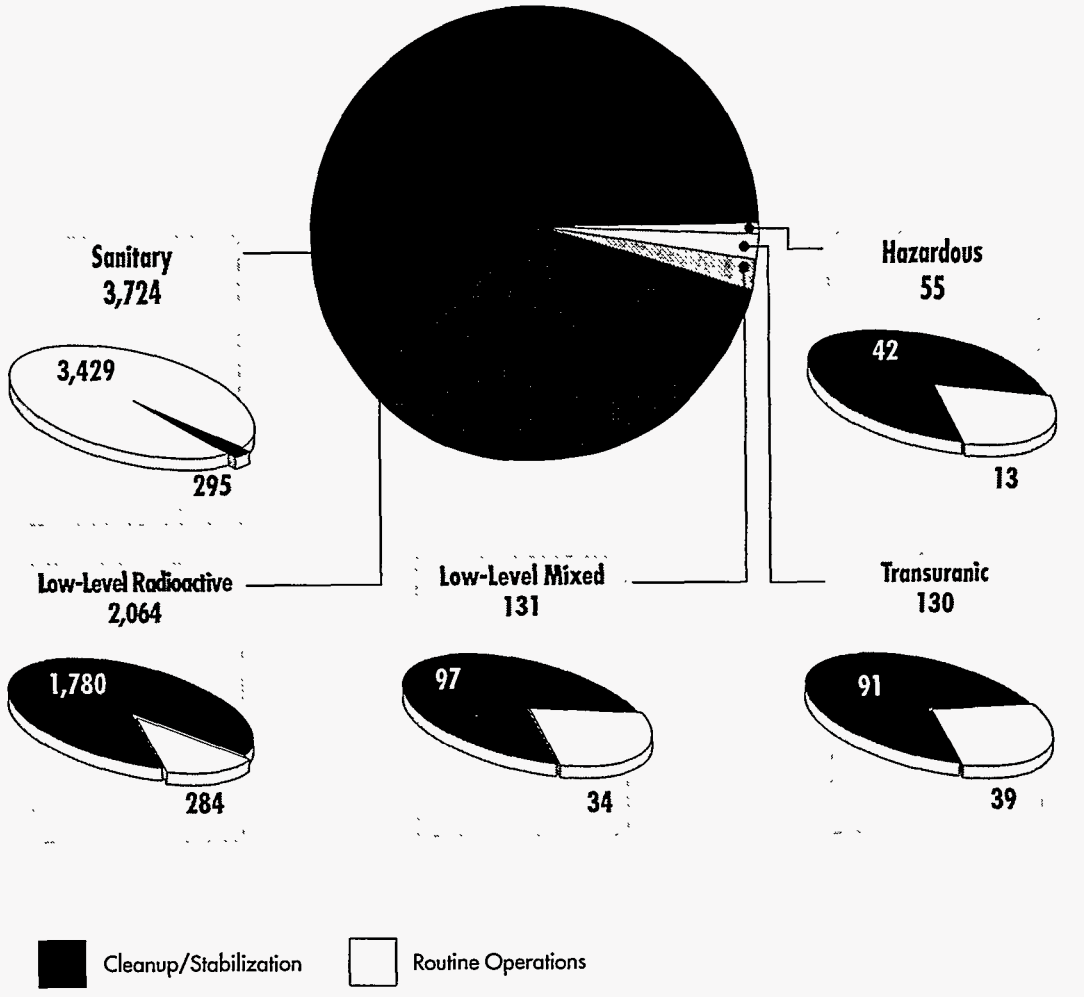


Figure 4.45
1996-1997 Rocky Flats Field Office Reported Cost Savings by Pollution Prevention Activity Category (in Dollars)

4.11.3 Waste Generation

The total waste generated by the Rocky Flats Field Office's one reporting site was approximately 6,100 cubic meters in 1997, accounting for approximately one percent of DOE's overall waste generation. Waste generated by the Rocky Flats Field Office in 1997 is attributed to Environmental Management. Sanitary waste generation of approximately 3,700 metric tons accounted for 61 percent of all waste generated by this field office, and three percent of all sanitary waste generated by the DOE Complex (Figure 4.46).

Figure 4.46
1997 Rocky Flats Field Office Waste Generation by Waste Type (in Cubic Meters)



Routine operations produced 92 percent of the total sanitary waste generated by the Rocky Flats Field Office. Routine operations transuranic waste generation increased 30 percent from 1996 to 1997 due to waste containers that could not be identified as containing either routine operations or cleanup/stabilization waste, but were accounted for in the routine operations waste generation total.

Cleanup/stabilization transuranic waste generation increased 250 percent and low-level radioactive waste generation increased 471 percent from 1996 to 1997 due to environmental restoration and decommissioning activities. Cleanup/stabilization hazardous waste generation increased slightly from 1996 to 1997 due to environmental restoration and decommissioning activities. Cleanup/stabilization sanitary waste generation increased from 25 metric tons to 295 metric tons from 1996 to 1997 due to an increase in the number of demolition projects.

4.12 Savannah River Operations Office

The Savannah River Operations Office serves the national interest by providing leadership, direction, and oversight to ensure that Savannah River Site programs, operations, and resources are managed in an open, safe, environmentally sound, and cost-effective manner. The Office's previous mission was to produce nuclear materials for national defense.

4.12.1 Pollution Prevention Performance

In 1997, approximately 18,200 cubic meters of waste were reduced at the Savannah River Operations Office's one reporting site through implementation of pollution prevention projects (Figure 4.47). As a result, the Savannah River Operations Office reduced the cost of operations by $18.5 million.

4.12.2 Pollution Prevention Accomplishments

The Savannah River Operations Office reported 121 pollution prevention projects in 1997, accounting for 17 percent of the waste reduction within the DOE Complex (Table 4.14). Figure 4.48 compares waste reduction by pollution prevention activity category, and Figure 4.49 compares reported cost savings by pollution prevention activity category, for 1996 and 1997. Examples of pollution prevention projects completed in 1997 include:

- The Savannah River Site implemented a new method to obtain tank samples by placing a glovebag over the tank riser. The waste generated by tank sampling would normally fill one B-25 box (approximately three cubic meters). The new method reduced 175 cubic meters of low-level radioactive waste, for a reported cost savings of $285,000.

Savannah River Operations Office Calendar Year 1997 Achievements

Number of Pollution Prevention Projects: 121

Total Waste Reduced: 18,200 cubic meters

Reported Cost Savings: $18.5 million

Category	Performance Measure	CY 99 Goal
Radioactive Waste	57% reduction	50%
Mixed Waste	115% increase	50%
Hazardous Waste	15% reduction	50%
Sanitary Waste	58% reduction	33%
Recycling	78% recycled	33%
Affirmative Procurement	52% purchased	100%

Figure 4.47 1997 Savannah River Operations Office Pollution Prevention Waste Reduction by Waste Category (in Cubic Meters)

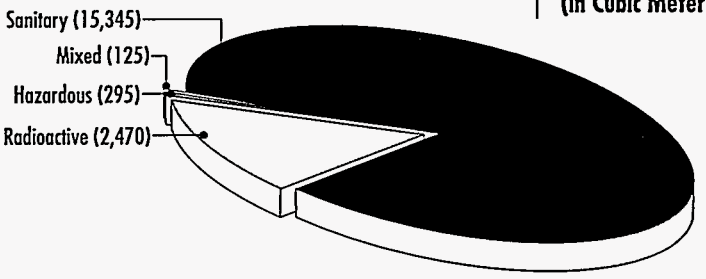


Table 4.14 1997 Savannah River Operations Office Pollution Prevention Accomplishments by Site

Site Name; Location	Number of Pollution Prevention Projects	Waste Reduction (Cubic Meters)	Reported Cost Savings (Thousands)
Savannah River Site; Aiken, SC	121	18,235	$18,486

Figure 4.48
1996-1997
Savannah River
Operations Office
Waste Reduction by
Pollution Prevention
Activity Category
(in Cubic Meters)

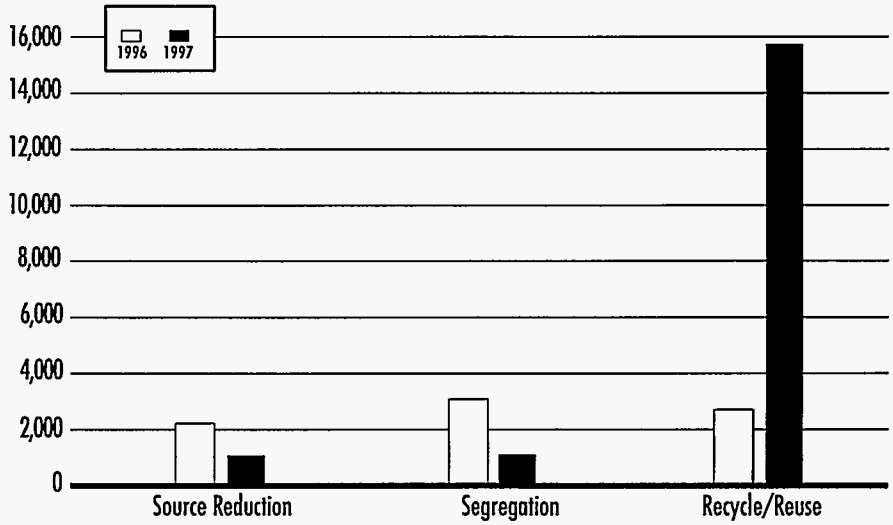
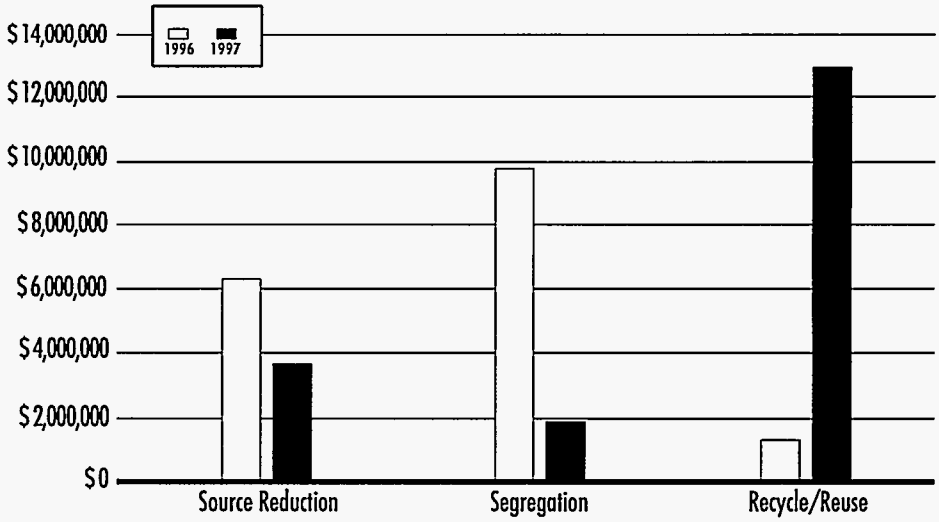


Figure 4.49
1996-1997
Savannah River
Operations Office
Reported Cost Savings
by Pollution Prevention
Activity Category
(in Dollars)



- The **Savannah River Site** developed an Investigation Derived Wastes Management Plan, which was negotiated with the South Carolina Department of Health and Environmental Control, to set de minimis levels for contaminants that could remain on an Environmental Restoration site. This plan reduced hazardous waste by 2,360 metric tons, for a reported cost savings of $314,000.

- The **Savannah River Site** installed a filter press in-line with the existing filter feed system to address the problem of elevated solid levels in the system's quench recirculation and filter feed tanks. The filter press was able to further concentrate solids from the quench water, and created a filter cake which may be deposited in a drum for disposal. The "clean" filtered water is then returned to the quench

recirculation tank. This process minimized the solids content of the quench recirculation filter feed tanks, and reduced the frequency of blowdowns, reducing 109 cubic meters of low-level mixed waste, for a reported cost savings of approximately $1.4 million.

- The **Savannah River Site** recycled approximately 13,063 metric tons of coal from runoff basins. The coal was diverted from the sanitary wastestream and used as road base, for a reported cost savings of $11 million.

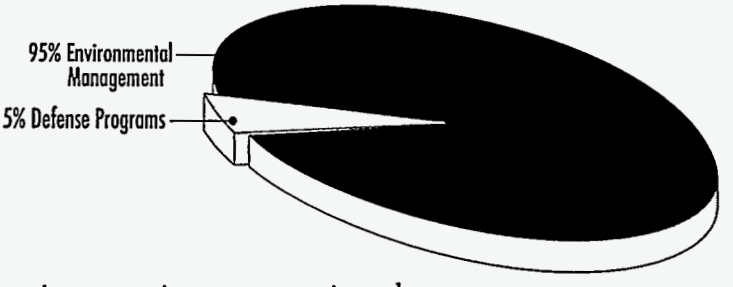
- At the **Savannah River Site** D-Area Oil Seepage Basin, an interim action was implemented to excavate soil and hazardous debris from a hazardous waste unit. It was estimated that as many as 100 drums and 481 cubic meters of debris were buried at this unit. Through careful excavation and rigorous segregation practices, this project reduced 92 metric tons of hazardous waste, for a reported cost savings of $380,920.

- A competitive "best value" contract for offsite decontamination, recycling, and reuse of equipment was initiated by the **Savannah River Site.** Waste minimization incentives were provided as part of the contract to limit the volume of secondary waste generated. Low-level radioactive waste was reduced by 368 cubic meters, for a reported cost savings of $297,724.

4.12.3 Waste Generation

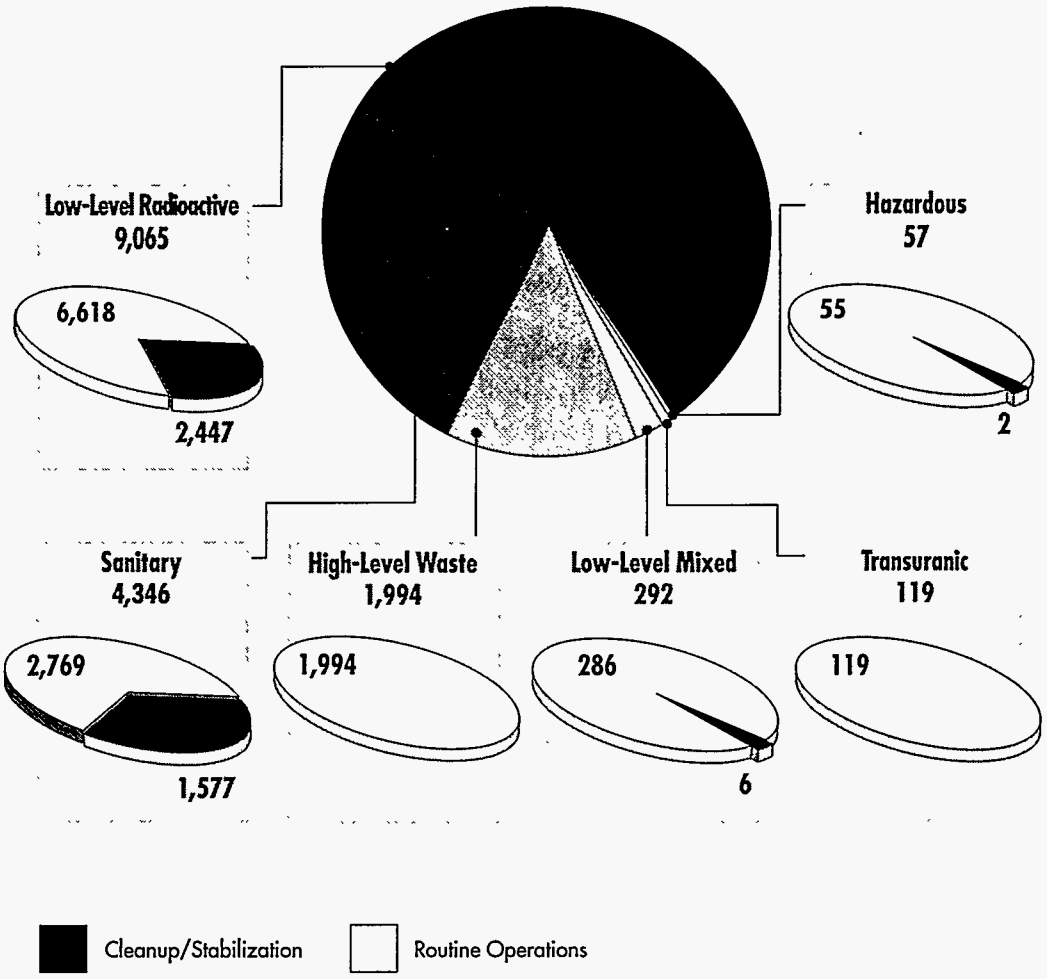
The total waste generated by the Savannah River Operations Office's one reporting site was approximately 15,900 cubic meters in 1997, accounting for approximately three percent of DOE's overall waste generation. Waste generated by the Savannah River Operations Office in 1997 is primarily attributed to Environmental Management (Figure 4.50). Routine operations produced 100 percent of the total high-level waste generated by the Savannah River Operations Office. The Savannah River Site was the only site in the DOE Complex that generated high-level waste in 1997 (Figure 4.51). In addition, Savannah River Site routine operations produced the largest amount of transuranic and low-level radioactive waste in 1997, accounting for 45 percent and 40 percent, respectively, of the total routine operations transuranic and low-level radioactive waste generated by the DOE Complex.

Figure 4.50
1997 Savannah River Operations Office Waste Generation by Program Secretarial Office



Routine operations low-level radioactive waste generation increased 15 percent from 1996 to 1997 at the Savannah River Site due to start-up activities at the FB-Line, the Defense Waste Processing Facility, and the Consolidated Incinerator Facility. The shutdown of the "Green is Clean" program, disposal of contaminated railroad cross ties, and Contaminated Area Rollback Implementation also contributed to the increase in routine operations low-level radioactive waste generation.

Figure 4.51
1997 Savannah River Operations Office Waste Generation by Waste Type (in Cubic Meters)



4.13 Headquarters

The DOE sites reporting to Headquarters include the Federal Energy Technology Center (Pittsburgh) and the Western Area Power Administration. The primary missions of these sites are research and development and power marketing, respectively.

4.13.1 Pollution Prevention Performance

In 1997, approximately 4,100 cubic meters of waste were reduced at Headquarters' one reporting site through implementation of pollution prevention projects (Figure 4.52). As a result, Headquarters reduced the cost of operations by approximately $72,400.

4.13.2 Pollution Prevention Accomplishments

Headquarters sites reported 25 pollution prevention projects in 1997, accounting for four percent of the waste reduction within the DOE Complex (Table 4.15). Figure 4.53 compares waste reduction by pollution prevention activity category, and Figure 4.54 compares reported cost savings by pollution prevention activity category, for 1996 and 1997. Examples of pollution prevention projects completed in 1997 include:

- The Western Area Power Administration's used transmission line poles were donated to various individuals and organizations for reuse. Information fact sheets explaining the proper uses of the transmission line poles were provided to the recipients. This project reduced sanitary waste by 92 metric tons, for a reported cost savings of $3,800.

- The Western Area Power Administration salvaged steel, copper, aluminum, used transformers, and circuit breakers for recycling during transmission line and substation renovations. Some steel was also sold

Headquarters
Calendar Year 1997 Achievements

Number of Pollution Prevention Projects: 25
Total Waste Reduced: 4,100 cubic meters
Reported Cost Savings: $72,400

Category	Performance Measure	CY 99 Goal
Hazardous Waste	73% reduction	50%
Sanitary Waste	80% reduction	33%
Recycling	73% recycled	33%
Affirmative Procurement	16% purchased	100%

Figure 4.52
1997 Headquarters Pollution Prevention Waste Reduction by Waste Category (in Cubic Meters)

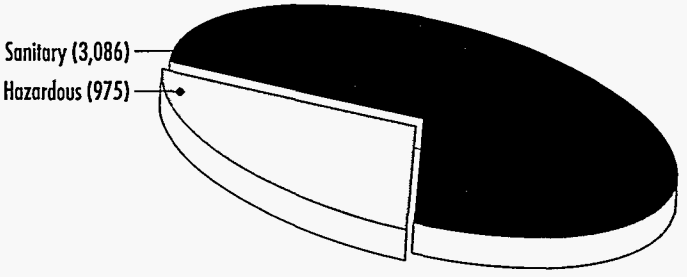


Table 4.15
1997 Headquarters Pollution Prevention Accomplishments by Site

Site Name; Location	Number of Pollution Prevention Projects	Waste Reduction (Cubic Meters)	Reported Cost Savings (Thousands)
Western Area Power Administration; Golden, CO	25	4,061	$72

Figure 4.53
1996-1997 Headquarters Waste Reduction by Pollution Prevention Activity Category (in Cubic Meters)

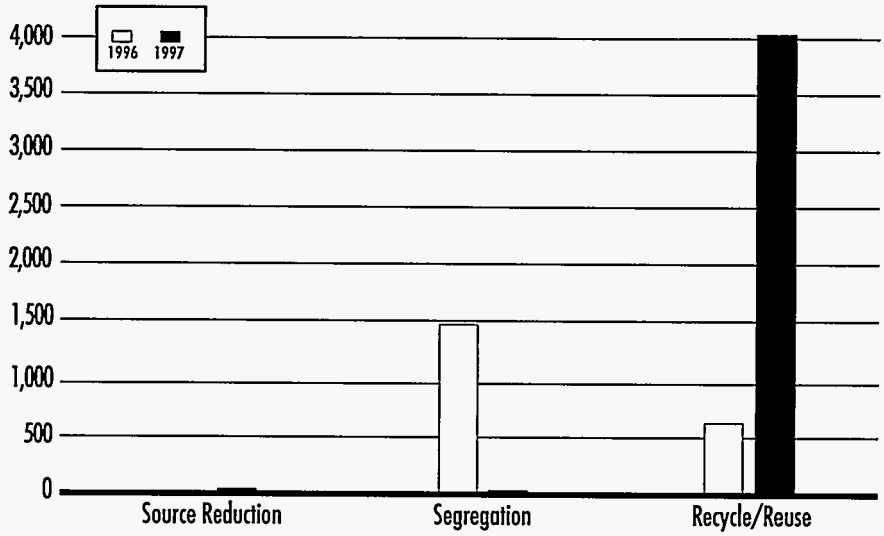
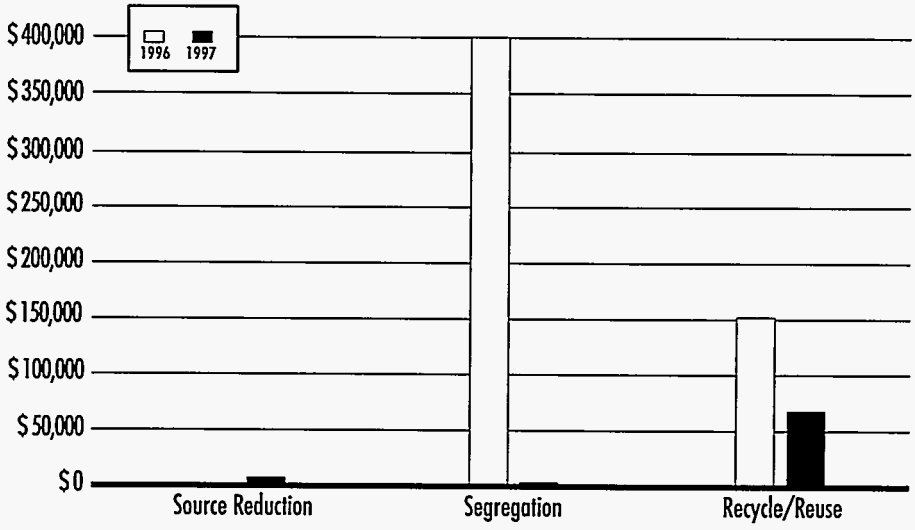


Figure 4.54
1996-1997 Headquarters Reported Cost Savings by Pollution Prevention Activity Category (in Dollars)



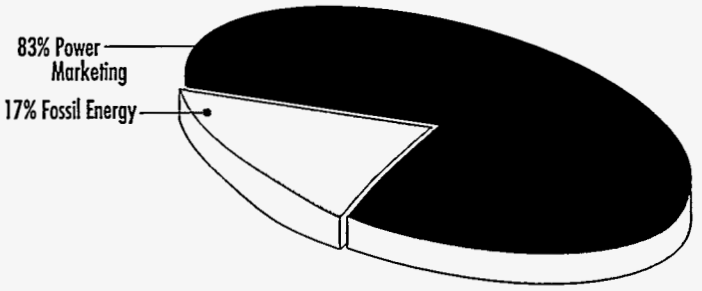
for recycling. This salvage activity reduced sanitary waste by 901 metric tons, for a reported cost savings of $57,000.

- The **Western Area Power Administration** recycled paper, aluminum cans, ceramic glass insulators, styrofoam "peanuts," toner cartridges, tires, and cardboard, reducing approximately 86 metric tons of sanitary waste, for a reported cost savings of $2,625.

4.13.3 Waste Generation

The total waste generated by Headquarters' one reporting site was approximately 1,800 metric tons in 1997, accounting for approximately one percent of DOE's overall waste generation. Waste generated by Headquarters in 1997 is primarily attributed to the Power Marketing Administration (Figure 4.55). Sanitary waste generation of approximately 1,600 metric tons accounted for 90 percent of all waste generated by Headquarters, and one percent of all sanitary waste generated by the DOE Complex (Figure 4.56).

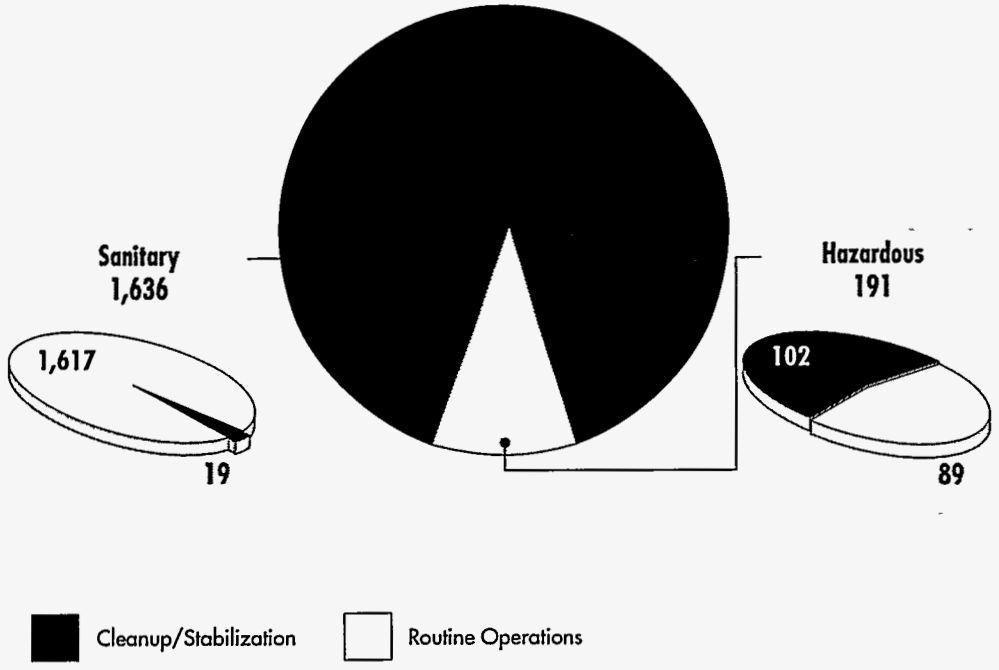
Figure 4.55
1997 Headquarters Waste Generation by Program Secretarial Office



Routine operations produced approximately 47 percent of the total hazardous waste generated by Headquarters. Approximately 64 percent of this waste was generated at the Western Area Power Administration. Routine operations hazardous waste generation increased 33 percent from 1996 to 1997 at the Western Area Power Administration due to remediation activities, including replacing polychlorinated biphenyl-contaminated electrical equipment.

Cleanup/stabilization hazardous waste generation increased 240 percent from 1996 to 1997 at the Western Area Power Administration due to removal of oil-contaminated soil and cleanup of leaks from aboveground storage tanks.

Figure 4.56
1997 Headquarters Waste Generation by Waste Type (in Cubic Meters)



Appendix A

Data Tables

This Appendix presents Calendar Year 1997 pollution prevention accomplishment and waste generation data for the DOE Complex.

Table A-1
Waste Reduction from Pollution Prevention Projects in 1997, for All Waste Types, by Operations/Field Office* (in Cubic Meters)

Operations/ Field Office	High-Level	Transuranic	Low-Level Radioactive	Low-Level Mixed	Hazardous	Sanitary	TOTAL REPORTED WASTE REDUCTION
Albuquerque		22	2,380	63	3,926	18,002	**24,393**
Chicago			426	15	1,403	11,257	**13,101**
Idaho			1	19	152	2,892	**3,064**
Nevada			197		86	579	**863**
Oakland			4,203	8	25	187	**4,422**
Oak Ridge			9,627	1,522	414	18,145	**29,708**
Ohio			647	7	33	1,097	**1,784**
Richland	7		139	2,000	106	5,772	**8,023**
Rocky Flats			120		36	1,811	**1,967**
Savannah River		31	2,438	125	295	15,345	**18,235**
Headquarters					975	3,086	**4,061**
TOTAL	**7**	**53**	**20,177**	**3,759**	**7,451**	**78,173**	**109,620**

* Numbers have been rounded to the nearest cubic meter.

Table A-2
Reported Cost Savings from Pollution Prevention Projects in 1997, for All Waste Types, by Operations/Field Office*

Operations/ Field Office	High-Level	Transuranic	Low-Level Radioactive	Low-Level Mixed	Hazardous	Sanitary	TOTAL REPORTED COST SAVINGS
Albuquerque		$1,125,788	$2,956,674	$4,792,152	$25,699,333	$1,564,159	**$36,138,105**
Chicago			$764,876	$160,437	$325,838	$421,048	**$1,672,199**
Idaho			$38,700	$1,239,970	$2,638,600	$2,071,400	**$5,988,670**
Nevada			$3,000,000		$113,430	$78,355	**$3,191,785**
Oakland			$14,456,200	$53,900	$117,000	$117,250	**$14,744,350**
Oak Ridge			$2,784,580	$8,049,294	$778,198	$2,843,910	**$14,455,980**
Ohio			$213,250	$20,000	$49,000	$67,425	**$349,675**
Richland	$2,216,667		$557,611	$1,276,265	$647,170	$1,524,060	**$6,221,773**
Rocky Flats			$15,000		$16,608	$106,089	**$137,697**
Savannah River		$370,565	$3,386,581	$1,614,563	$1,255,203	$11,858,987	**$18,485,899**
Headquarters					$3,200	$69,175	**$72,375**
TOTAL	**$2,216,667**	**$1,496,353**	**$28,173,472**	**$17,206,580**	**$31,643,579**	**$20,721,857**	**$101,458,508**

* Numbers have been rounded to the nearest dollar.

Table A-3
High-Level Waste Generation in 1997 by Site (in Cubic Meters)

Site	Routine Operations	Cleanup/Stabilization	TOTAL
Savannah River Site	1,994	0	1,994
TOTAL	**1,994**	**0**	**1,994**

Table A-4
Transuranic Waste Generation in 1997 by Site (in Cubic Meters)

Site	Routine Operations	Cleanup/Stabilization	TOTAL
Rocky Flats Environmental Technology Site	39	91	130
Savannah River Site	119	0	119
Los Alamos National Laboratory	94	8	102
Hanford Site	0	18	18
Oak Ridge National Laboratory	6	<0.5	6
Pacific Northwest National Laboratory	3	2	5
Argonne National Laboratory – East	2	<0.5	2
Argonne National Laboratory – West	2	0	2
Lawrence Livermore National Laboratory	2	0	2
Inhalation Toxicology Laboratory	<0.5	0	<0.5
Fermi National Accelerator Laboratory	0	0	0
TOTAL	**267**	**119**	**386**

Table A-5
Low-Level Radioactive Waste Generation in 1997 by Site (in Cubic Meters)

Site	Routine Operations	Cleanup/Stabilization	TOTAL
Hanford Site	727	262,433	263,160
Mound Plant	552	33,633	34,185
Fernald Environmental Management Project	1,572	9,491	11,063
Savannah River Site	6,618	2,447	9,065
Nevada Test Site	0	4,919	4,919
Idaho National Engineering and Environmental Laboratory	2,196	855	3,051
Los Alamos National Laboratory	532	2,314	2,846
Rocky Flats Environmental Technology Site	284	1,780	2,064
Energy Technology Engineering Center	0	1,679	1,679
Oak Ridge Y-12 Plant	1,647	0	1,647
RMI Environmental Services	0	1,459	1,459
Paducah Gaseous Diffusion Plant	0	1,050	1,050
Oak Ridge National Laboratory	652	390	1,042
Pantex Plant	66	969	1,035
Portsmouth Gaseous Diffusion Plant	0	887	887
Brookhaven National Laboratory	487	358	845
Battelle Columbus Laboratories	0	782	782
East Tennessee Technology Park	132	329	461
Argonne National Laboratory – East	188	198	386
West Valley Demonstration Project	303	12	315
Sandia National Laboratories/New Mexico	12	267	279
Lawrence Livermore National Laboratory	61	194	255
Argonne National Laboratory – West	221	0	221
Pacific Northwest National Laboratory	127	75	202
Inhalation Toxicology Laboratory	50	29	79
Princeton Plasma Physics Laboratory	55	0	55
Fermi National Accelerator Laboratory	28	0	28
Lawrence Berkeley National Laboratory	21	7	28
Stanford Linear Accelerator Center	0	17	17
Sandia National Laboratories/California	2	0	2
TOTAL	**16,533**	**326,574**	**343,107**

Table A-6
Low-Level Mixed* Waste Generation in 1997 by Site (in Cubic Meters)

Site	Routine Operations	Cleanup/Stabilization	TOTAL
Oak Ridge Y-12 Plant	322	561	**883**
Hanford Site	233	276	**509**
Argonne National Laboratory – West	5	337	**342**
Portsmouth Gaseous Diffusion Plant	0	317	**317**
Savannah River Site	286	6	**292**
East Tennessee Technology Park	216	26	**242**
Paducah Gaseous Diffusion Plant	0	209	**209**
Los Alamos National Laboratory	6	149	**155**
Fernald Environmental Management Project	128	6	**134**
Rocky Flats Environmental Technology Site	34	97	**131**
Idaho National Engineering and Environmental Laboratory	48	78	**126**
Lawrence Livermore National Laboratory	19	26	**45**
Weldon Spring Site Remedial Action Project	0	28	**28**
Oak Ridge National Laboratory	7	20	**27**
Argonne National Laboratory – East	25	0	**25**
Pantex Plant	14	6	**20**
Pacific Northwest National Laboratory	15	4	**19**
West Valley Demonstration Project	11	6	**17**
RMI Environmental Services	0	6	**6**
Brookhaven National Laboratory	2	2	**4**
Sandia National Laboratories/New Mexico	1	3	**4**
Nevada Test Site	0	3	**3**
Energy Technology Engineering Center	0	2	**2**
Lawrence Berkeley National Laboratory	1	<0.5	**1**
TOTAL	**1,373**	**2,168**	**3,541**

* Includes low-level mixed and Toxic Substances Control Act mixed waste.

Table A-7
Hazardous* Waste Generation in 1997 by Site (in Metric Tons)

Site	Routine Operations	Cleanup/Stabilization	TOTAL
Los Alamos National Laboratory	122	3,257	3,379
Argonne National Laboratory – East	1,247	1,799	3,046
Brookhaven National Laboratory	315	2,587	2,902
Lawrence Livermore National Laboratory	218	1,028	1,246
Fermi National Accelerator Laboratory	38	922	960
Sandia National Laboratories/New Mexico	100	633	733
Stanford Linear Accelerator Center	57	549	606
Kansas City Plant	113	478	591
Pantex Plant	128	455	583
Argonne National Laboratory – West	5	300	305
Hanford Site	12	253	265
Western Area Power Administration	57	102	159
Sandia National Laboratories/California	20	92	112
Idaho National Engineering and Environmental Laboratory	68	34	102
Lawrence Berkeley National Laboratory	45	49	94
Waste Isolation Pilot Plant	84	0	84
Oak Ridge National Laboratory	26	37	63
Portsmouth Gaseous Diffusion Plant	0	58	58
Savannah River Site	55	2	57
Rocky Flats Environmental Technology Site	13	42	55
Mound Plant	39	0	39
Energy Technology Engineering Center	1	35	36
Federal Energy Technology Center (Pittsburgh)	32	0	32
Pacific Northwest National Laboratory	31	0	31
Oak Ridge Y-12 Plant	9	20	29
Nevada Test Site	9	11	20
East Tennessee Technology Park	12	1	13
Fernald Environmental Management Project	8	0	8
West Valley Demonstration Project	6	0	6
Inhalation Toxicology Laboratory	4	<0.5	4
Princeton Plasma Physics Laboratory	4	0	4
Weldon Spring Site Remedial Action Project	0	3	3
North Las Vegas Facility	2	0	2
TOTAL	**2,880**	**12,747**	**15,627**

* Includes Resource Conservation and Recovery Act regulated, State regulated, and Toxic Substances Control Act regulated hazardous waste.

Table A-8
Sanitary Waste Generation in 1997 by Site (in Metric Tons)

Site	Routine Operations	Cleanup/Stabilization	TOTAL
Oak Ridge Y-12 Plant	20,490	21,392	**41,882**
Idaho National Engineering and Environmental Laboratory	2,768	37,446	**40,214**
Sandia National Laboratories/New Mexico	3,511	5,316	**8,827**
Argonne National Laboratory – East	984	5,270	**6,254**
Savannah River Site	2,769	1,577	**4,346**
Rocky Flats Environmental Technology Site	3,429	295	**3,724**
Kansas City Plant	3,702	0	**3,702**
Lawrence Livermore National Laboratory	1,812	1,745	**3,557**
Paducah Gaseous Diffusion Plant	6	2,493	**2,499**
Hanford Site	1,153	1,218	**2,371**
Lawrence Berkeley National Laboratory	999	1,271	**2,270**
Los Alamos National Laboratory	2,239	0	**2,239**
Mound Plant	540	1,378	**1,918**
Oak Ridge National Laboratory	1,060	575	**1,635**
Western Area Power Administration	1,540	19	**1,559**
Portsmouth Gaseous Diffusion Plant	0	1,545	**1,545**
Weldon Spring Site Remedial Action Project	0	1,531	**1,531**
North Las Vegas Facility	1,211	1	**1,212**
Nevada Test Site	1,067	46	**1,113**
Argonne National Laboratory – West	1,086	0	**1,086**
East Tennessee Technology Park	624	200	**824**
Waste Isolation Pilot Plant	821	0	**821**
Brookhaven National Laboratory	766	0	**766**
Pantex Plant	691	0	**691**
Stanford Linear Accelerator Center	628	0	**628**
West Valley Demonstration Project	553	0	**553**
Fermi National Accelerator Laboratory	345	0	**345**
Inhalation Toxicology Laboratory	240	100	**340**
Sandia National Laboratories/California	134	63	**197**
Fernald Environmental Management Project	161	0	**161**
Princeton Plasma Physics Laboratory	79	0	**79**
Energy Technology Engineering Center	77	0	**77**
Federal Energy Technology Center (Pittsburgh)	77	0	**77**
Pacific Northwest National Laboratory	28	0	**28**
TOTAL	**55,590**	**83,481**	**139,071**

Table A-9
1997 Total Routine Operations and Cleanup/Stabilization Waste Generation by Program and Waste Type (in Cubic Meters)

Program	High-Level‡	Transuranic		
	Total High-Level	Routine Operations	Cleanup/ Stabilization	Total Transuranic
Defense Programs	0	94	4	98
Energy Research	0	3	2	5
Environmental Management	1,994	167	113	280
Nuclear Energy	0	3	0	3
Power Marketing Administration	0	0	0	0
Others*	0	0	0	0
TOTAL	**1,994**	**267**	**119**	**386**

Program	Low-Level Radioactive§			Low-Level Mixed		
	Routine Operations	Cleanup/ Stabilization	Total Low-Level Radioactive	Routine Operations	Cleanup/ Stabilization	Total Low-Level Mixed
Defense Programs	2,799	1,039	3,838	346	157	503
Energy Research	934	543	1,477	41	12	53
Environmental Management	12,316	324,980	337,296	978	1,662	2,640
Nuclear Energy	441	2	443	8	337	345
Power Marketing Administration	0	0	0	0	0	0
Others*	43	10	53	0	0	0
TOTAL	**16,533**	**326,574**	**343,107**	**1,373**	**2,168**	**3,541**

Program	Hazardous			TOTAL EXCLUDING SANITARY	Sanitary			GRAND TOTAL
	Routine Operations	Cleanup/ Stabilization	Total Hazardous		Total Operations	Cleanup/ Stabilization	Total Sanitary	
Defense Programs	625	4,233	4,858	9,297	34,857	28,563	63,420	72,717
Energy Research	1,615	4,036	5,651	7,186	5,129	7,216	12,345	19,531
Environmental Management	368	4,357	4,725	346,935	12,901	47,683	60,584	407,519
Nuclear Energy	172	18	190	981	1,086	0	1,086	2,067
Power Marketing Administration	57	102	159	159	1,540	19	1,559	1,718
Others*	43	1	44	97	77	0	77	174
TOTAL	2,880	12,747	15,627	364,655	55,590	83,481	139,071	503,726

* Others include the Office of Civilian Radioactive Waste Management, Energy Efficiency and Renewable Energy, Office of Fossil Energy, Chief Financial Officer, Human Resources and Administration, Office of Nonproliferation and National Security, and the Office of Science Education and Technical Information.

‡ Only routine operations waste is generated.

§ Excludes 11e(2) byproduct material (soil or other material contaminated by extraction or concentration of uranium or thorium). The only site reporting byproduct material in 1997 was the Weldon Spring Site Remedial Action Project, which reported 46,976 cubic meters of low-level radioactive waste.

Figure A-1
1997 Routine Operations, Cleanup/Stabilization, and Sanitary Waste Generation by Operations/Field Office (in Cubic Meters)

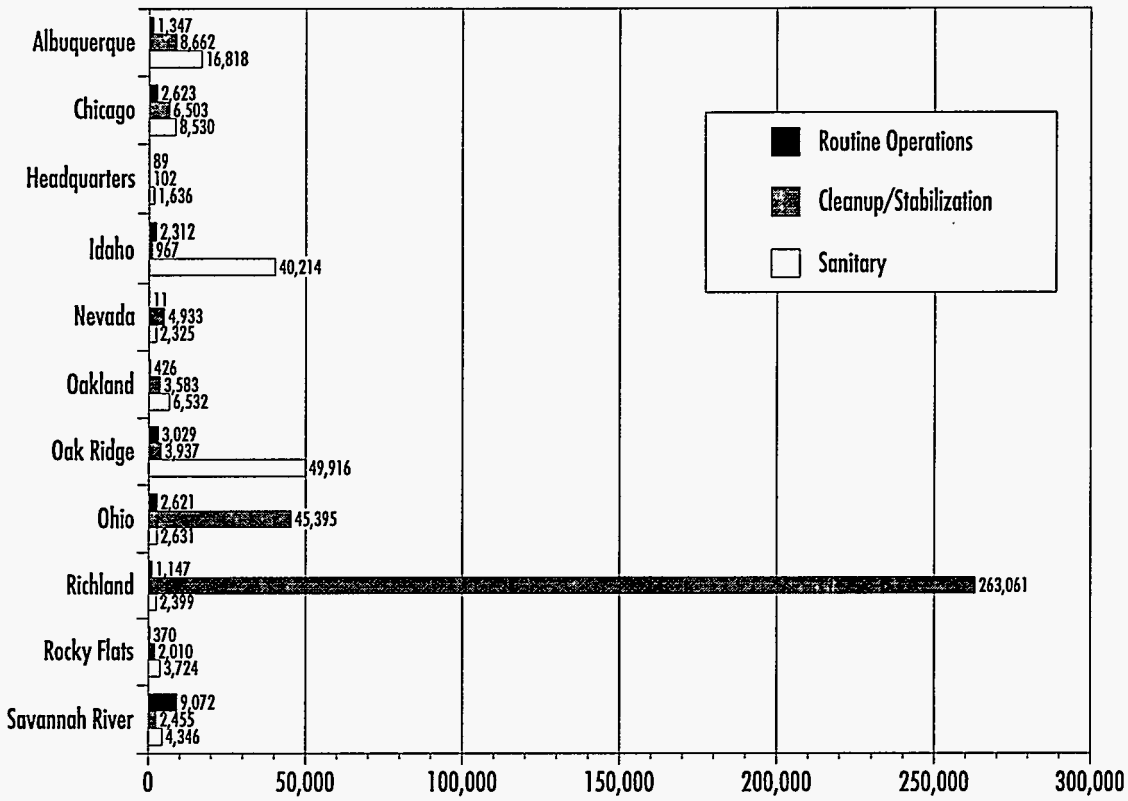
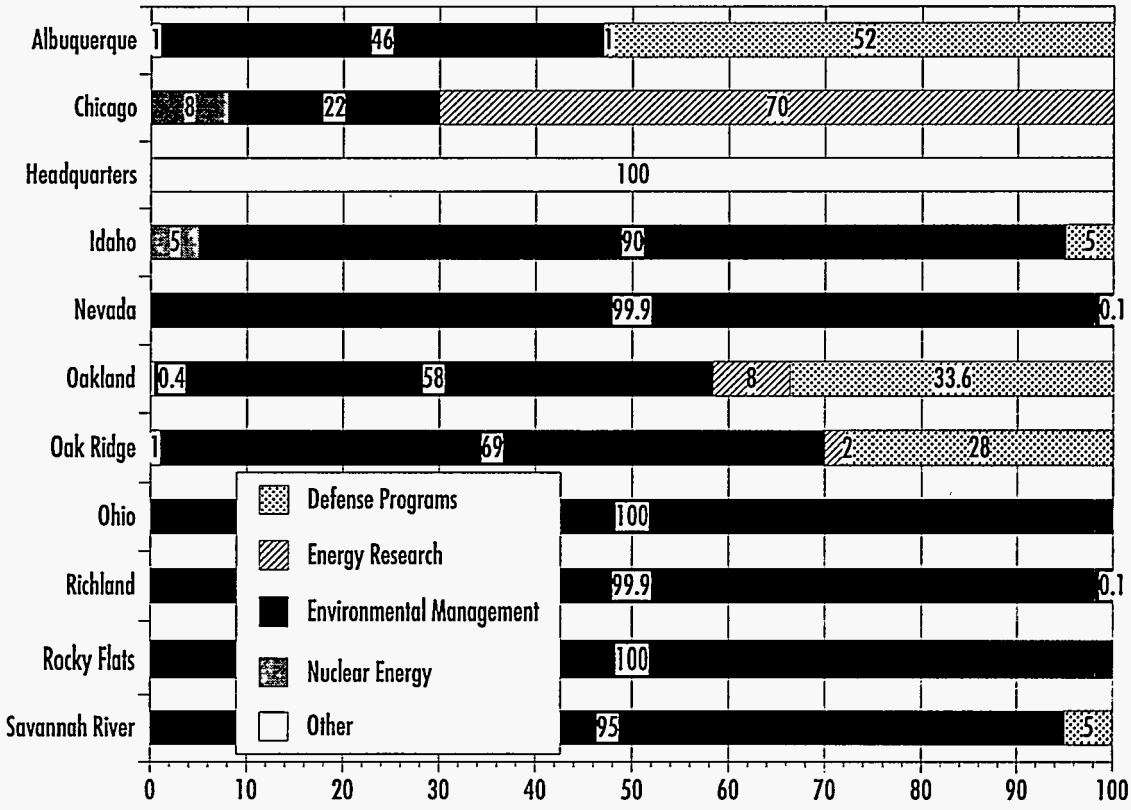


Figure A-2
1997 Program Waste Generation by Operations/Field Office (in Percent)



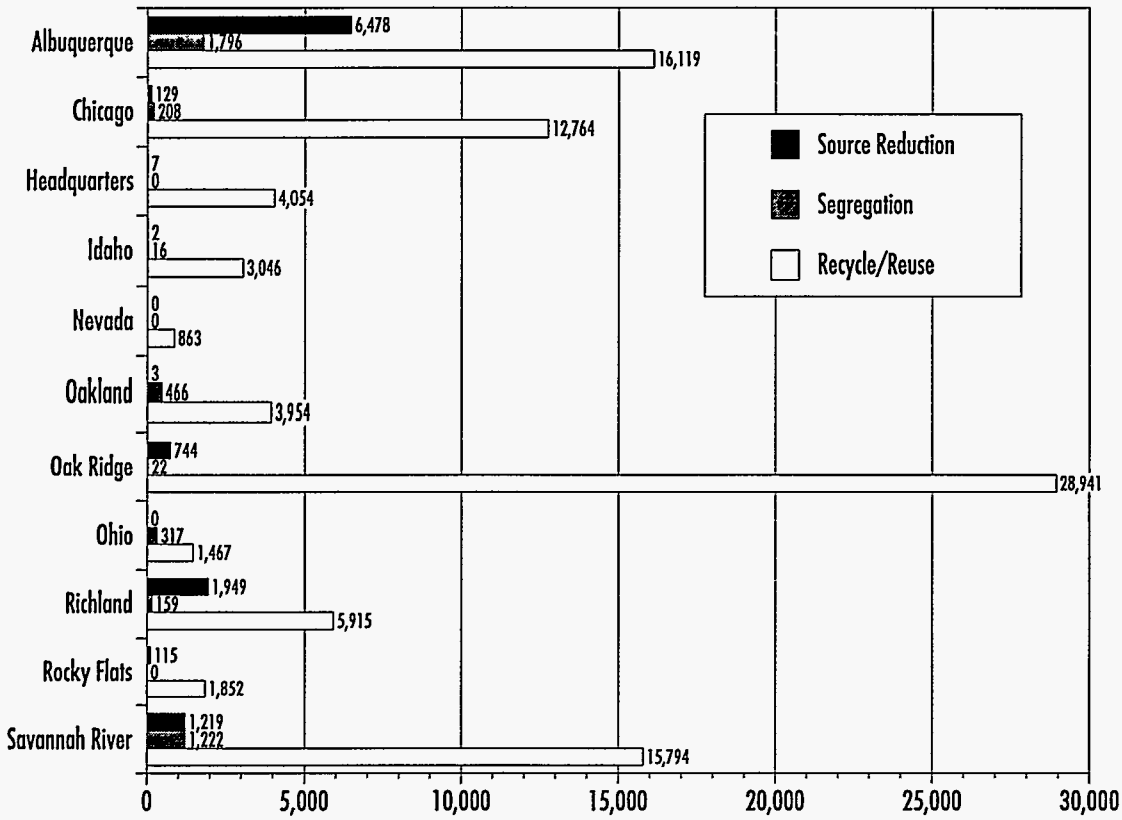


Figure A-3
1997 Waste Reduction from Pollution Prevention Projects by Operations/Field Office (in Metric Tons)

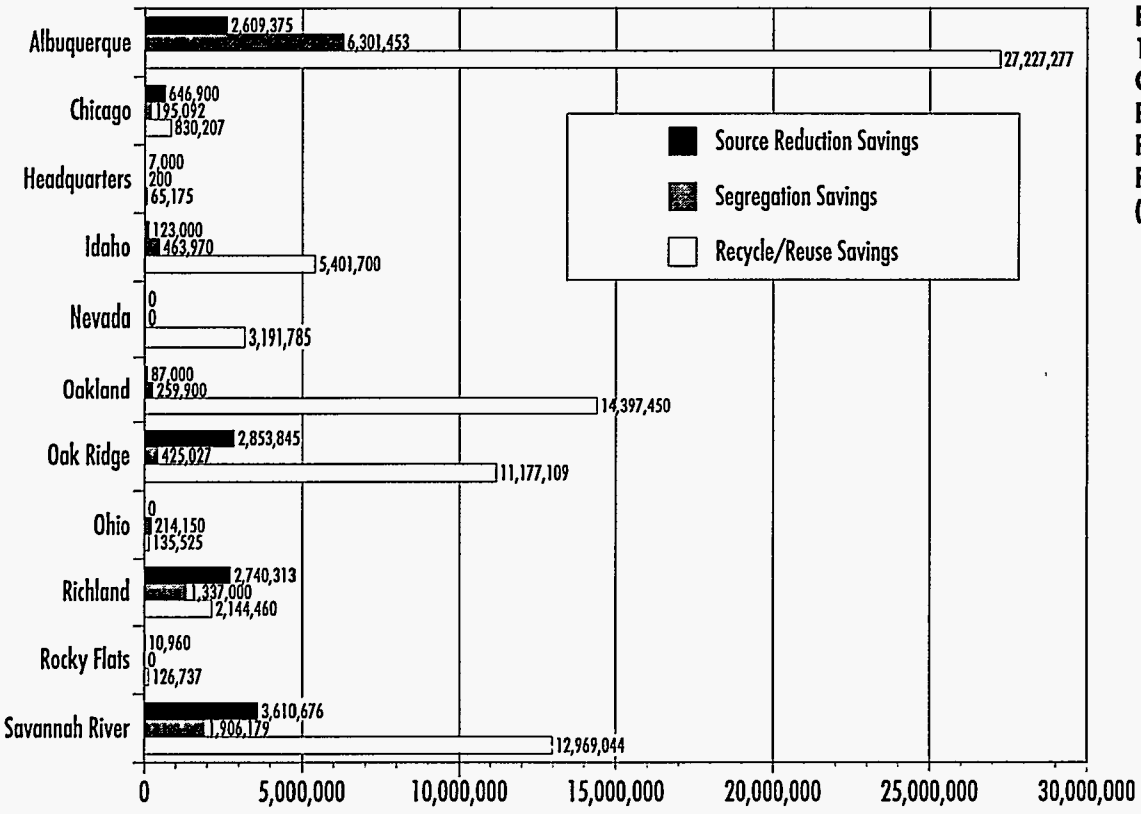
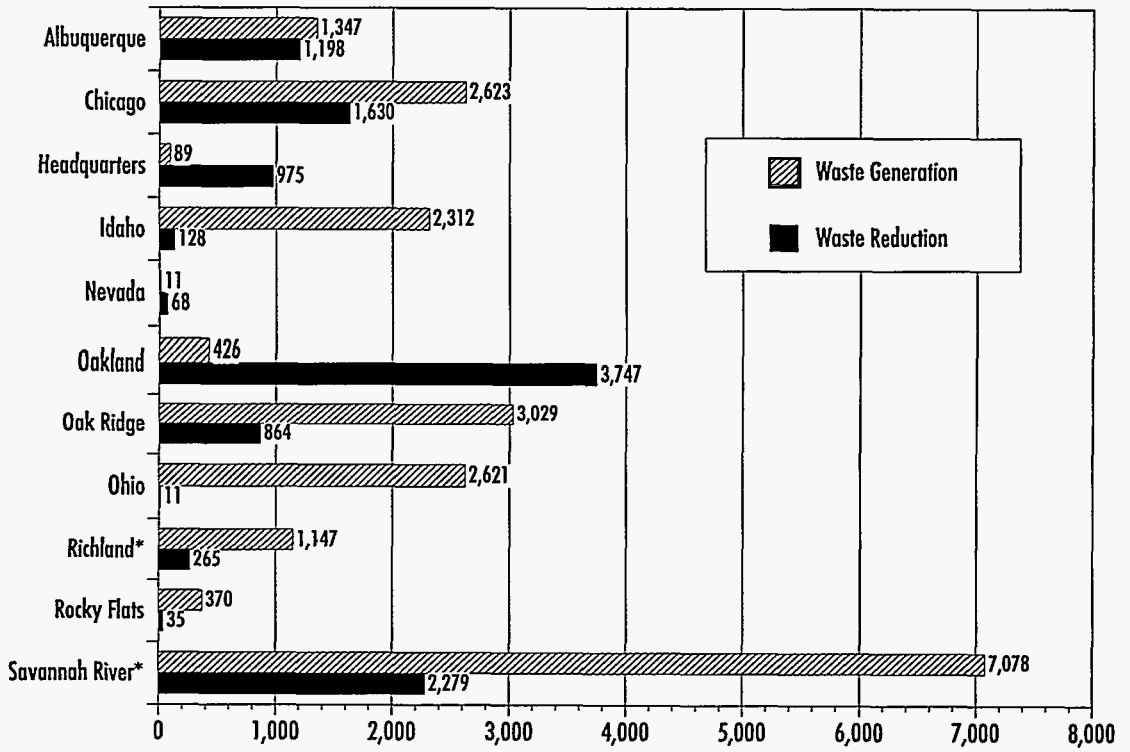


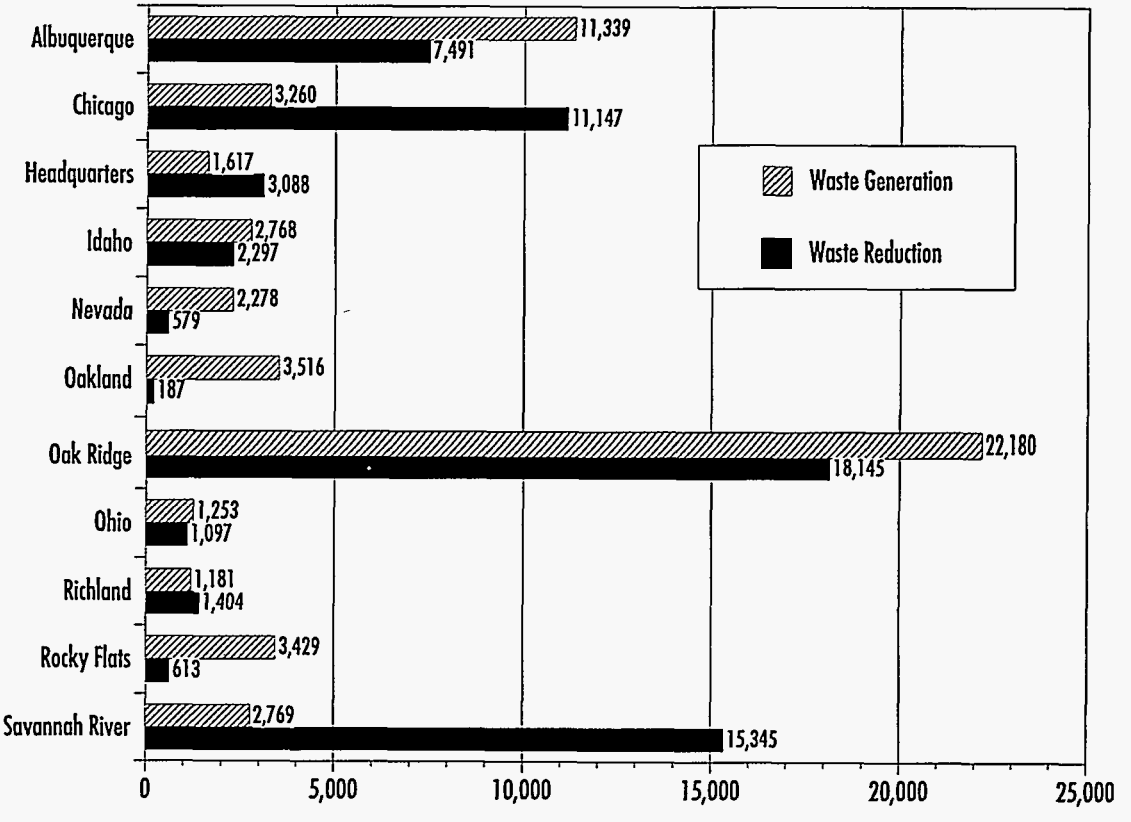
Figure A-4
1997 Total Reported Cost Savings from Pollution Prevention Projects by Operations/ Field Office (in Dollars)

Figure A-5
1997 Routine Operations Waste Generation and Waste Reduction (Excluding Sanitary Waste) by Operations/Field Office (in Cubic Meters)



*Not including high-level waste.

Figure A-6
1997 Routine Operations Sanitary Waste Generation and Waste Reduction by Operations/Field Office (in Metric Tons)



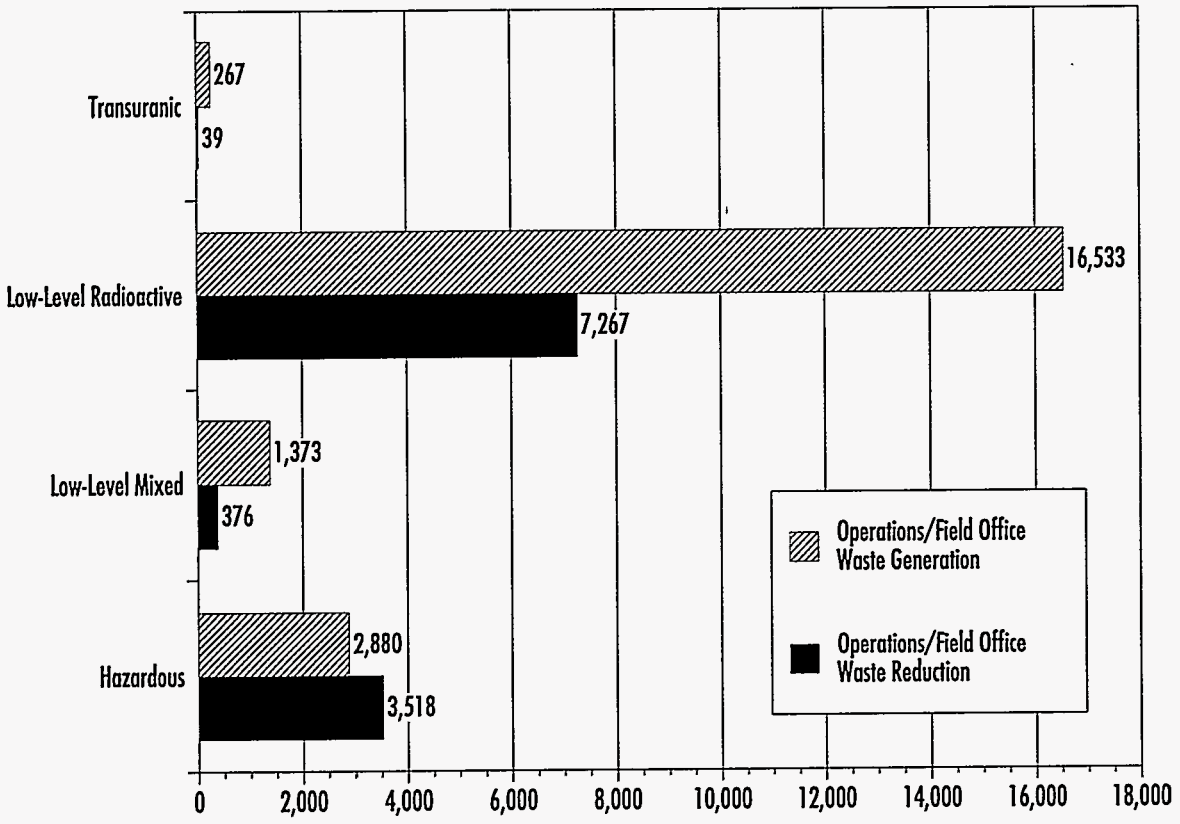


Figure A-7
1997 Routine Operations Waste Generation and Waste Reduction for All Operations/Field Offices by Waste Type (in Cubic Meters)

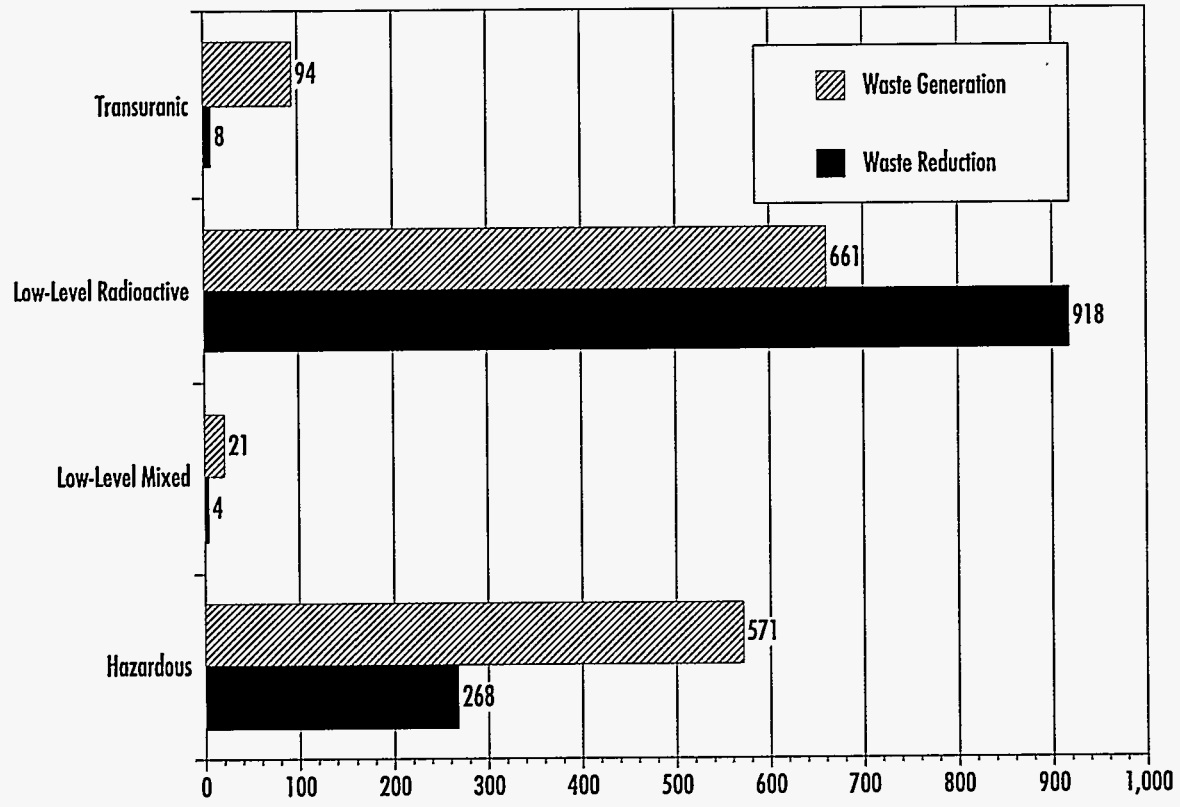


Figure A-8
Albuquerque Operations Office 1997 Routine Operations Waste Generation and Waste Reduction (in Cubic Meters)

Figure A-9 Chicago Operations Office 1997 Routine Operations Waste Generation and Waste Reduction (in Cubic Meters)

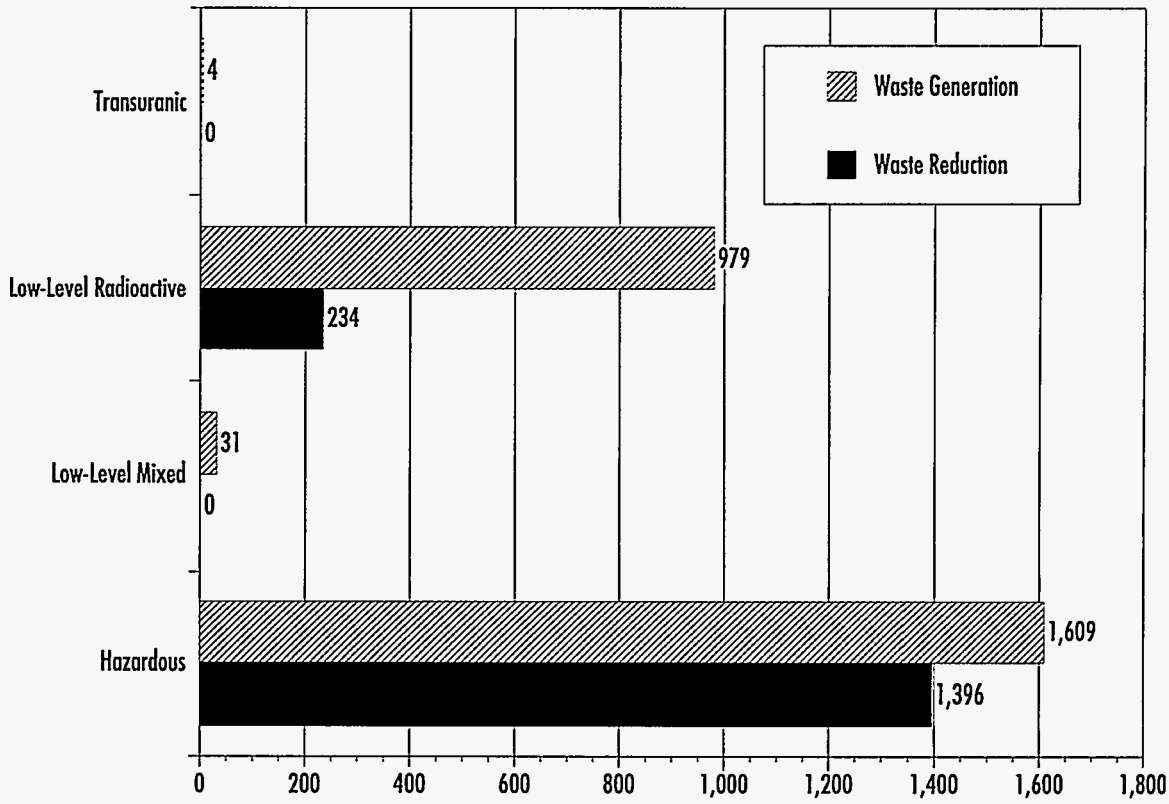
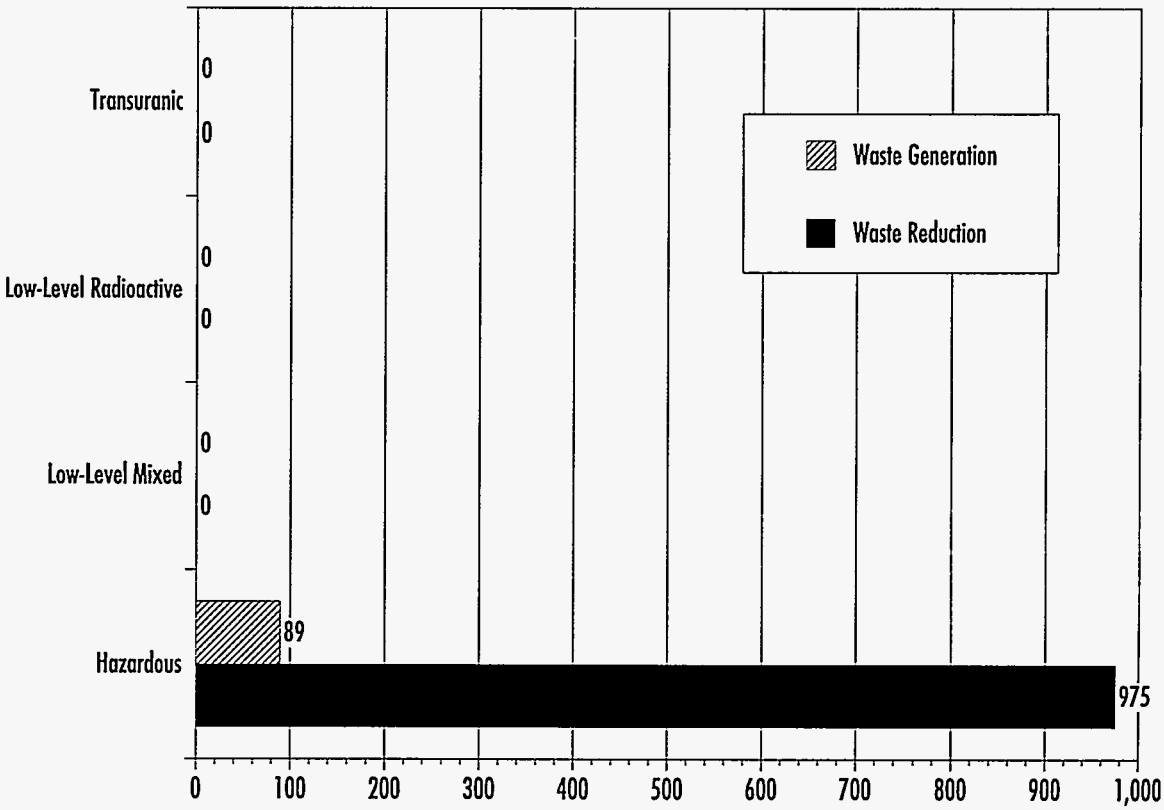


Figure A-10 Headquarters 1997 Routine Operations Waste Generation and Waste Reduction (in Cubic Meters)



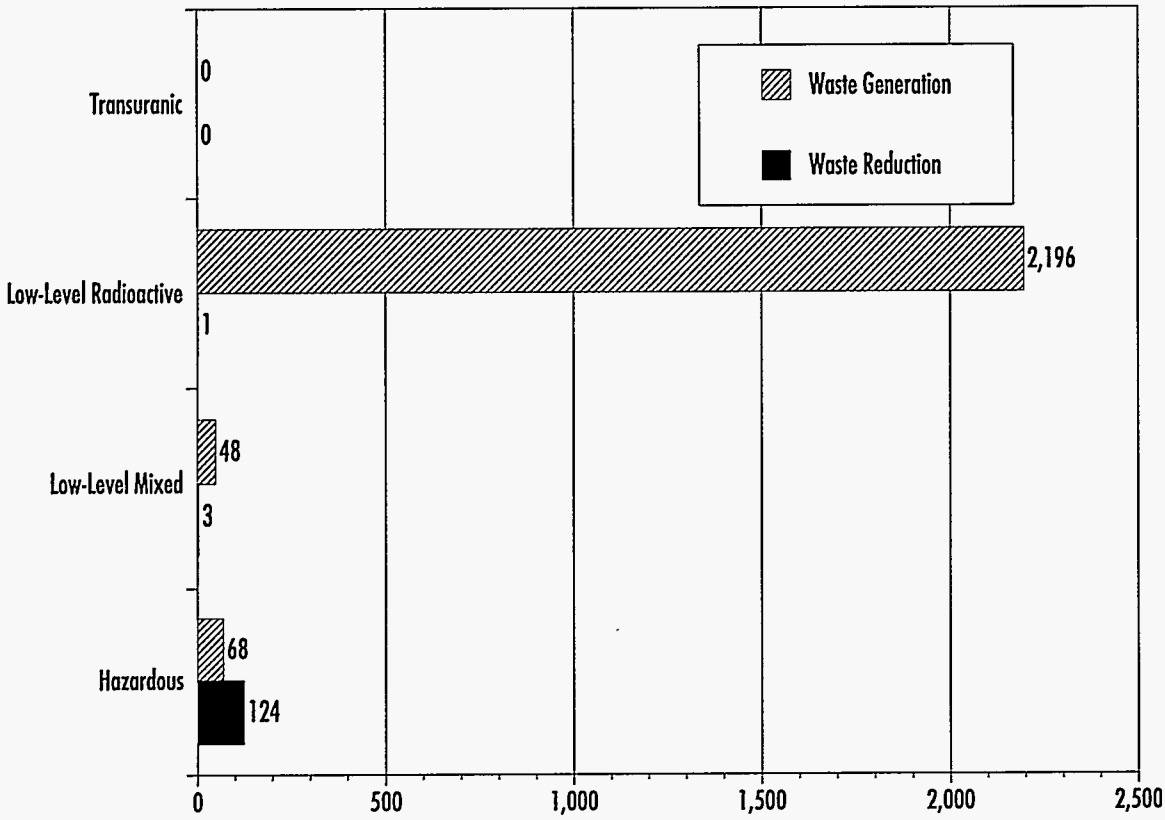


Figure A-11
Idaho Operations Office 1997 Routine Operations Waste Generation and Waste Reduction (in Cubic Meters)

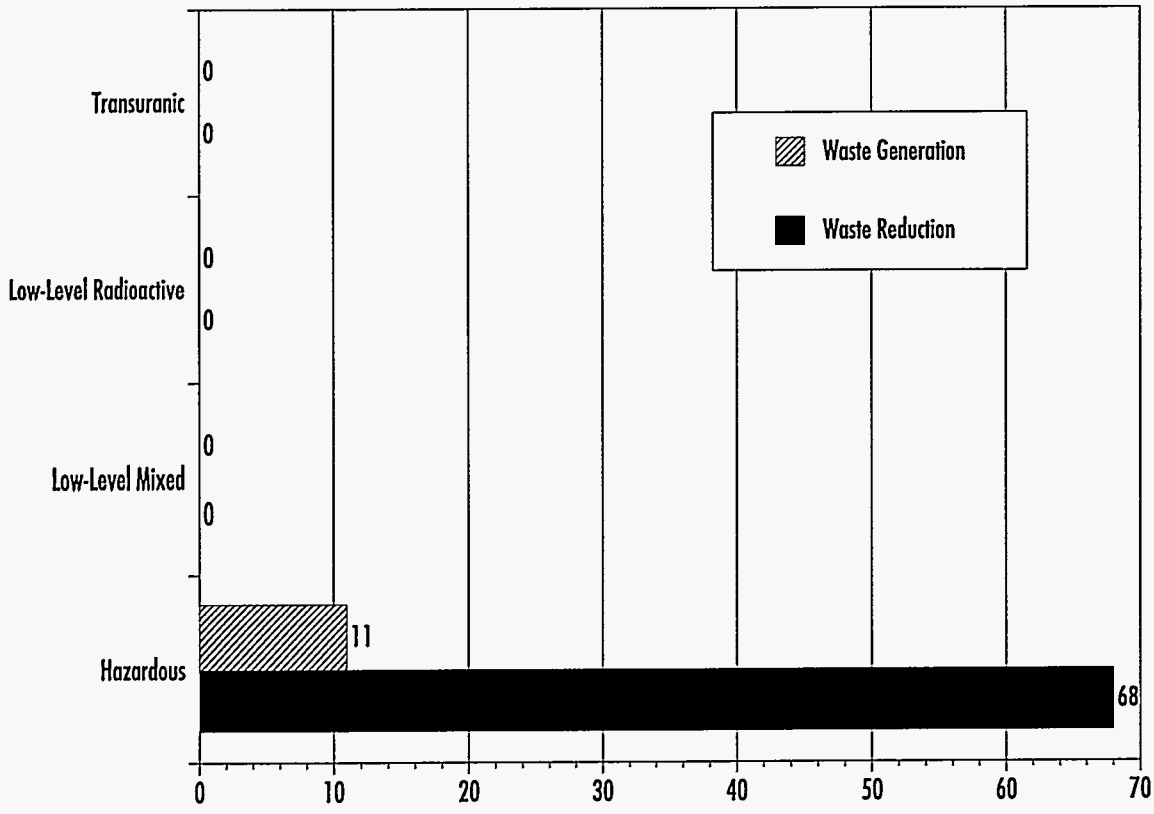


Figure A-12
Nevada Operations Office 1997 Routine Operations Waste Generation and Waste Reduction (in Cubic Meters)

Figure A-13
Oakland Operations Office 1997 Routine Operations Waste Generation and Waste Reduction (in Cubic Meters)

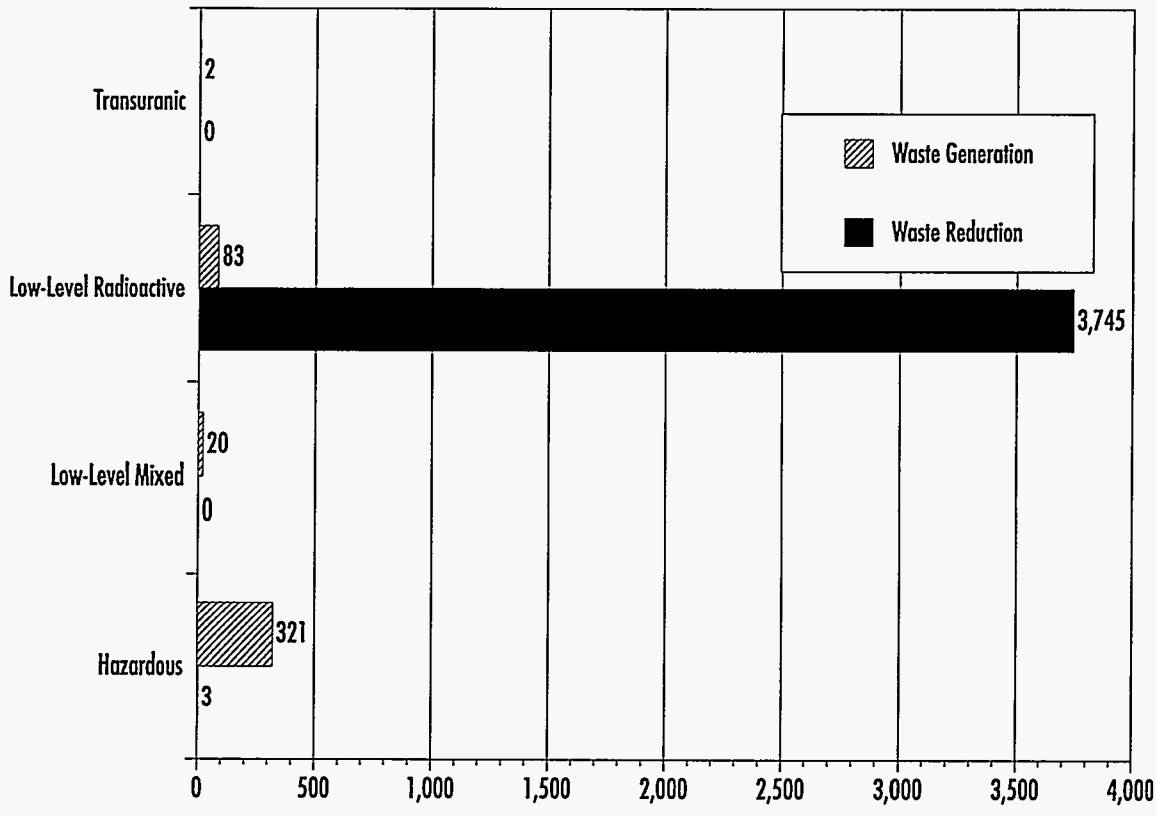
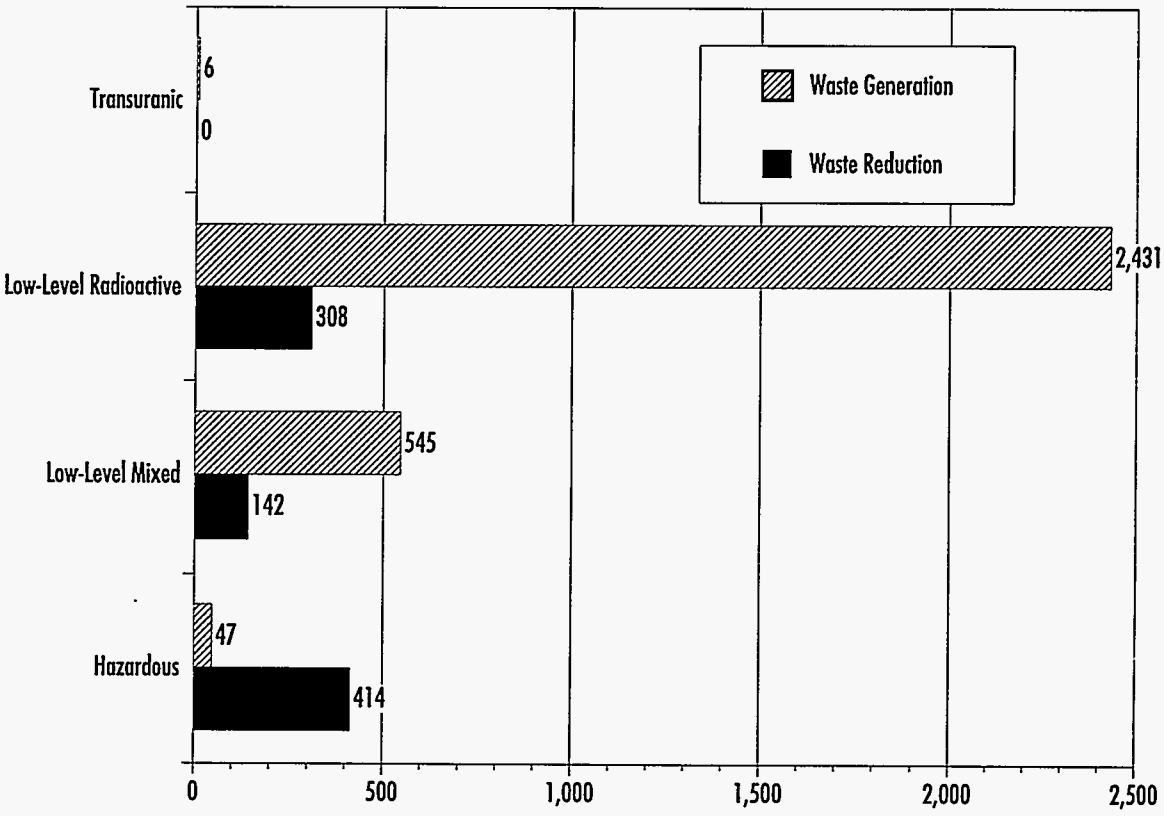


Figure A-14
Oak Ridge Operations Office 1997 Routine Operations Waste Generation and Waste Reduction (in Cubic Meters)



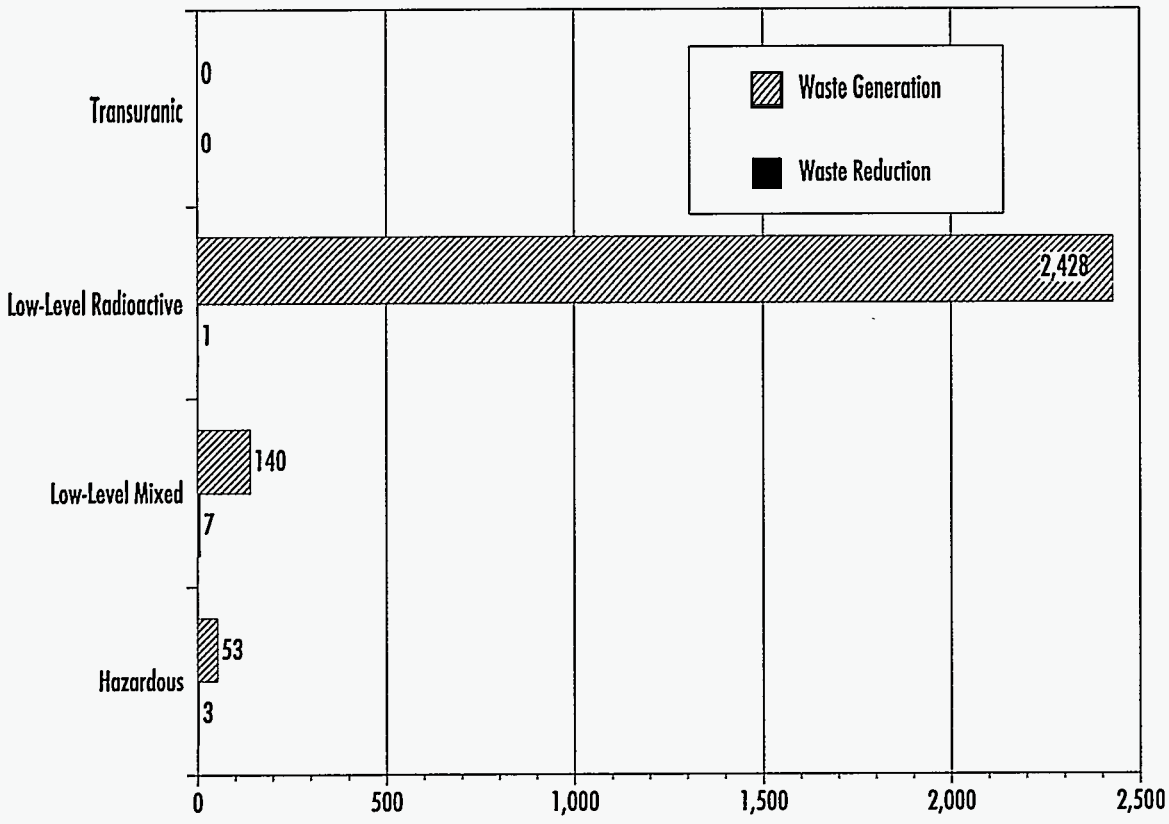


Figure A-15
Ohio Field Office 1997 Routine Operations Waste Generation and Waste Reduction (in Cubic Meters)

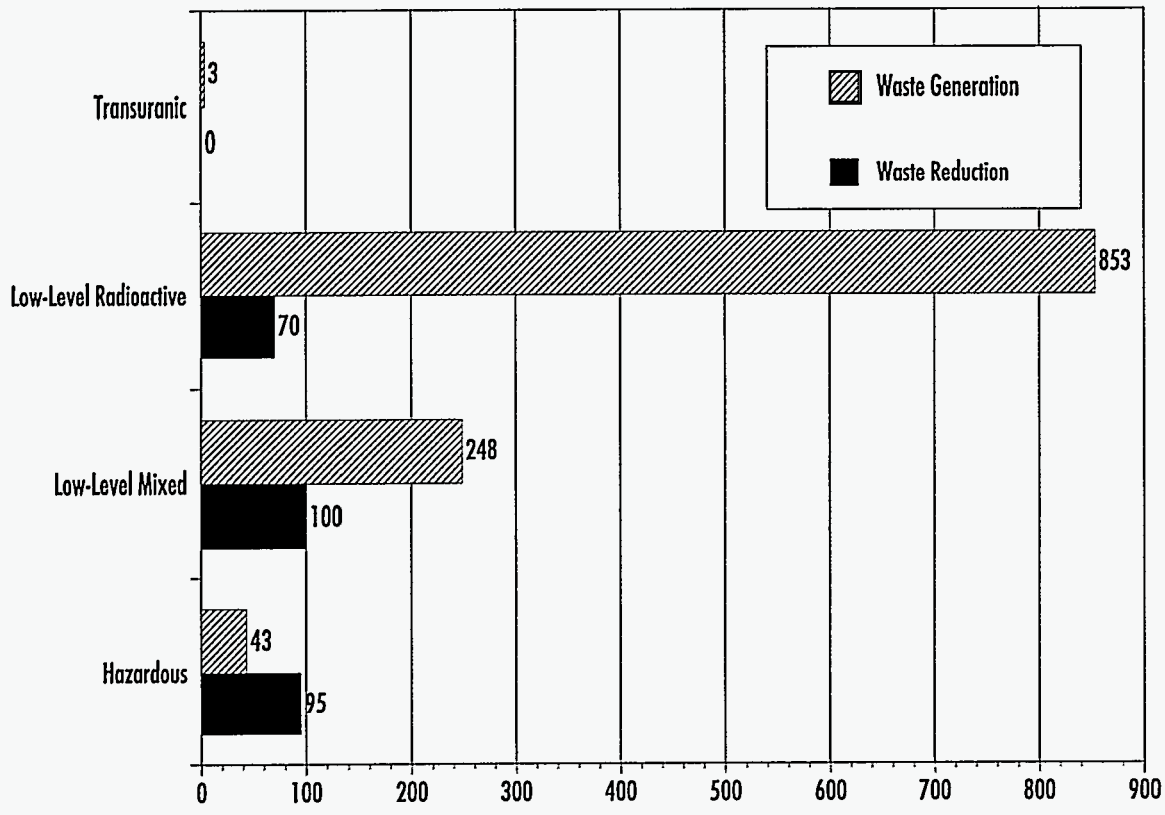


Figure A-16
Richland Operations Office 1997 Routine Operations Waste Generation and Waste Reduction (in Cubic Meters)

Figure A-17
Rocky Flats Field Office
1997 Routine
Operations Waste
Generation and
Waste Reduction
(in Cubic Meters)

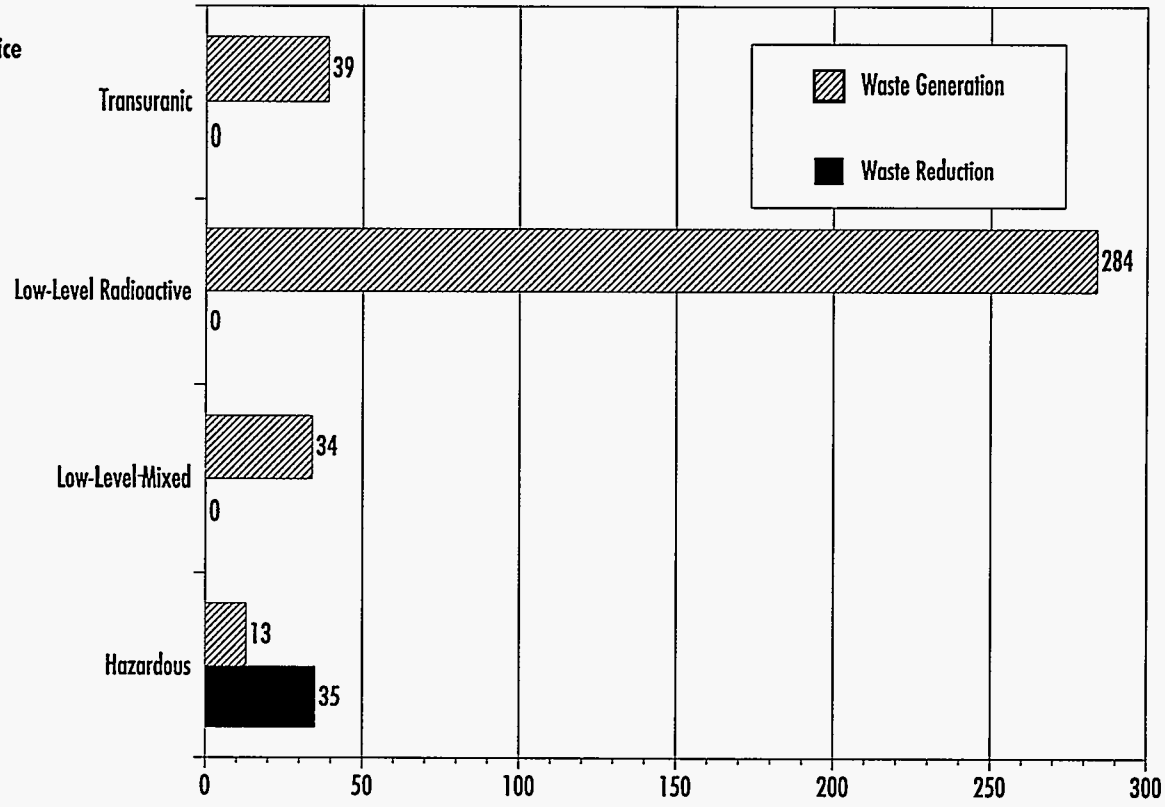
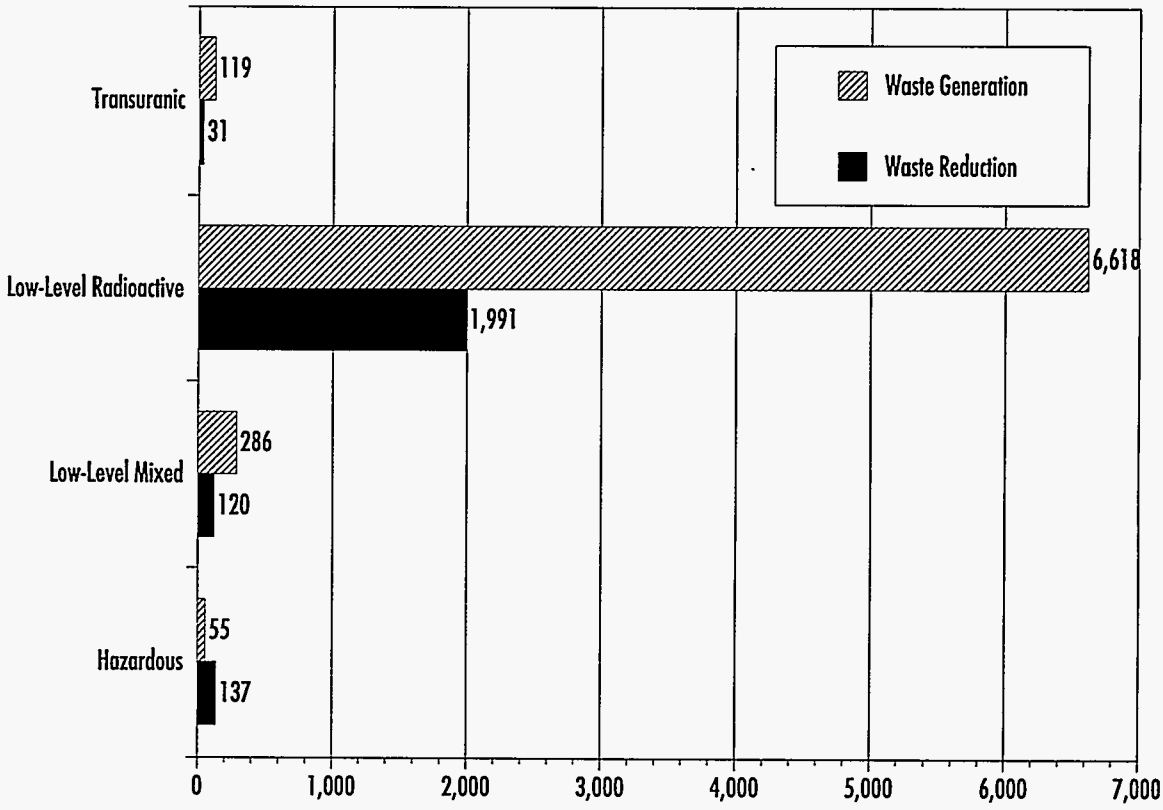


Figure A-18
Savannah River
Operations Office
1997 Routine
Operations Waste
Generation and
Waste Reduction
(in Cubic Meters)



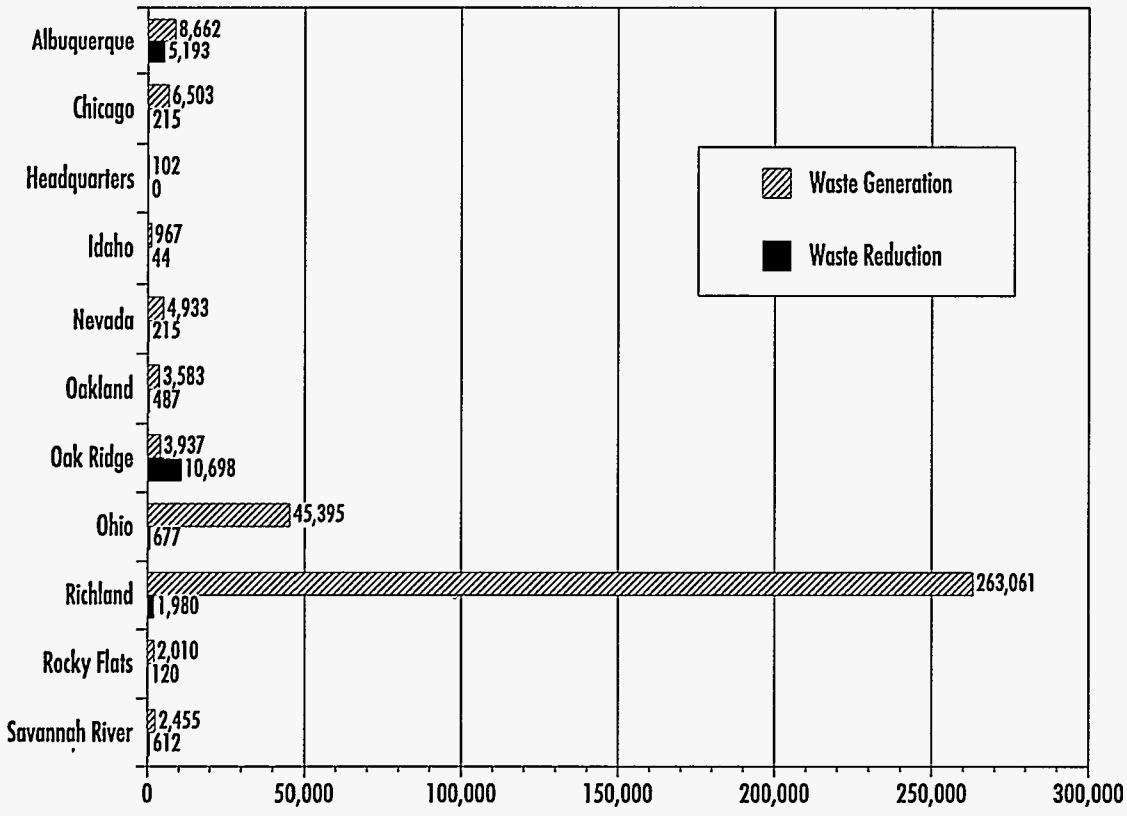


Figure A-19
1997 Cleanup/Stabilization Waste Generation and Waste Reduction (Excluding Sanitary Waste) by Operations/Field Office (in Cubic Meters)

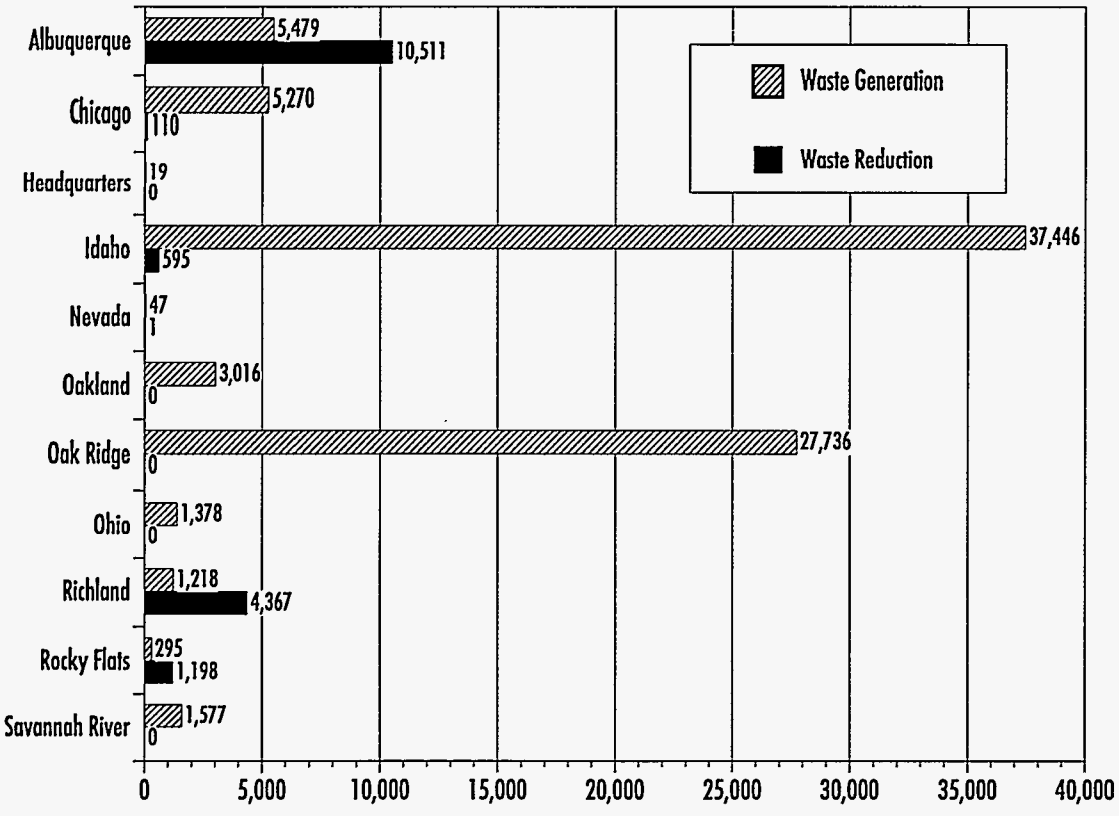


Figure A-20
1997 Cleanup/ Stabilization Sanitary Waste Generation and Waste Reduction by Operations/Field Office (in Metric Tons)

Figure A-21
1997 Cleanup/ Stabilization Waste Generation and Waste Reduction for All Operations/Field Offices by Waste Type (in Cubic Meters)

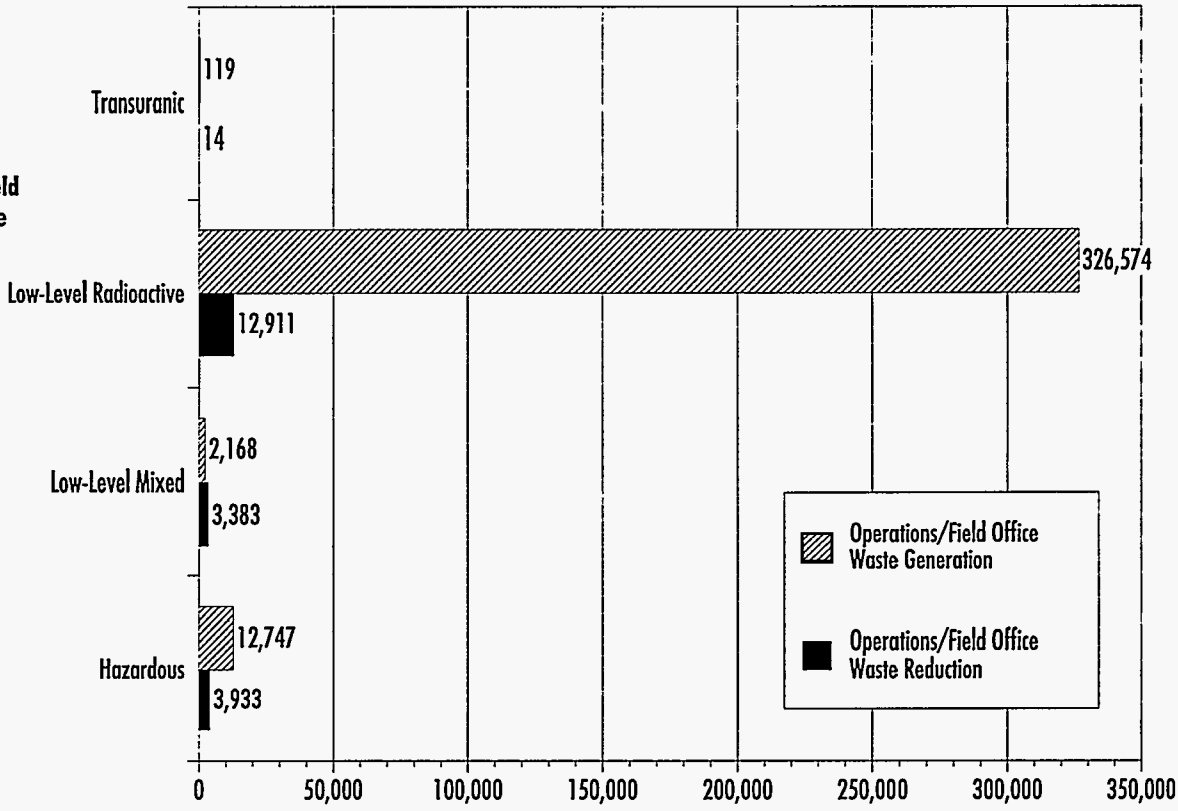
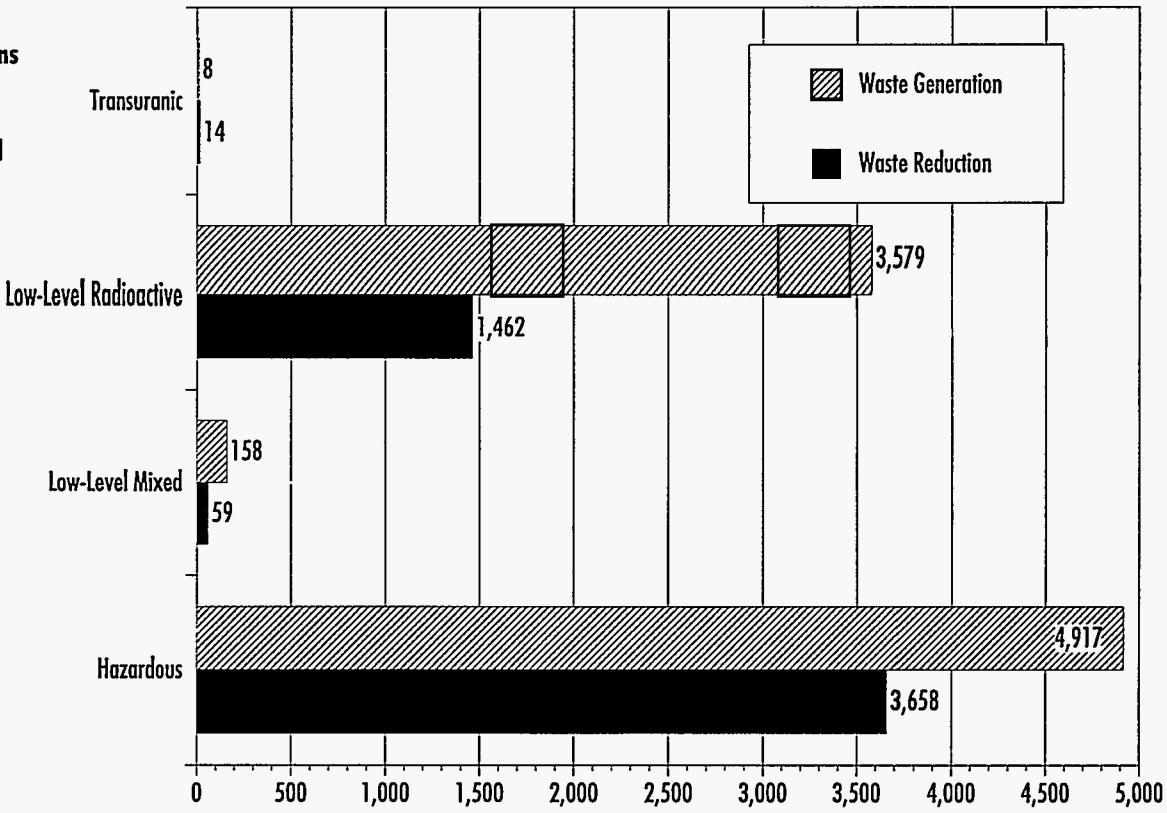


Figure A-22
Albuquerque Operations Office 1997 Cleanup/Stabilization Waste Generation and Waste Reduction (in Cubic Meters)



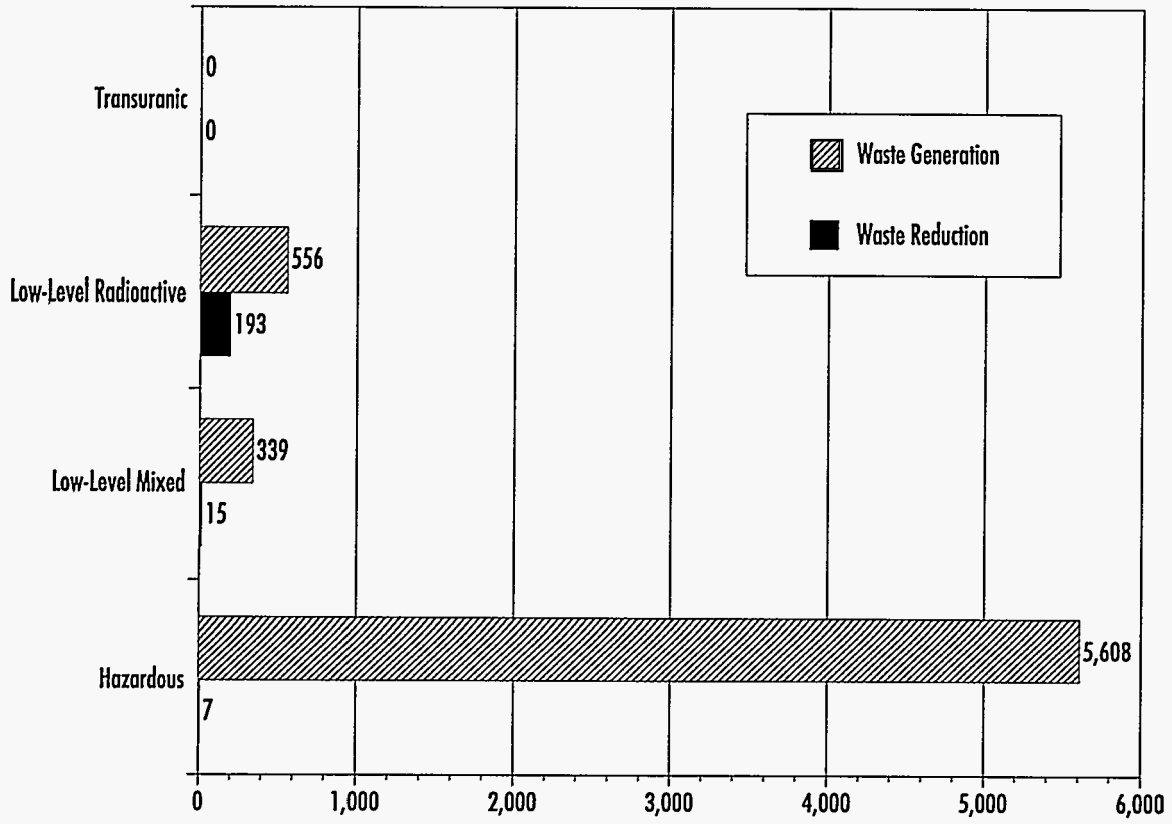


Figure A-23
Chicago Operations Office 1997 Cleanup/Stabilization Waste Generation and Waste Reduction (in Cubic Meters)

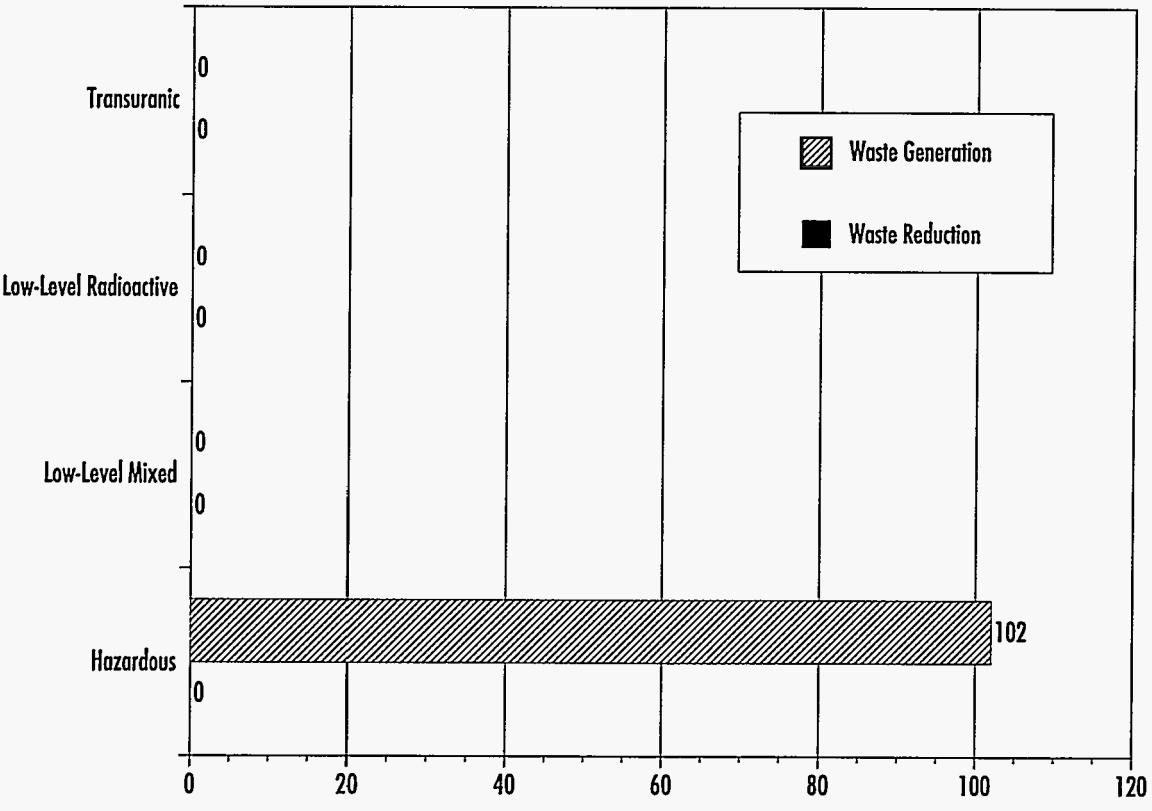


Figure A-24
Headquarters 1997 Cleanup/Stabilization Waste Generation and Waste Reduction (in Cubic Meters)

Figure A-25
Idaho Operations Office 1997 Cleanup/Stabilization Waste Generation and Waste Reduction (in Cubic Meters)

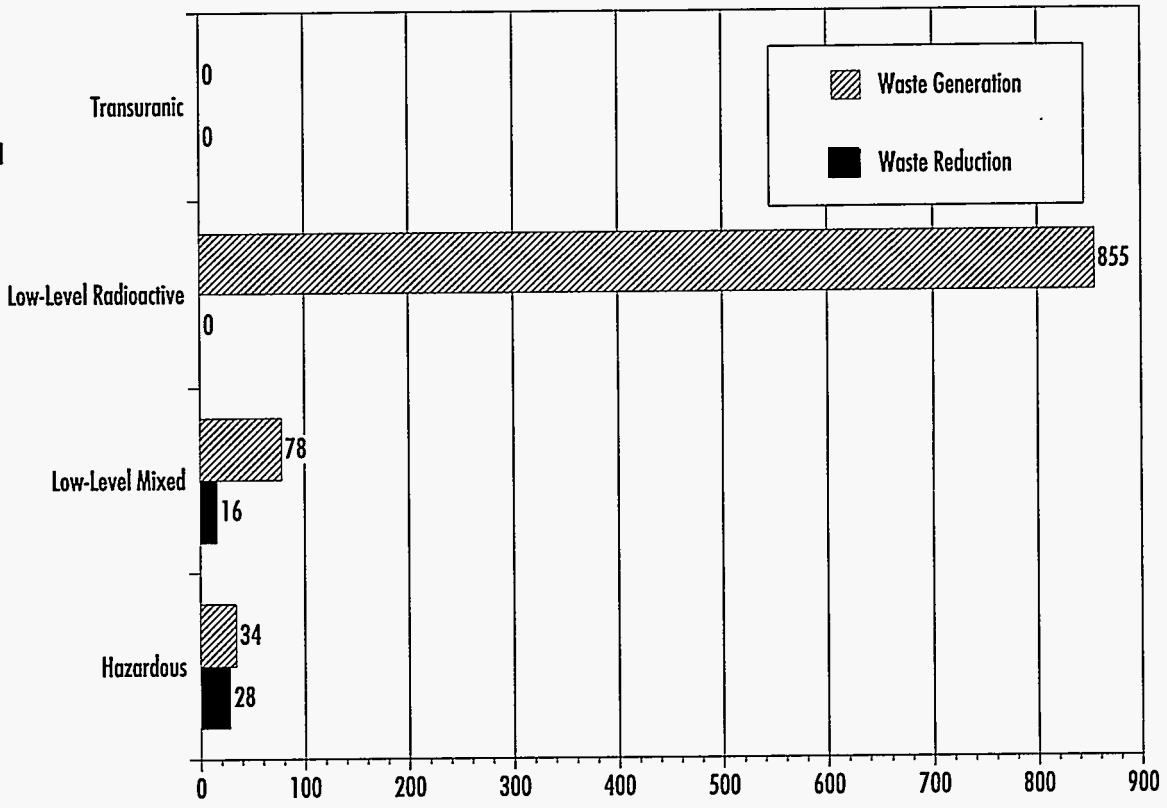
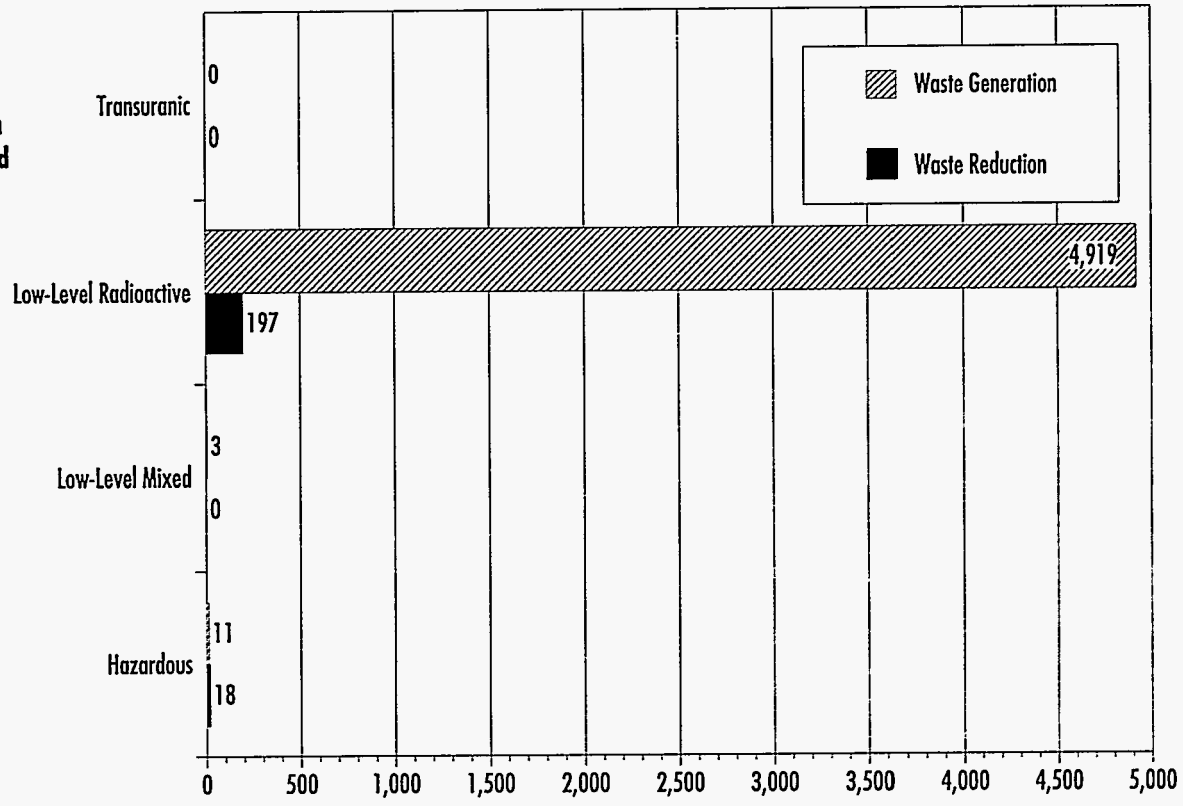


Figure A-26
Nevada Operations Office 1997 Cleanup/Stabilization Waste Generation and Waste Reduction (in Cubic Meters)



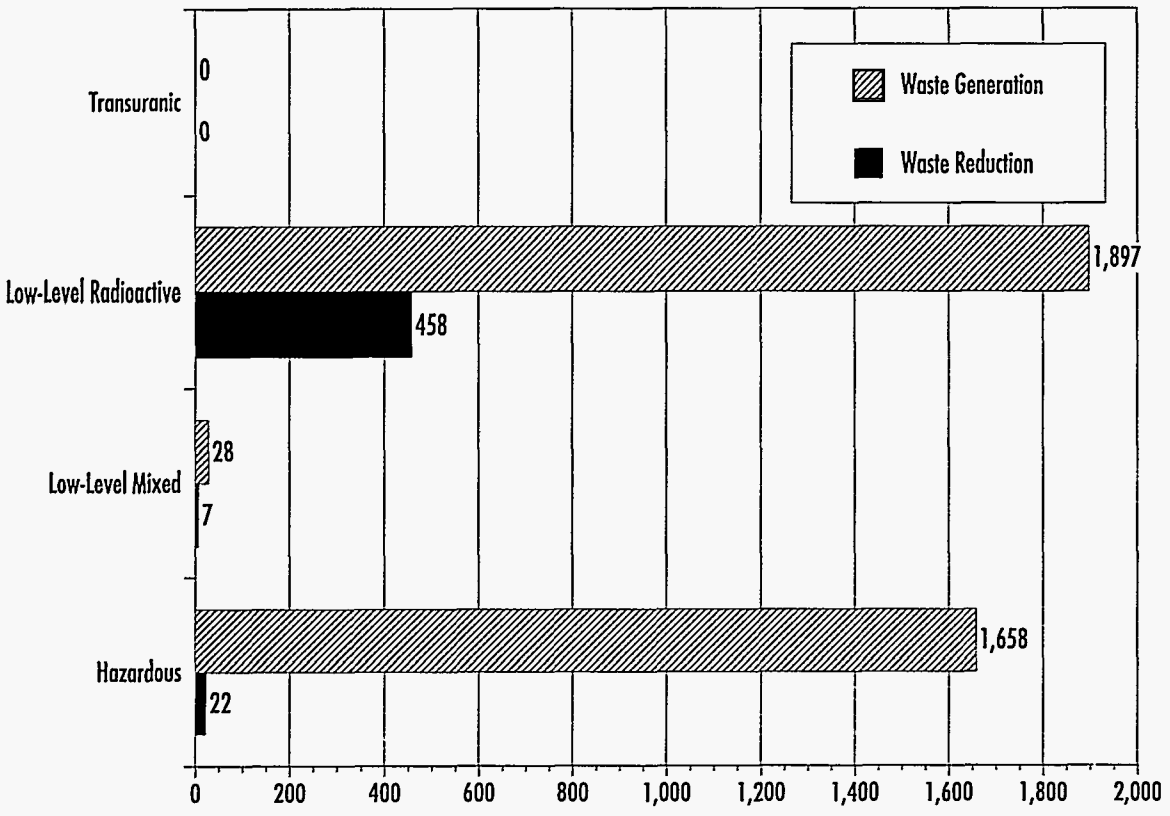


Figure A-27
Oakland Operations Office 1997 Cleanup/Stabilization Waste Generation and Waste Reduction (in Cubic Meters)

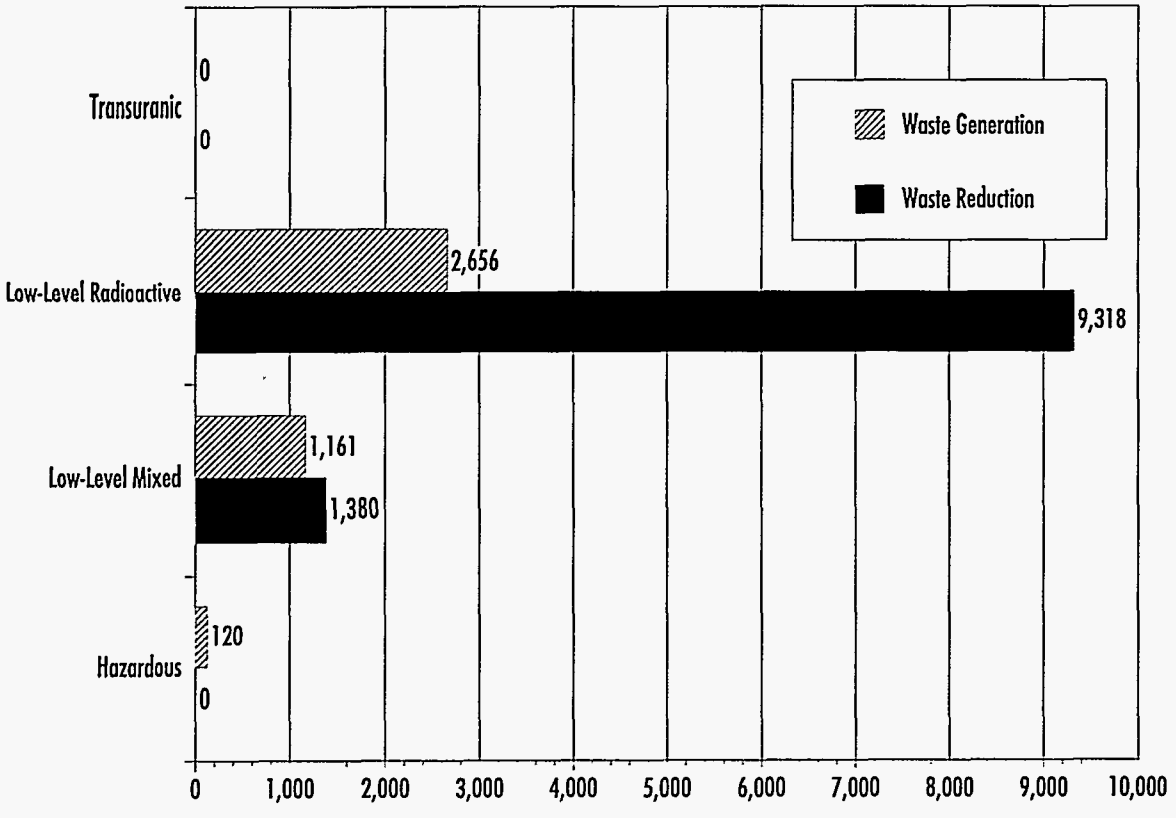


Figure A-28
Oak Ridge Operations Office 1997 Cleanup/Stabilization Waste Generation and Waste Reduction (in Cubic Meters)

Figure A-29
Ohio Field Office
1997 Cleanup/
Stabilization Waste
Generation and
Waste Reduction
(in Cubic Meters)

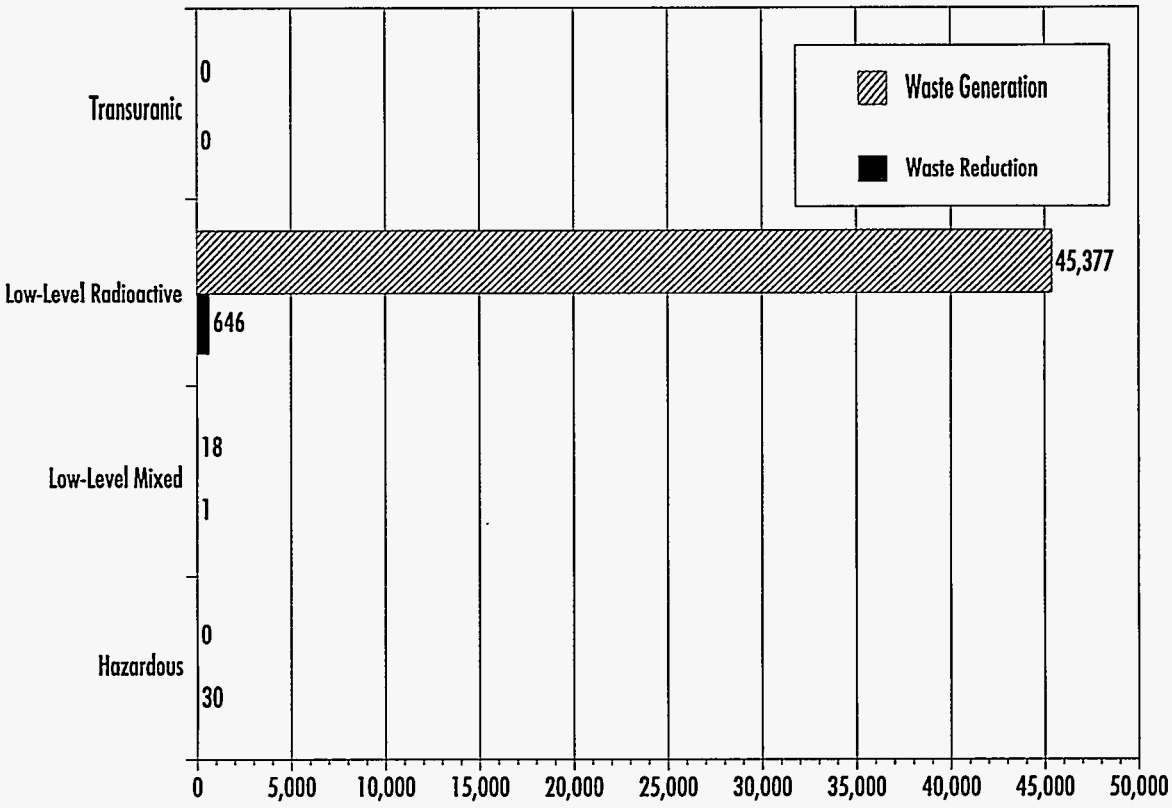
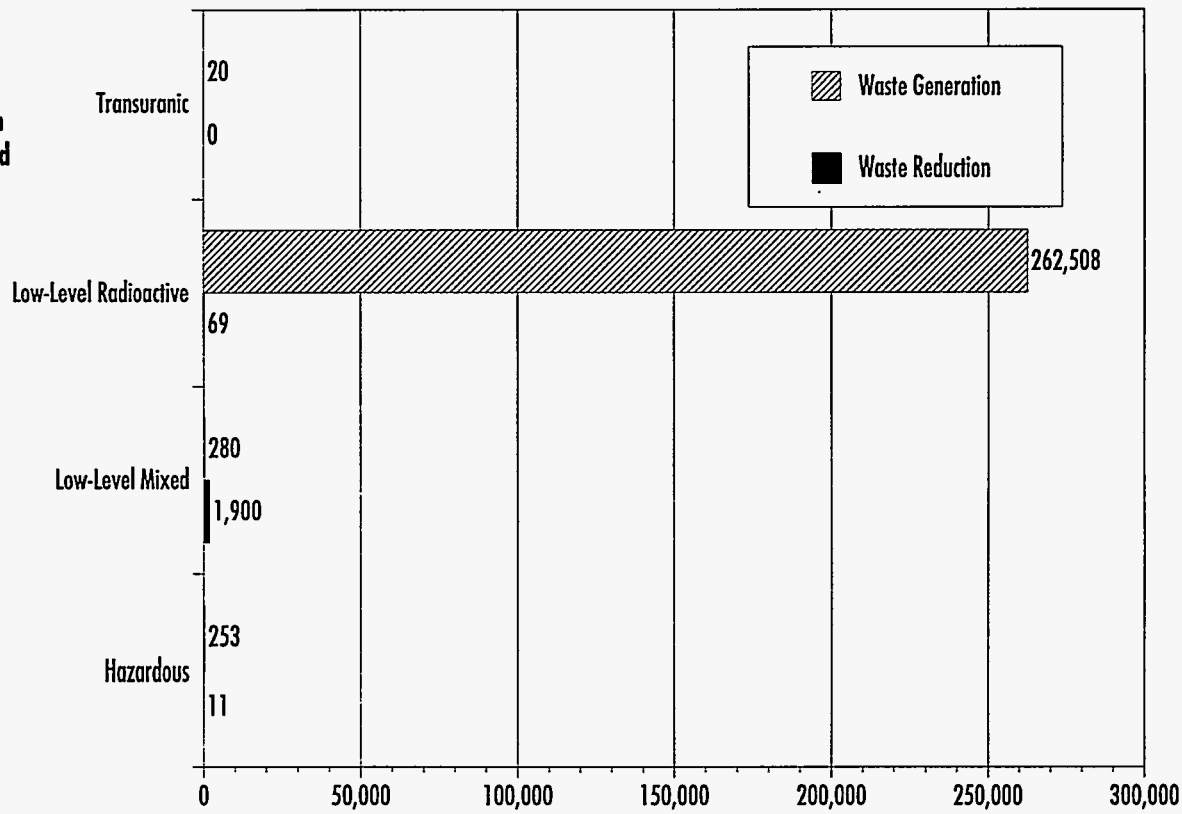


Figure A-30
Richland Operations
Office 1997
Cleanup/Stabilization
Waste Generation and
Waste Reduction
(in Cubic Meters)



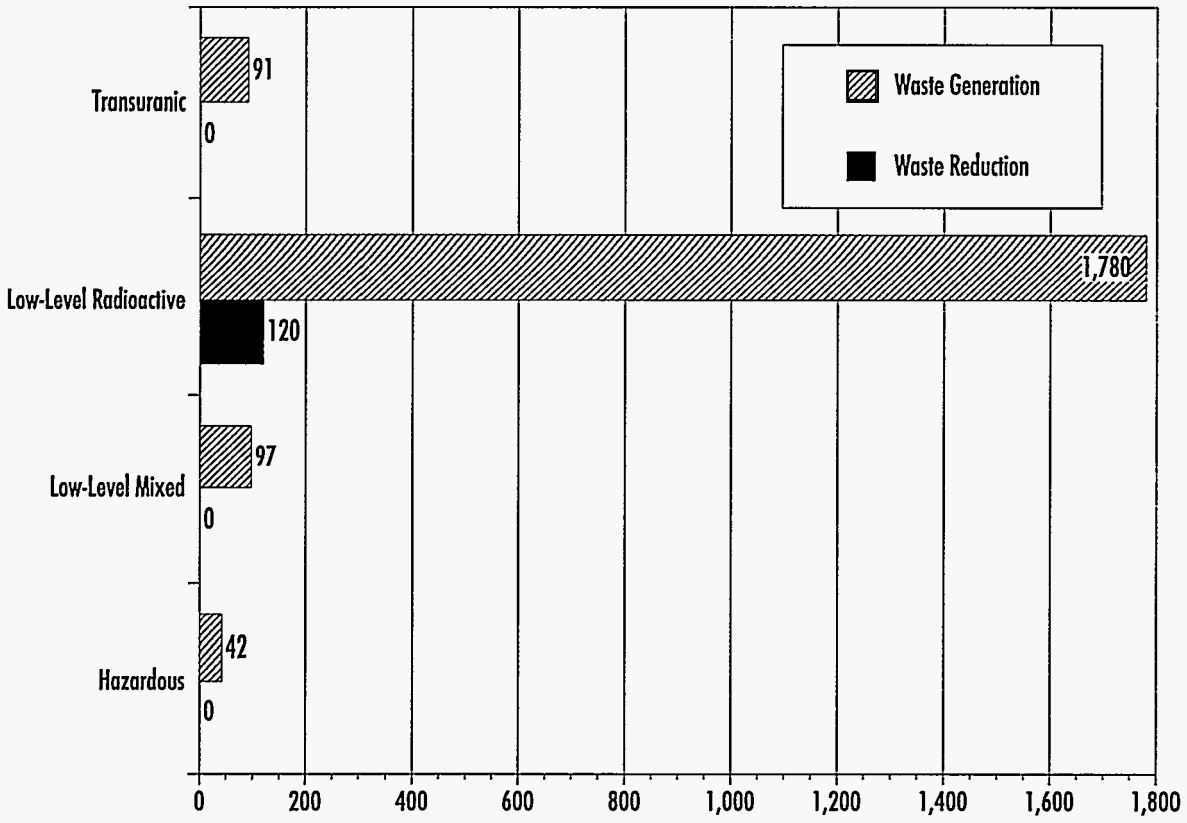


Figure A-31
Rocky Flats Field Office
1997 Cleanup/
Stabilization Waste
Generation and
Waste Reduction
(in Cubic Meters)

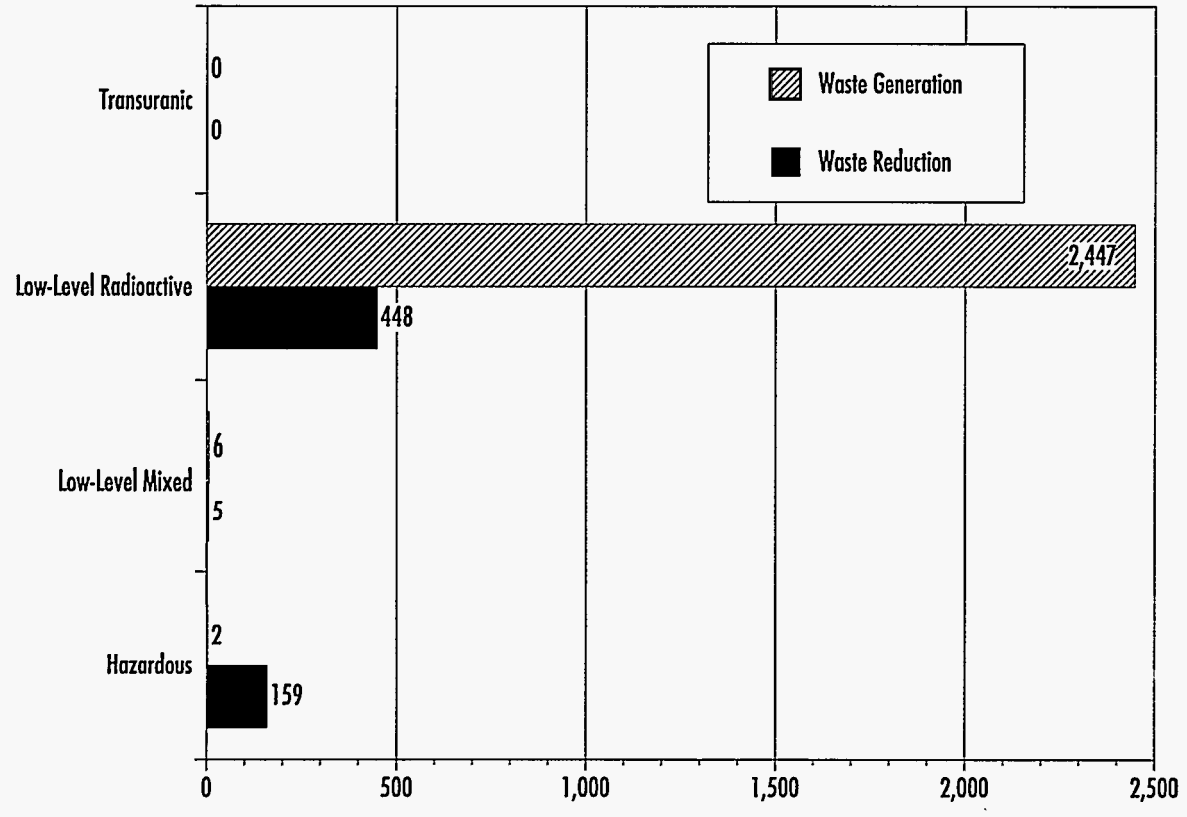


Figure A-32
Savannah River
Operations Office
1997 Cleanup/
Stabilization Waste
Generation and
Waste Reduction
(in Cubic Meters)

Appendix B
Affirmative Procurement

The Resource Conservation and Recovery Act, Section 6002, requires Federal agencies to purchase items designated by the Environmental Protection Agency (EPA) as having recycled or recovered content. President Clinton's Executive Order 12873, *Federal Acquisition, Recycling and Waste Prevention*, requires Federal agencies to purchase EPA-designated recycled items except when these items do not meet availability, competition, performance, or price criteria. In May 1996, the Secretary of Energy set a goal increasing the Department of Energy's procurement of EPA-designated items to 100 percent by December 31, 1999.

The following tables present DOE's Affirmative Procurement data for Fiscal Year 1997, and illustrate DOE's progress toward meeting the Complex-Wide Affirmative Procurement Goals. This information is also available on the Executive Order 12873 Web site at http://gerweb.bdm.com/cfdocs/aprs/sitetotl.htm.

	Albuquerque Totals			AL Ops	
Product Type	Total	Recycled	%	Total	R
Paper	**$ 2,542,470**	**$ 759,619**	**30%**	**$ 59,806**	**$**
Uncoated Printing	$ 1,549,034	$ 323,507	21%	$ 59,806	$
Commercial Sanitary	$ 642,429	$ 390,523	61%	$ -	$
Bristols	$ 129,901	$ 24,234	19%	$ -	$
Paperboard and Packaging	$ 177,113	$ 660	0%	$ -	$
Coated Printing	$ 23,298	$ -	0%	$ -	$
Miscellaneous Paper Products	$ -	$ -	NA.	$ -	$
Newsprint	$ 20,695	$ 20,695	100%	$ -	$
Construction	**$ 980,416**	**$ 400,049**	**41%**	**$ -**	**$**
Cement & Concrete	$ 264,917	$ 233,698	88%	$ -	$
Carpet	$ 250,730	$ -	0%	$ -	$
Building Insulation	$ 76,510	$ 9,620	13%	$ -	$
Floor Tiles	$ 338,702	$ 151,879	45%	$ -	$
Structural Fiberboard	$ 40,161	$ 1,500	4%	$ -	$
Laminated Paperboard	$ 9,162	$ 3,352	37%	$ -	$
Patio Block	$ 234	$ -	0%	$ -	$
Non-Paper	**$ 1,652,988**	**$ 246,175**	**15%**	**$ 12,125**	**$**
Toner Cartridge	$ 1,223,956	$ 127,501	10%	$ 10,050	$
Plastic Trash Bags	$ 166,469	$ 103,266	62%	$ -	$
Plastic Desktop	$ 21,540	$ 1,197	6%	$ -	$
Binders	$ 173,799	$ 14,044	8%	$ -	$
Office Waste Receptacles	$ 4,264	$ 92	2%	$ -	$
Office Recycling Containers	$ 62,960	$ 75	0%	$ 2,075	$
Vehicular	**$ 123,216**	**$ 24,049**	**20%**	**$ -**	**$**
Tires	$ 75,493	$ 1,222	2%	$ -	$
Re-refined Oil	$ 43,548	$ 22,827	52%	$ -	$
Reclaimed Coolant	$ 4,175	$ -	0%	$ -	$
Transportation	**$ 3,636**	**$ -**	**0%**	**$ -**	**$**
Traffic Barriers	$ -	$ -	NA.	$ -	$
Traffic Cones	$ 3,636	$ -	0%	$ -	$
Landscape	**$ -**	**$ -**	**NA.**	**$ -**	**$**
Hydraulic Mulch	$ -	$ -	NA.	$ -	$
Yard Trimmings	$ -	$ -	NA.	$ -	$
Total	**$ 5,302,726**	**$ 1,429,892**	**27%**	**$ 71,931**	**$**

ice		Grand Junction (GJPO)			Kansas City (KCP)		
cled	%	Total	Recycled	%	Total	Recycled	%
57,434	**96%**	**$ 69,843**	**$ 63,587**	**91%**	**$ 445,873**	**$ 221,382**	**50%**
57,434	96%	$ 63,505	$ 57,758	91%	$ 309,765	$ 166,732	54%
-	NA.	$ 583	$ 583	100%	$ 54,736	$ 52,852	97%
-	NA.	$ 5,178	$ 4,996	96%	$ 29,723	$ 1,798	6%
-	NA.	$ 577	$ 250	43%	$ 49,206	$ -	0%
-	NA.	$ -	$ -	NA.	$ 2,443	$ -	0%
-	NA.	$ -	$ -	NA.	$ -	$ -	NA.
-	NA.	$ -	$ -	NA.	$ -	$ -	NA.
-	**NA.**	**$ -**	**$ -**	**NA.**	**$ 38,706**	**$ 6,772**	**17%**
-	NA.	$ -	$ -	NA.	$ 29,340	$ -	0%
-	NA.	$ -	$ -	NA.	$ 1,192	$ -	0%
-	NA.	$ -	$ -	NA.	$ 3,420	$ 3,420	100%
-	NA.	$ -	$ -	NA.	$ 1,402	$ -	0%
-	NA.	$ -	$ -	NA.	$ -	$ -	NA.
-	NA.	$ -	$ -	NA.	$ 3,352	$ 3,352	100%
-	NA.	$ -	$ -	NA.	$ -	$ -	NA.
1,125	**9%**	**$ 49,461**	**$ 15,214**	**31%**	**$ 77,674**	**$ 61,110**	**79%**
1,050	10%	$ 40,995	$ 7,004	17%	$ 53,216	$ 45,248	85%
-	NA.	$ -	$ -	NA.	$ 15,506	$ 15,506	100%
-	NA.	$ 90	$ 90	100%	$ 510	$ 127	25%
-	NA.	$ 8,376	$ 8,120	97%	$ 8,442	$ 229	3%
-	NA.	$ -	$ -	NA.	$ -	$ -	NA.
75	4%	$ -	$ -	NA.	$ -	$ -	NA.
-	**NA.**	**$ 230**	**$ -**	**0%**	**$ -**	**$ -**	**NA.**
-	NA.	$ -	$ -	NA.	$ -	$ -	NA.
-	NA.	$ 230	$ -	0%	$ -	$ -	NA.
-	NA.	$ -	$ -	NA.	$ -	$ -	NA.
-	**NA.**	**$ -**	**$ -**	**NA.**	**$ -**	**$ -**	**NA.**
-	NA.	$ -	$ -	NA.	$ -	$ -	NA.
-	NA.	$ -	$ -	NA.	$ -	$ -	NA.
-	**NA.**	**$ -**	**$ -**	**NA.**	**$ -**	**$ -**	**NA.**
-	NA.	$ -	$ -	NA.	$ -	$ -	NA.
-	NA.	$ -	$ -	NA.	$ -	$ -	NA.
8,559	**81%**	**$ 119,304**	**$ 78,801**	**66%**	**$ 562,253**	**$ 289,264**	**51%**

Table B-1
Fiscal Year 1997
Affirmative Procurement Data for the AlbuquerqueOperations Office

	Chicago Totals			Ames	
Product Type	Total	Recycled	%	Total	R
Paper	$ 977,850	$ 356,363	36%	$ 27,364	$
Uncoated Printing	$ 331,038	$ 87,975	27%	$ 18,939	$
Commercial Sanitary	$ 205,608	$ 149,577	73%	$ 5,357	$
Bristols	$ 269,011	$ 67,606	25%	$ 3,011	$
Paperboard and Packaging	$ 38,057	$ 13,857	36%	$ 57	$
Coated Printing	$ 134,136	$ 37,348	28%	$ -	$
Miscellaneous Paper Products	$ -	$ -	NA.	$ -	$
Newsprint	$ -	$ -	NA.	$ -	$
Construction	$ 813,880	$ 285,131	35%	$ 2,411	$
Cement & Concrete	$ 658,448	$ 253,024	38%	$ 304	$
Carpet	$ 86,525	$ 30,000	35%	$ -	$
Building Insulation	$ 63,807	$ 2,107	3%	$ 2,107	$
Floor Tiles	$ 5,100	$ -	0%	$ -	$
Structural Fiberboard	$ -	$ -	NA.	$ -	$
Laminated Paperboard	$ -	$ -	NA.	$ -	$
Patio Block	$ -	$ -	NA.	$ -	$
Non-Paper	$ 458,130	$ 73,621	16%	$ 14,164	$
Toner Cartridge	$ 344,200	$ 16,500	5%	$ 10,200	$
Plastic Trash Bags	$ 23,624	$ 10,015	42%	$ 375	$
Plastic Desktop	$ 6,029	$ 500	8%	$ 112	$
Binders	$ 81,777	$ 46,106	56%	$ 3,477	$
Office Waste Receptacles	$ 2,000	$ -	0%	$ -	$
Office Recycling Containers	$ 500	$ 500	100%	$ -	$
Vehicular	$ 107,993	$ 25,147	23%	$ -	$
Tires	$ 87,850	$ 22,969	26%	$ -	$
Re-refined Oil	$ 18,818	$ 2,178	12%	$ -	$
Reclaimed Coolant	$ 1,325	$ -	0%	$ -	$
Transportation	$ 352	$ -	0%	$ -	$
Traffic Barriers	$ -	$ -	NA.	$ -	$
Traffic Cones	$ 352	$ -	0%	$ -	$
Landscape	$ 250	$ 250	100%	$ -	$
	$ -	$ -	NA.	$ -	$
Yard Trimmings	$ 250	$ 250	100%	$ -	$
Total	$ 2,358,455	$ 740,512	31%	$ 43,939	$

		Argonne -E			Brookhaven		
cled	%	Total	Recycled	%	Total	Recycled	%
18,416	67%	$ 602,000	$ 197,000	33%	$ 201,404	$ 83,104	41%
13,176	70%	$ 205,000	$ -	0%	$ 20,879	$ 17,579	84%
2,577	48%	$ 135,000	$ 135,000	100%	$ 12,000	$ 12,000	100%
2,606	87%	$ 250,000	$ 50,000	20%	$ 15,000	$ 15,000	100%
57	100%	$ 12,000	$ 12,000	100%	$ 26,000	$ 1,800	7%
-	NA.	$ -	$ -	NA.	$ 127,525	$ 36,725	29%
-	NA.	$ -	$ -	NA.	$ -	$ -	NA.
-	NA.	$ -	$ -	NA.	$ -	$ -	NA.
2,411	100%	$ 75,000	$ 30,000	40%	$ 450,700	$ -	0%
304	100%	$ -	$ -	NA.	$ 389,000	$ -	0%
-	NA.	$ 75,000	$ 30,000	40%	$ -	$ -	NA.
2,107	100%	$ -	$ -	NA.	$ 61,700	$ -	0%
-	NA.	$ -	$ -	NA.	$ -	$ -	NA.
-	NA.	$ -	$ -	NA.	$ -	$ -	NA.
-	NA.	$ -	$ -	NA.	$ -	$ -	NA.
-	NA.	$ -	$ -	NA.	$ -	$ -	NA.
2,781	20%	$ 185,000	$ 24,000	13%	$ 132,300	$ 28,600	22%
-	0%	$ 150,000	$ 5,500	4%	$ 98,000	$ 8,000	8%
15	4%	$ 5,000	$ 5,000	100%	$ 10,000	$ 5,000	50%
-	0%	$ 2,500	$ 500	20%	$ -	$ -	NA.
2,766	80%	$ 25,000	$ 12,500	50%	$ 24,300	$ 15,600	64%
-	NA.	$ 2,000	$ -	0%	$ -	$ -	NA.
-	NA.	$ 500	$ 500	100%	$ -	$ -	NA.
-	NA.	$ 21,000	$ 21,000	100%	$ 68,978	$ 1,178	2%
-	NA.	$ 20,000	$ 20,000	100%	$ 54,277	$ -	0%
-	NA.	$ 1,000	$ 1,000	100%	$ 14,077	$ 1,178	8%
-	NA.	$ -	$ -	NA.	$ 624	$ -	0%
-	NA.	$ -	$ -	NA.	$ 352	$ -	0%
-	NA.	$ -	$ -	NA.	$ -	$ -	NA.
-	NA.	$ -	$ -	NA.	$ 352	$ -	0%
-	NA.	$ -	$ -	NA.	$ -	$ -	NA.
-	NA.	$ -	$ -	NA.	$ -	$ -	NA.
-	NA.	$ -	$ -	NA.	$ -	$ -	NA.
3,608	54%	$ 883,000	$ 272,000	31%	$ 853,734	$ 112,882	13%

Table B-2
Fiscal Year 1997
Affirmative Procurement Data for the Chicago Operations Office

	Idaho- INEEL		
Product Type	Total	Recycled	%
Paper	**$ 411,505**	**$ 403,274**	**98%**
Uncoated Printing	$ 411,505	$ 403,274	98%
Commercial Sanitary	$ -	$ -	NA.
Bristols	$ -	$ -	NA.
Paperboard and Packaging	$ -	$ -	NA.
Coated Printing	$ -	$ -	NA.
Miscellaneous Paper Products	$ -	$ -	NA.
Newsprint	$ -	$ -	NA.
Construction	**$ 3,315**	**$ -**	**0%**
Cement & Concrete	$ -	$ -	NA.
Carpet	$ -	$ -	NA.
Building Insulation	$ 3,315	$ -	0%
Floor Tiles	$ -	$ -	NA.
Structural Fiberboard	$ -	$ -	NA.
Laminated Paperboard	$ -	$ -	NA.
Patio Block	$ -	$ -	NA.
Non-Paper	**$ 36,593**	**$ 36,593**	**100%**
Toner Cartridge	$ 36,593	$ 36,593	100%
Plastic Trash Bags	$ -	$ -	NA.
Plastic Desktop	$ -	$ -	NA.
Binders	$ -	$ -	NA.
Office Waste Receptacles	$ -	$ -	NA.
Office Recycling Containers	$ -	$ -	NA.
Vehicular	**$ 191,427**	**$ 22,800**	**12%**
Tires	$ 126,344	$ 22,800	18%
Re-refined Oil	$ 65,083	$ -	0%
Reclaimed Coolant	$ -	$ -	NA.
Transportation	**$ -**	**$ -**	**NA.**
Traffic Barriers	$ -	$ -	NA.
Traffic Cones	$ -	$ -	NA.
Landscape	**$ -**	**$ -**	**NA.**
Hydraulic Mulch	$ -	$ -	NA.
Yard Trimmings	$ -	$ -	NA.
Total	**$ 642,840**	**$ 462,667**	**72%**

Table B-4
Fiscal Year 1997
Affirmative Procurement Data for the Idaho Operations Office

	Nevada		
Product Type	Total	Recycled	%
Paper	**$ 948,496**	**$ 910,744**	**96%**
Uncoated Printing	$ 474,248	$ 455,372	96%
Commercial Sanitary	$ 474,248	$ 455,372	96%
Bristols	$ -	$ -	NA.
Paperboard and Packaging	$ -	$ -	NA.
Coated Printing	$ -	$ -	NA.
Miscellaneous Paper Products	$ -	$ -	NA.
Newsprint	$ -	$ -	NA.
Construction	**$ 172,248**	**$ 135,672**	**79%**
Cement & Concrete	$ 36,576	$ -	0%
Carpet	$ 22,467	$ 22,467	100%
Building Insulation	$ 2,866	$ 2,866	100%
Floor Tiles	$ -	$ -	NA.
Structural Fiberboard	$ 110,339	$ 110,339	100%
Laminated Paperboard	$ -	$ -	NA.
Patio Block	$ -	$ -	NA.
Non-Paper	**$ 94,249**	**$ 75,716**	**80%**
Toner Cartridge	$ -	$ -	NA.
Plastic Trash Bags	$ -	$ -	NA.
Plastic Desktop	$ -	$ -	NA.
Binders	$ 94,249	$ 75,716	80%
Office Waste Receptacles	$ -	$ -	NA.
Office Recycling Containers	$ -	$ -	NA.
Vehicular	**$ 172,507**	**$ 36,145**	**21%**
Tires	$ 145,868	$ 18,976	13%
Re-refined Oil	$ 26,639	$ 17,169	64%
Reclaimed Coolant	$ -	$ -	NA.
Transportation	**$ -**	**$ -**	**NA.**
Traffic Barriers	$ -	$ -	NA.
Traffic Cones	$ -	$ -	NA.
Landscape	**$ -**	**$ -**	**NA.**
Hydraulic Mulch	$ -	$ -	NA.
Yard Trimmings	$ -	$ -	NA.
Total	**$ 1,387,500**	**$ 1,158,277**	**83%**

Table B-5
Fiscal Year 1997
Affirmative Procurement Data for the Nevada Operations Office

	Oak Ridge Totals			Oak Ridge Asso	
Product Type	Total	Recycled	%	Total	Recyc
Paper	$ 2,395,337	$ 1,537,067	64%	$ 15,981	$
Uncoated Printing	$ 1,372,888	$ 943,845	69%	$ 7,680	$
Commercial Sanitary	$ 408,086	$ 353,673	87%	$ 7,636	$
Bristols	$ 454,548	$ 84,272	19%	$ -	$
Paperboard and Packaging	$ 159,815	$ 155,277	97%	$ 665	$
Coated Printing	$ -	$ -	NA.	$ -	$
Miscellaneous Paper Products	$ -	$ -	NA.	$ -	$
Newsprint	$ -	$ -	NA.	$ -	$
Construction	$ 455,153	$ 418,921	92%	$ -	$
Cement & Concrete	$ 284,703	$ 284,703	100%	$ -	$
Carpet	$ 32,454	$ -	0%	$ -	$
Building Insulation	$ 134,218	$ 134,218	100%	$ -	$
Floor Tiles	$ 3,778	$ -	0%	$ -	$
Structural Fiberboard	$ -	$ -	NA.	$ -	$
Laminated Paperboard	$ -	$ -	NA.	$ -	$
Patio Block	$ -	$ -	NA.	$ -	$
Non-Paper	$ 753,352	$ 442,051	59%	$ 7,154	$
Toner Cartridge	$ 395,482	$ 392,220	99%	$ 3,284	$
Plastic Trash Bags	$ 162,863	$ 43,583	27%	$ 3,870	$
Plastic Desktop	$ 5,354	$ 153	3%	$ -	$
Binders	$ 156,933	$ 4,252	3%	$ -	$
Office Waste Receptacles	$ 32,720	$ 1,843	6%	$ -	$
Office Recycling Containers	$ -	$ -	NA.	$ -	$
Vehicular	$ 289,620	$ 23,817	8%	$ -	$
Tires	$ 253,655	$ 21,342	8%	$ -	$
Re-refined Oil	$ 35,965	$ 2,475	7%	$ -	$
Reclaimed Coolant	$ -	$ -	NA.	$ -	$
Transportation	$ -	$ -	NA.	$ -	$
Traffic Barriers	$ -	$ -	NA.	$ -	$
Traffic Cones	$ -	$ -	NA.	$ -	$
Landscape	$ 2,295	$ 2,295	100%	$ -	$
Hydraulic Mulch	$ 2,295	$ 2,295	100%	$ -	$
Yard Trimmings	$ -	$ -	NA.	$ -	$
Total	$ 3,895,757	$ 2,424,151	62%	$ 23,135	$

niv.		Oak Ridge National Lab			T. J. National Accelerator Facility		
	%	Total	Recycled	%	Total	Recycled	%
01	52%	$ 2,311,365	$ 1,517,226	66%	$ 67,991	$ 11,540	17%
-	0%	$ 1,308,683	$ 943,771	72%	$ 56,525	$ 74	0%
636	100%	$ 388,984	$ 334,571	86%	$ 11,466	$ 11,466	100%
-	NA.	$ 454,548	$ 84,272	19%	$ -	$ -	NA.
665	100%	$ 159,150	$ 154,612	97%	$ -	$ -	NA.
-	NA.	$ -	$ -	NA.	$ -	$ -	NA.
-	NA.	$ -	$ -	NA.	$ -	$ -	NA.
-	NA.	$ -	$ -	NA.	$ -	$ -	NA.
-	NA.	$ 455,153	$ 418,921	92%	$ -	$ -	NA.
-	NA.	$ 284,703	$ 284,703	100%	$ -	$ -	NA.
-	NA.	$ 32,454	$ -	0%	$ -	$ -	NA.
-	NA.	$ 134,218	$ 134,218	100%	$ -	$ -	NA.
-	NA.	$ 3,778	$ -	0%	$ -	$ -	NA.
-	NA.	$ -	$ -	NA.	$ -	$ -	NA.
-	NA.	$ -	$ -	NA.	$ -	$ -	NA.
-	NA.	$ -	$ -	NA.	$ -	$ -	NA.
50	96%	$ 695,996	$ 400,666	58%	$ 50,202	$ 34,525	69%
990	91%	$ 357,673	$ 354,705	99%	$ 34,525	$ 34,525	100%
370	100%	$ 158,993	$ 39,713	25%	$ -	$ -	NA.
-	NA.	$ 5,354	$ 153	3%	$ -	$ -	NA.
-	NA.	$ 141,256	$ 4,252	3%	$ 15,677	$ -	0%
-	NA.	$ 32,720	$ 1,843	6%	$ -	$ -	NA.
-	NA.	$ -	$ -	NA.	$ -	$ -	NA.
-	NA.	$ 289,620	$ 23,817	8%	$ -	$ -	NA.
-	NA.	$ 253,655	$ 21,342	8%	$ -	$ -	NA.
-	NA.	$ 35,965	$ 2,475	7%	$ -	$ -	NA.
-	NA.	$ -	$ -	NA.	$ -	$ -	NA.
-	NA.	$ -	$ -	NA.	$ -	$ -	NA.
-	NA.	$ -	$ -	NA.	$ -	$ -	NA.
-	NA.	$ -	$ -	NA.	$ -	$ -	NA.
-	NA.	$ 2,295	$ 2,295	100%	$ -	$ -	NA.
-	NA.	$ 2,295	$ 2,295	100%	$ -	$ -	NA.
-	NA.	$ -	$ -	NA.	$ -	$ -	NA.
1	66%	$ 3,754,429	$ 2,362,925	63%	$ 118,193	$ 46,065	39%

Table B-7
Fiscal Year 1997
Affirmative Procurement Data for
the Oak Ridge Operations Office

	Richland Totals			Bechtel			
Product Type	Total	Recycled	%	Total	Recycled	%	
Paper	$ 1,198,849	$ 1,071,558	89%	$ 133,065	$ 90,539	68%	$
Uncoated Printing	$ 1,081,557	$ 1,001,527	93%	$ 38,377	$ 38,377	100%	$
Commercial Sanitary	$ 96	$ 96	100%	$ -	$ -	NA.	$
Bristols	$ 22,508	$ 17,773	79%	$ -	$ -	NA.	$
Paperboard and Packaging	$ 94,688	$ 52,162	55%	$ 94,688	$ 52,162	55%	$
Coated Printing	$ -	$ -	NA.	$ -	$ -	NA.	$
Miscellaneous Paper Products	$ -	$ -	NA.	$ -	$ -	NA.	$
Newsprint	$ -	$ -	NA.	$ -	$ -	NA.	$
Construction	$ 96,135	$ 13,500	14%	$ -	$ -	NA.	$
Cement & Concrete	$ 76,782	$ 13,500	18%	$ -	$ -	NA.	$
Carpet	$ 1,164	$ -	0%	$ -	$ -	NA.	$
Building Insulation	$ 18,189	$ -	0%	$ -	$ -	NA.	$
Floor Tiles	$ -	$ -	NA.	$ -	$ -	NA.	$
Structural Fiberboard	$ -	$ -	NA.	$ -	$ -	NA.	$
Laminated Paperboard	$ -	$ -	NA.	$ -	$ -	NA.	$
Patio Block	$ -	$ -	NA.	$ -	$ -	NA.	$
Non-Paper	$ 667,555	$ 580,314	87%	$ 48,625	$ 48,251	99%	$
Toner Cartridge	$ 509,402	$ 487,774	96%	$ 48,625	$ 48,251	99%	$
Plastic Trash Bags	$ 127,266	$ 79,693	63%	$ -	$ -	NA.	$
Plastic Desktop	$ 14,860	$ 7,727	52%	$ -	$ -	NA.	$
Binders	$ 15,667	$ 4,760	30%	$ -	$ -	NA.	$
Office Waste Receptacles	$ -	$ -	NA.	$ -	$ -	NA.	$
Office Recycling Containers	$ 360	$ 360	100%	$ -	$ -	NA.	$
Vehicular	$ 122,844	$ 39,468	32%	$ -	$ -	NA.	$
Tires	$ 84,580	$ 10,732	13%	$ -	$ -	NA.	$
Re-refined Oil	$ 35,506	$ 28,736	81%	$ -	$ -	NA.	$
Reclaimed Coolant	$ 2,758	$ -	0%	$ -	$ -	NA.	$
Transportation	$ -	$ -	NA.	$ -	$ -	NA.	$
Traffic Barriers	$ -	$ -	NA.	$ -	$ -	NA.	$
Traffic Cones	$ -	$ -	NA.	$ -	$ -	NA.	$
Landscape	$ -	$ -	NA.	$ -	$ -	NA.	$
Hydraulic Mulch	$ -	$ -	NA.	$ -	$ -	NA.	$
Yard Trimmings	$ -	$ -	NA.	$ -	$ -	NA.	$
Total	$ 2,085,383	$ 1,704,840	82%	$ 181,690	$ 138,790	76%	$

	HEHF			Fluor Daniel Hanford NW			PNNL		
al	Recycled	%	Total	Recycled	%	Total	Recycled	%
8,335	$ 8,335	100%	$ 957,267	$ 895,323	94%	$ 100,182	$ 77,361	77%
4,435	$ 4,435	100%	$ 957,267	$ 895,323	94%	$ 81,478	$ 63,392	78%
-	$ -	NA.	$ -	$ -	NA.	$ 96	$ 96	100%
3,900	$ 3,900	100%	$ -	$ -	NA.	$ 18,608	$ 13,873	75%
-	$ -	NA.	$ -	$ -	NA.	$ -	$ -	NA.
-	$ -	NA.	$ -	$ -	NA.	$ -	$ -	NA.
-	$ -	NA.	$ -	$ -	NA.	$ -	$ -	NA.
-	$ -	NA.	$ -	$ -	NA.	$ -	$ -	NA.
-	$ -	NA.	$ 94,857	$ 13,500	14%	$ 1,278	$ -	0%
-	$ -	NA.	$ 76,782	$ 13,500	18%	$ -	$ -	NA.
-	$ -	NA.	$ -	$ -	NA.	$ 1,164	$ -	0%
-	$ -	NA.	$ 18,075	$ -	0%	$ 114	$ -	0%
-	$ -	NA.	$ -	$ -	NA.	$ -	$ -	NA.
-	$ -	NA.	$ -	$ -	NA.	$ -	$ -	NA.
-	$ -	NA.	$ -	$ -	NA.	$ -	$ -	NA.
-	$ -	NA.	$ -	$ -	NA.	$ -	$ -	NA.
2,167	$ 12,167	100%	$ 509,985	$ 439,462	86%	$ 96,778	$ 80,434	83%
5,015	$ 5,015	100%	$ 364,008	$ 355,419	98%	$ 91,754	$ 79,089	86%
-	$ -	NA.	$ 127,266	$ 79,693	63%	$ -	$ -	NA.
7,152	$ 7,152	100%	$ 5,760	$ -	0%	$ 1,948	$ 575	30%
-	$ -	NA.	$ 12,951	$ 4,350	34%	$ 2,716	$ 410	15%
-	$ -	NA.	$ -	$ -	NA.	$ -	$ -	NA.
-	$ -	NA.	$ -	$ -	NA.	$ 360	$ 360	100%
-	$ -	NA.	$ 122,844	$ 39,468	32%	$ -	$ -	NA.
-	$ -	NA.	$ 84,580	$ 10,732	13%	$ -	$ -	NA.
-	$ -	NA.	$ 35,506	$ 28,736	81%	$ -	$ -	NA.
-	$ -	NA.	$ 2,758	$ -	0%	$ -	$ -	NA.
-	$ -	NA.	$ -	$ -	NA.	$ -	$ -	NA.
-	$ -	NA.	$ -	$ -	NA.	$ -	$ -	NA.
-	$ -	NA.	$ -	$ -	NA.	$ -	$ -	NA.
-	$ -	NA.	$ -	$ -	NA.	$ -	$ -	NA.
-	$ -	NA.	$ -	$ -	NA.	$ -	$ -	NA.
-	$ -	NA.	$ -	$ -	NA.	$ -	$ -	NA.
0,502	$ 20,502	100%	$ 1,684,953	$ 1,387,753	82%	$ 198,238	$ 157,795	80%

Table B-9
Fiscal Year 1997
Affirmative Procurement Data for the Richland Operations Office

	Fossil Energy Totals		
Product Type	Total	Recycled	%
Paper	$ 170,914	$ 142,237	83
Uncoated Printing	$ 97,096	$ 82,165	8
Commercial Sanitary	$ 47,108	$ 45,438	9
Bristols	$ 19,292	$ 7,737	4
Paperboard and Packaging	$ 6,267	$ 6,267	100
Coated Printing	$ 1,151	$ 630	5
Miscellaneous Paper Products	$ -	$ -	N
Newsprint	$ -	$ -	N
Construction	$ 146,731	$ 63,169	43
Cement & Concrete	$ 128,464	$ 45,325	3
Carpet	$ -	$ -	
Building Insulation	$ 6,267	$ 5,844	9
Floor Tiles	$ 12,000	$ 12,000	100
Structural Fiberboard	$ -	$ -	N
Laminated Paperboard	$ -	$ -	N
Patio Block	$ -	$ -	N
Non-Paper	$ 114,166	$ 29,783	26
Toner Cartridge	$ 78,519	$ 20,661	2
Plastic Trash Bags	$ 11,730	$ 8,120	6
Plastic Desktop	$ 465	$ 465	10
Binders	$ 2,085	$ 85	
Office Waste Receptacles	$ 452	$ 452	10
Office Recycling Containers	$ 20,915	$ -	
Vehicular	$ 78,967	$ 10,954	14
Tires	$ 32,066	$ 3,235	
Re-refined Oil	$ 46,868	$ 7,719	
Reclaimed Coolant	$ 33	$ -	
Transportation	$ -	$ -	N
Traffic Barriers	$ -	$ -	N
Traffic Cones	$ -	$ -	N
Landscape	$ -	$ -	N
Hydraulic Mulch	$ -	$ -	N
Yard Trimmings	$ -	$ -	N
Total	$ 510,778	$ 246,143	48

FETC			Naval Petrol Reserves: CA		
Total	Recycled	%	Total	Recycled	%
$ 130,944	$ 125,151	96%	$ 23,391	$ 17,086	73%
$ 70,016	$ 65,079	93%	$ 23,391	$ 17,086	73%
$ 46,273	$ 45,438	98%	$ -	$ -	NA.
$ 7,737	$ 7,737	100%	$ -	$ -	NA.
$ 6,267	$ 6,267	100%	$ -	$ -	NA.
$ 651	$ 630	97%	$ -	$ -	NA.
$ -	$ -	NA.	$ -	$ -	NA.
$ -	$ -	NA.	$ -	$ -	NA.
$ 85,060	$ 63,169	74%	$ -	$ -	NA.
$ 66,793	$ 45,325	68%	$ -	$ -	NA.
$ -	$ -	NA.	$ -	$ -	NA.
$ 6,267	$ 5,844	93%	$ -	$ -	NA.
$ 12,000	$ 12,000	100%	$ -	$ -	NA.
$ -	$ -	NA.	$ -	$ -	NA.
$ -	$ -	NA.	$ -	$ -	NA.
$ -	$ -	NA.	$ -	$ -	NA.
$ 52,267	$ 21,783	42%	$ -	$ -	NA.
$ 39,340	$ 12,661	32%	$ -	$ -	NA.
$ 9,925	$ 8,120	82%	$ -	$ -	NA.
$ 465	$ 465	100%	$ -	$ -	NA.
$ 2,085	$ 85	4%	$ -	$ -	NA.
$ 452	$ 452	100%	$ -	$ -	NA.
$ -	$ -	NA.	$ -	$ -	NA.
$ 1,127	$ 192	17%	$ 34,993	$ 8,262	24%
$ -	$ -	NA.	$ 27,466	$ 735	3%
$ 1,094	$ 192	18%	$ 7,527	$ 7,527	100%
$ 33	$ -	0%	$ -	$ -	NA.
$ -	$ -	NA.	$ -	$ -	NA.
$ -	$ -	NA.	$ -	$ -	NA.
$ -	$ -	NA.	$ -	$ -	NA.
$ -	$ -	NA.	$ -	$ -	NA.
$ -	$ -	NA.	$ -	$ -	NA.
$ -	$ -	NA.	$ -	$ -	NA.
$ 269,398	$ 210,295	78%	$ 58,384	$ 25,348	43%

Table B-12
Fiscal Year 1997
Affirmative Procurement Data for
Fossil Energy

	Golden Totals	
Product Type	Total	Recycled
Paper	$ 79,438	$ 79,
Uncoated Printing	$ 79,438	$ 7
Commercial Sanitary	$ -	$
Bristols	$ -	$
Paperboard and Packaging	$ -	$
Coated Printing	$ -	$
Miscellaneous Paper Products	$ -	$
Newsprint	$ -	$
Construction	$ 220,253	$ 220,
Cement & Concrete	$ 220,000	$ 22
Carpet	$ -	$
Building Insulation	$ 253	$
Floor Tiles	$ -	$
Structural Fiberboard	$ -	$
Laminated Paperboard	$ -	$
Patio Block	$ -	$
Non-Paper	$ 7,788	$ 4,
Toner Cartridge	$ 7,518	$
Plastic Trash Bags	$ -	$
Plastic Desktop	$ 228	$
Binders	$ -	$
Office Waste Receptacles	$ 42	$
Office Recycling Containers	$ -	$
Vehicular	$ -	$
Tires	$ -	$
Re-refined Oil	$ -	$
Reclaimed Coolant	$ -	$
Transportation	$ -	$
Traffic Barriers	$ -	$
Traffic Cones	$ -	$
Landscape	$ -	$
Hydraulic Mulch	$ -	$
Yard Trimmings	$ -	$
Total	$ 307,479	$ 303,

		NREL			Golden Field Office		
	%	Total	Recycled	%	Total	Recycled	%
5	**100%**	**$ 75,000**	**$ 75,000**	**100%**	**$ 4,438**	**$ 4,425**	**100%**
25	100%	$ 75,000	$ 75,000	100%	$ 4,438	$ 4,425	100%
-	NA.	$ -	$ -	NA.	$ -	$ -	NA.
-	NA.	$ -	$ -	NA.	$ -	$ -	NA.
-	NA.	$ -	$ -	NA.	$ -	$ -	NA.
-	NA.	$ -	$ -	NA.	$ -	$ -	NA.
-	NA.	$ -	$ -	NA.	$ -	$ -	NA.
-	NA.	$ -	$ -	NA.	$ -	$ -	NA.
3	**100%**	**$ 220,253**	**$ 220,253**	**100%**	**$ -**	**$ -**	**NA.**
0	100%	$ 220,000	$ 220,000	100%	$ -	$ -	NA.
-	NA.	$ -	$ -	NA.	$ -	$ -	NA.
3	100%	$ 253	$ 253	100%	$ -	$ -	NA.
-	NA.	$ -	$ -	NA.	$ -	$ -	NA.
-	NA.	$ -	$ -	NA.	$ -	$ -	NA.
-	NA.	$ -	$ -	NA.	$ -	$ -	NA.
-	NA.	$ -	$ -	NA.	$ -	$ -	NA.
	52%	**$ -**	**$ -**	**NA.**	**$ 7,788**	**$ 4,029**	**52%**
	51%	$ -	$ -	NA.	$ 7,518	$ 3,870	51%
	NA.	$ -	$ -	NA.	$ -	$ -	NA.
	51%	$ -	$ -	NA.	$ 228	$ 117	51%
	NA.	$ -	$ -	NA.	$ -	$ -	NA.
	100%	$ -	$ -	NA.	$ 42	$ 42	100%
	NA.	$ -	$ -	NA.	$ -	$ -	NA.
	NA.	**$ -**	**$ -**	**NA.**	**$ -**	**$ -**	**NA.**
	NA.	$ -	$ -	NA.	$ -	$ -	NA.
	NA.	$ -	$ -	NA.	$ -	$ -	NA.
	NA.	$ -	$ -	NA.	$ -	$ -	NA.
	NA.	**$ -**	**$ -**	**NA.**	**$ -**	**$ -**	**NA.**
	NA.	$ -	$ -	NA.	$ -	$ -	NA.
	NA.	$ -	$ -	NA.	$ -	$ -	NA.
	NA.	**$ -**	**$ -**	**NA.**	**$ -**	**$ -**	**NA.**
	NA.	$ -	$ -	NA.	$ -	$ -	NA.
	NA.	$ -	$ -	NA.	$ -	$ -	NA.
	99%	**$ 295,253**	**$ 295,253**	**100%**	**$ 12,226**	**$ 8,454**	**69%**

Table B-13
Fiscal Year 1997
Affirmative Procurement Data for
the Golden Field Office

	Power Administration Totals			SouthWest
Product Type	Total	Recycled	%	Total	Recyc
Paper	**$ 15,241**	**$ 4,489**	**29%**	**$ 2,809**	**$**
Uncoated Printing	$ 5,861	$ 2,989	51%	$ 2,809	$
Coated Printing	$ -	$ -	NA.	$ -	$
Bristols	$ 1,703	$ -	0%	$ -	$
Commercial Sanitary	$ 5,500	$ 1,500	27%	$ -	$
Newsprint	$ -	$ -	NA.	$ -	$
Paperboard and Packaging	$ 2,177	$ -	0%	$ -	$
Miscellaneous Paper Products	$ -	$ -	NA.	$ -	$
Construction	**$ 298,981**	**$ 117,243**	**39%**	**$ 95,000**	**$**
Cement & Concrete	$ 285,381	$ 117,243	41%	$ 95,000	$
Carpet	$ 2,000	$ -	0%	$ -	$
Building Insulation	$ 5,000	$ -	0%	$ -	$
Floor Tiles	$ 4,600	$ -	0%	$ -	$
Structural Fiberboard	$ 2,000	$ -	0%	$ -	$
Laminated Paperboard	$ -	$ -	NA.	$ -	$
Patio Block	$ -	$ -	NA.	$ -	$
NonPaper	**$ 49,526**	**$ 9,326**	**19%**	**$ -**	**$**
Binders	$ 2,107	$ -	0%	$ -	$
Office Recycling Containers	$ -	$ -	NA.	$ -	$
Office Waste Receptacles	$ -	$ -	NA.	$ -	$
Plastic Desktop	$ 858	$ 300	35%	$ -	$
Plastic Trash Bags	$ 1,000	$ -	0%	$ -	$
Toner Cartridge	$ 45,561	$ 9,026	20%	$ -	$
Vehicular	**$ 72,737**	**$ 1,410**	**2%**	**$ 5,210**	**$**
Reclaimed Coolant	$ 100	$ 100	100%	$ -	$
Re-refined Oil	$ 5,546	$ 1,310	24%	$ 341	$
Tires	$ 67,091	$ -	0%	$ 4,869	$
Transportation	**$ -**	**$ -**	**NA.**	**$ -**	**$**
Traffic Barriers	$ -	$ -	NA.	$ -	$
Traffic Cones	$ -	$ -	NA.	$ -	$
Landscape	**$ 1,000**	**$ 1,000**	**100%**	**$ -**	**$**
Hydraulic Mulch	$ 1,000	$ 1,000	100%	$ -	$
Yard Trimmings	$ -	$ -	NA.	$ -	$
Total	**$ 437,485**	**$ 133,468**	**31%**	**$ 103,019**	**$**

n		Western Area			SouthEastern		
d	%	Total	Recycled	%	Total	Recycled	%
,809	100%	$ 12,432	$ 1,680	14%	$ -	$ -	NA.
2,809	100%	$ 3,052	$ 180	6%	$ -	$ -	NA.
-	NA.	$ -	$ -	NA.	$ -	$ -	NA.
-	NA.	$ 1,703	$ -	0%	$ -	$ -	NA.
-	NA.	$ 5,500	$ 1,500	27%	$ -	$ -	NA.
-	NA.	$ -	$ -	NA.	$ -	$ -	NA.
-	NA.	$ 2,177	$ -	0%	$ -	$ -	NA.
-	NA.	$ -	$ -	NA.	$ -	$ -	NA.
000	37%	$ 203,981	$ 82,243	40%	$ -	$ -	NA.
5,000	37%	$ 190,381	$ 82,243	43%	$ -	$ -	NA.
-	NA.	$ 2,000	$ -	0%	$ -	$ -	NA.
-	NA.	$ 5,000	$ -	0%	$ -	$ -	NA.
-	NA.	$ 4,600	$ -	0%	$ -	$ -	NA.
-	NA.	$ 2,000	$ -	0%	$ -	$ -	NA.
-	NA.	$ -	$ -	NA.	$ -	$ -	NA.
-	NA.	$ -	$ -	NA.	$ -	$ -	NA.
-	NA.	$ 48,326	$ 8,126	17%	$ 1,200	$ 1,200	100%
-	NA.	$ 2,107	$ -	0%	$ -	$ -	NA.
-	NA.	$ -	$ -	NA.	$ -	$ -	NA.
-	NA.	$ -	$ -	NA.	$ -	$ -	NA.
-	NA.	$ 858	$ 300	35%	$ -	$ -	NA.
-	NA.	$ 1,000	$ -	0%	$ -	$ -	NA.
-	NA.	$ 44,361	$ 7,826	18%	$ 1,200	$ 1,200	100%
-	0%	$ 67,527	$ 1,410	2%	$ -	$ -	NA.
-	NA.	$ 100	$ 100	100%	$ -	$ -	NA.
-	0%	$ 5,205	$ 1,310	25%	$ -	$ -	NA.
-	0%	$ 62,222	$ -	0%	$ -	$ -	NA.
-	NA.	$ -	$ -	NA.	$ -	$ -	NA.
-	NA.	$ -	$ -	NA.	$ -	$ -	NA.
-	NA.	$ -	$ -	NA.	$ -	$ -	NA.
-	NA.	$ 1,000	$ 1,000	100%	$ -	$ -	NA.
-	NA.	$ 1,000	$ 1,000	100%	$ -	$ -	NA.
-	NA.	$ -	$ -	NA.	$ -	$ -	NA.
)9	37%	$ 333,266	$ 94,459	28%	$ 1,200	$ 1,200	100%

Table B-15
Fiscal Year 1997
Affirmative Procurement Data for
Power Administration

Appendix C

Point of Contact List

This Appendix provides points of contact for obtaining additional information on DOE Operations/Field Offices and sites/facilities.

POINT OF CONTACT LIST

Bold italics indicate sites that are exempt from Calendar Year 1997 reporting.

Operations Office	Site/Facility Name	Contact Name	E-Mail Address	Telephone	Fax
AL	*Albuquerque Operations Office*	*Mike Sweitzer*	*msweitzer@doeal.gov*	*505-845-4347*	*505-845-6286*
AL	***Grand Junction Projects Office***	***Andria Dutcher***	***adutcher@GJPMAIL.DOEGJPO.com***	***970-248-7656***	***970-248-6040***
AL	Inhalation Toxicology Laboratory (formerly the Inhalation Toxicology Research Institute)	Mary Hall	mshall@lrri.org	505-845-1076	505-845-1198
AL	Kansas City Plant	Bill Schlosberg	wschlosberg@kcp.com	816-997-3673	816-997-4208
AL	Los Alamos National Laboratory	Dianne Wilburn	dwwilburn@lanl.gov	505-667-6952	505-665-8118
AL	Pantex Plant	James Luginbyhl	jluginby@pantex.com	806-477-6507	806-477-7979
AL	Sandia National Laboratories/CA	Sally Raubfogel	sjraubf@sandia.gov	510-294-2341	510-294-3418
AL	Sandia National Laboratories/NM	Kylene Molley Mary Ann Olascoaga	kjmolle@sandia.gov molasco@sandia.gov	505-284-3982 505-889-4590	505-844-3747 505-889-4511
AL	Waste Isolation Pilot Plant	Cynthia Zvonar	zvonarc@wipp.carlsbad.nm.us	505-234-7495	505-234-7008
CH	***Ames Laboratory***	***Paul Waters***	***waters@ameslab.gov***	***515-294-7923***	***515-294-2155***
CH	Argonne National Laboratory-East	Keith Trychta	ktrychta@anl.gov	630-252-1476	630-252-9767
CH	Argonne National Laboratory-West	Adrian Collins	adrian.collins@anlw.anl.gov	208-533-7643	208-533-7344
CH	Brookhaven National Laboratory	George Goode	goode@mail.sep.bnl.gov	516-344-4549	516-344-7334
CH	***Chicago Operations Office***	***Antanas Bindokas***	***antanas.bindokas@ch.doe.gov***	***630-252-2692***	***630-252-8649***
CH	***Environmental Measurements Laboratory***	***Al Crescenzi***	***alcres@eml.doe.gov***	***212-620-3571***	***212-620-3600***
CH	Fermi National Accelerator Laboratory	Ken Isakson	isakson@fnal.gov	630-840-8203	630-840-3390
CH	***New Brunswick Laboratory***	***Eric Dallmann***	***eric.dallmann@ch.doe.gov***	***630-252-3340***	***630-252-6256***
CH	Princeton Plasma Physics Laboratory	Tom McGeachen	tmcgeach@pppl.gov	609-243-2948	609-243-3366
HQ	***Alaska Power Administration***	***Rob Waldman***	***rob@wapa.gov***	***907-586-7546***	***907-586-7270***
HQ	***Albany Research Center***	***Dave Flinn***	***flinn@alrc.doe.gov***	***541-967-5807***	***541-967-5936***
HQ	***Bonneville Power Administration***	***Rebecca Redeker***	***rlredeker@bpa.gov***	***503-230-7603***	***503-230-3314***
HQ	***Federal Energy Technology Center (FETC) - Morgantown***	***Jason M. Cook***	***jcook@metz.doe.gov***	***304-285-4718***	***304-285-4403***

POINT OF CONTACT LIST

Bold italics indicate sites that are exempt from Calendar Year 1997 reporting.

Operations Office	Site/Facility Name	Contact Name	E-Mail Address	Telephone	Fax
HQ	Federal Energy Technology Center (FETC) - Pittsburgh	Bruce Webster	webster@fetc.doe.gov	412-892-4475	412-892-4726
HQ	***National Petroleum Technology Office***	***David Alleman***	***dalleman@npto.doe.gov***	***918-337-4455***	***918-337-4418***
HQ	***National Renewable Energy Laboratory***	***Deborah Turner***	***deborah_turner@nrel.gov***	***303-275-4746***	***303-275-4788***
HQ	***Naval Petroleum & Oil Shale Reserves (CO, UT, WY)***	***David Miles***	***dam@casper.net***	***307-437-9631***	***307-437-9623***
HQ	***Southeastern Power Administration***	***Jim B. Lloyd***	***jiml@sepa.fed.us***	***706-213-3850***	***706-213-3884***
HQ	***Southwestern Power Administration***	***Joe Melinovsky***	***melinovsky@swpa.gov***	***918-595-6667***	***918-595-6656***
HQ	***Strategic Petroleum Reserve Project Management Office (SPRPMO)***	***Brent Smith***	***brent.smith@spr.doe.gov***	***504-734-4970***	***504-734-4950***
HQ	Western Area Power Administration	Gene Iley	ILEY@wapa.gov	970-490-7294	970-490-7579
HQ	***Yucca Mountain Project Office***	***Scott A. Wade***	***Scott Wade@notes.ymp.gov***	***702-794-5459***	***702-794-5467***
ID	Idaho National Engineering and Environmental Laboratory	John Griffin Chuck Ljungberg	jdg@inel.gov ljungbc@id.doe.gov	208-526-6997 208-526-0198	208-526-1458 208-526-1926
NV	Nevada DOE Operations Office	Bob Barner	barner@nv.doe.gov	702-295-7500	701-295-4515
NV	Nevada Test Site/ North Las Vegas Facility Bechtel Nevada	Gina Cook	cookgm@nv.doe.gov	702-295-2985	702-295-1420
OAK	Energy Technology Engineering Center	Karin King	karin.king@oak.doe.gov	510-637-1638	510-637-1646
OAK	Lawrence Berkeley National Laboratory	Shelley A. Worsham	saworsham@lbl.gov	510-486-6123	510-486-6603
OAK	Lawrence Livermore National Laboratory	John Celeste	celeste1@llnl.gov	510-422-1685	510-422-3469
OAK	Stanford Linear Accelerator Center	Richard Cellamare	rcellamare@slac.stanford.edu	650-926-3401	650-926-3175
OH	Battelle Columbus Laboratories	Jim Eide	eide@battelle.org	614-424-3785	614-424-7990

POINT OF CONTACT LIST

Bold italics indicate sites that are exempt from Calendar Year 1997 reporting.

Operations Office	Site/Facility Name	Contact Name	E-Mail Address	Telephone	Fax
OH	Fernald Environmental Management Project				
	- Area Office	Pete Yerace	pete.yerace@fernald.gov	513-648-3161	513-648-3076
	- Site Contact	Alisa Rhodes	alisa_rhodes@fernald.gov	513-648-4968	513-648-5701
	FERMCO	Bob Lehrter	robert.lehrter@fernald.gov	513-648-4966	513-648-5701
OH	Mound Plant	Michael Merker	michael.merker@em.doe.gov	937-865-3644	937-865-4489
		Rob Rothman	robert.rothman@em.doe.gov	937-865-3823	937-865-4489
OH	***Ohio Field Office***	***Don Hodge***	***jonah.hodge@em.doe.gov***	***937-865-3622***	***937-865-4402***
OH	RMI Environmental Services	Joe Britcher	joe_britcher@rmies.com	440-993-1976	440-993-1918
OH	West Valley Demonstration Project	Ahmad Al-Daouk	aaldaouk@wv.doe.gov	716-942-4629	716-942-4703
OR	East Tennessee Technology Park	Angela Tallent	AP6@ornl.gov	423-241-5074	423-576-7668
OR	***Oak Ridge Institute for Science and Education***	***Tom Wantland***	***wantlant@orau.gov***	***423-576-3336***	***423-576-7047***
OR	Oak Ridge National Laboratory	Susan R. C. Michaud	SUN@ornl.gov	423-576-1562	423-241-2843
OR	***Oak Ridge Operations Office***	***Ana Gonzalez***	***gonzalezal@oro.doe.gov***	***423-241-4212***	***423-576-6074***
OR	Oak Ridge Y-12 Plant	Sheila Poligone	SS9@ornl.gov	423-241-2568	423-241-2857
		Eva Irwin	EXI@ornl.gov	423-241-2581	423-241-2857
OR	***Office of Scientific and Technical Information***	***William T. Edmonds***	***Bill.Edmonds@ccmail.osti.gov***	***423-576-3382***	***423-576-2865***
OR	Paducah Gaseous Diffusion Plant	Garyena Belcher	GBE@ornl.gov	502-441-5055	502-441-5177
OR	Portsmouth Gaseous Diffusion Plant	Mitch Newman	N5Z@cosmail4sctd.ornl.gov	614-897-2331	614-897-6274
		John R. Venneman	V87@ornl.gov	614-897-2331	614-897-6274
OR	***Thomas Jefferson National Accelerator Facility***	***Barbara Morgan***	***barbara.morgan@oer.doe.gov***	***757-269-7139***	***757-269-7146***
OR	Weldon Spring Site Remedial Action Project	Tom Pauling	thomas.pauling.wssrap.com	314-926-7051	314-447-0739
RF	***Rocky Flats Field Office***	***Sandra MacLeod***	***sandra.macleod@rfets.gov***	***303-966-3367***	***303-966-4728***
RF	Rocky Flats Environmental Technology Site	Sandra MacLeod	sandra.macleod@rfets.gov	303-966-3367	303-966-4728
RL	Hanford Site	Pete Segall	Peter_Segall@rl.gov	509-372-0469	509-373-0743

POINT OF CONTACT LIST

Bold italics indicate sites that are exempt from Calendar Year 1997 reporting.

Operations Office	Site/Facility Name	Contact Name	E-Mail Address	Telephone	Fax
RL	Pacific Northwest National Laboratory	Jill Engel-Cox	ja.engelcox@pnl.gov	509-372-0307	509-376-6663
RL	***Richland Operations Office***	***Anna Beard***	***anna_v_beard@rl.gov***	***509-376-7472***	***509-372-1926***
SR	***Savannah River Operations Office***	***Stephen Macmull***	***stephen.macmull@srs.gov***	***803-725-3817***	***803-725-3616***
SR	Savannah River Site - Westinghouse	Phil Mottel	phil.mottel@srs.gov	803-557-6363	803-557-6526

Appendix D

Pollution Prevention Web Site Addresses

As recognition of the importance of pollution prevention increases, the number of pollution prevention Web sites also increases. Following is a growing list of Web site addresses for additional information on pollution prevention.

Center for Economic Studies: Energy and Environmental Issues
www.census.gov/ces/prog2.html

EcoMall
www.ecomall.com/

EcoNet
www.igc.apc.org/econet/

Environmental Compliance Assistance Center
www.hazmat.frcc.cccoes.edu

Environmental News Network
www.enn.com

Environmental RouteNet
moe.csa.com/routenet

Enviroene
es.epa.gov

EPIC
epic.er.doe.gov/epic

Executive Order 12873 "Federal Aquisition, Recycling, and Waste Prevention"
http://gerweb.bdm.com/cfdocs/aprs/default.htm

Fedworld
www.fedworld.gov

Global Futures Foundation
www.globalff.org/

The Global Network of Environment Technology
gnet.together.org/

Idaho National Engineering and Environmental Laboratory Home Page
www.inel.gov/

The International Council for Local Environmental Initiative
www.iclei.org./

Lawrence Livermore National Laboratories Home Page
www.llnl.gov/

Maine Department of Environmental Protection's Pollution Prevention Resource List
www.state.me.us/dep/p2list.htm

Michigan Department of Environmental Quality
www.deq.state.mi.us

National Pollution Prevention Center for Higher Education
www.snre.umich.edu/nppc/

Office of the Federal Environmental Executive
www.ofee.gov/

Office of Pollution Prevention (EM-77)
http://twilight.saic.com/wastemin/

Office of Pollution Prevention and Compliance Assistance

www.dep.state.pa.us/dep/deputate/pollprev/pollution_prevention.html

OIT Chemical Industry Team

www.oit.doe.gov/IOF/chemicals/

Pollution Prevention Articles

procor.misi.net/articles.htm

Pollution Prevention Program Office, Los Alamos National Laboratory

perseus.lanl.gov/

SAGE Solvent Alernatives Guide

clean.rti.org

U.S. Army Environmental Center

aec-www.apgea.army.mil:8080/

U.S. Department of Energy Home Page

www.doe.gov

U.S. EPA Home Page

www.epa.gov

Appendix E

Methodology for Calculating Pollution Prevention Project Return-on-Investment

A rigorous process for determining the Return-on-Investment (ROI) was established for the ROI Program that was initiated by the Pollution Prevention Executive Board. The process serves as a means to identify pollution prevention projects that provide a high ROI through the reduction of waste and its associated waste management costs, and therefore are fiscally beneficial to the Department. ROI is a performance indicator that compares savings for a particular project to the costs associated with that project.

ROI is defined as: Savings/Costs.

For the purposes of pollution prevention projects, ROI is calculated as follows:

$$ROI\% = \frac{[B - A] - \{[C + E + D]/L\}}{[C + E + D]} \times 100$$

Where:

- A = Annual recurring operating and maintenance costs After implementation of project.
- B = Annual recurring operating and maintenance costs Before implementation of project.
- C = Capital Investment (one-time implementation cost).
- D = Estimated project termination/disassembly cost (only for projects with a useful life (L) greater than five years).
- E = Installation Operating Expenses (one-time implementation cost).
- L = Useful project Life (in years).

Standardized worksheets are utilized to identify and tabulate estimates for both annual recurring costs and implementation costs for a particular project. Example worksheets are provided on the following pages. Worksheet 1: Itemized Operating & Maintenance Annual Recurring Costs, facilitates the tabulation of the current (i.e., before or baseline) costs and anticipated future (i.e., after) costs following successful completion of the project. The costs associated with individual operating and maintenance categories are itemized on this worksheet. Worksheet 2: Itemized Project Funding Requirements, provides a cost breakdown of the project, identifying project funding requirements. The cost elements for both capital investments and installation operating expenses are listed as fully burdened costs to the Department.

E.1 Elements of ROI Equation Cost Components

E.1.1 Annual Recurring O&M Costs, Before & After (B & A)

Include all annual recurring costs associated with equipment, raw materials and supplies, utility costs (i.e., steam, electricity, natural gas, water, etc.), operation and maintenance

Worksheet 1: Itemized Operating & Maintenance Annual Recurring Costs

Expense Cost Items	Before Annual Costs		After Annual Costs
1. Equipment			
2. Purchased raw materials and supplies			
3. Process Operation Costs:			
Utility costs			
Labor costs			
Routine maintenance costs for processes			
4. PPE & related health/safety supply costs			
5. Waste Management Costs:			
Waste container costs			
Treatment/Storage/Disposal costs			
Inspection/Compliance costs			
6. Recycling Costs			
Material collection/separation/preparation costs			
a. Material and supply costs			
b. Operations and maintenance labor costs			
Vendor costs for recycling			
7. Administrative/Other Costs			
Total Annual Cost : Before (B) =		**After (A) =**	

Worksheet 2: Itemized Project Funding Requirements (i.e., One Time Implementation Costs)

Category	Cost $
Initial Capital Investment GPE: [ ] GPP: [ ] (mark, as applicable)	
1. Design	
2. Purchase	
3. Installation	
4. Other capital investments (explain)	
Subtotal: Capital Investment = (C)	
Installation Operating Expenses	
1. Planning/ Procedure development	
2. Training	
3. Miscellaneous supplies	
4. Startup/Testing	
5. Readiness reviews/ Management assessment/ Administrative costs	
6. Other installation operating expenses (explain)	
Subtotal: Installation Operating Expenses = (E)	
TOTAL PROJECT FUNDING REQUIREMENTS = (C + E)	

Useful Project Life = (L) _____ Years **Time to Implement: _____ Months**

Estimated Project Termination/Disassembly Cost (if applicable) = (D) _____
(Only for Projects where L ≤ 5 years; D = 0 if L > 5 years)

Return on Investment Calculation

$$\text{Return on Investment (ROI) \%} = \frac{\text{[Before - After] - \{[Total Project Funding Requirements + Project Termination] / Useful Life\}}}{\text{[Total Project Funding Requirements + Project Termination]}} \times 100$$

$$\text{ROI \%} = \frac{[B - A] - \{[C + E + D] / L\}}{[C + E + D]} \times 100 = \_\_\_\_\_ \%$$

Notes: Before (B) and After (A) are Operating & Maintenance Annual Recurring Costs from Worksheet 1.

labor costs (fully burdened, including overheads and indirects), protective equipment and other related health or safety materials and supplies, waste containers, waste Treatment/Storage/Disposal, inspection/compliance (sampling, testing, laboratory analysis), material collection/separation/preparation for recycle, and administrative costs (record keeping, data analysis, progress reporting).

Labor costs are determined for a particular activity by multiplying the estimated annual man-hours by the appropriate labor rate, in dollars per hour, paid to personnel who will be either operating the equipment in question or, as appropriate, supervising its operation. Overhead rates and indirects should be added in as appropriate.

Credit for labor savings can only be taken when a person is removed from the particular process group (or plant charge number) or stops charging his/her hours to the subject account.

E.1.2 Initial Capital Investment (C)

Include all one-time expenditures associated with design, procurement, installation of the project.

E.1.3 Project Termination/Disassembly Cost (D)

Include costs associated with disassembly and removal of equipment/structures provided as part of the proposed project, decontamination, release surveys, and final dispositioning of materials.

E.1.4 Installation Operating Expenses (E)

Include all one-time expenditures (material and labor) associated with planning/ procedure development, training, miscellaneous supplies, startup and testing, readiness reviews, and management assessment, and any other expense costs required to implement the project.

Appendix F
Glossary of Terms

11e(2) BYPRODUCT MATERIAL - As defined by Section 11e(2) of the Atomic Energy Act of 1954, as amended, and Department of Energy Order 5820.2A, 11e(2) byproduct material is "the tailings or waste produced by the extraction or concentration of uranium or thorium from any ore processed primarily for its source material content." Ore bodies depleted by uranium solution extraction operations and which remain underground do not constitute byproduct material.

AFFIRMATIVE PROCUREMENT - The Resource Conservation and Recovery Act, Section 6002, requires Federal agencies to purchase items designated by the Environmental Protection Agency (EPA) as having recycled or recovered content. President Clinton's Executive Order 12873, *Federal Acquisition, Recycling and Waste Prevention*, requires Federal agencies to purchase EPA-designated recycled items except when these items do not meet availability, competition, performance, or price criteria. In May 1996, the Secretary of Energy set a goal increasing the Department of Energy's procurement of EPA-designated items to 100 percent by December 31, 1999.

CALENDAR YEAR - The twelve-month period based on the Gregorian calendar, beginning January 1 and ending December 31.

CLEANUP/STABILIZATION WASTE - Cleanup/stabilization encompasses a complex range of activities including environmental restoration of contaminated media (soil, groundwater, surface water, sediments, etc.); stabilization of nuclear and nonnuclear (chemical) materials; and deactivation and decommissioning (including decontamination) of facilities. Cleanup/stabilization waste consists of one-time operations waste produced by environmental restoration program activities, including primary and secondary wastes associated with retrieval and remediation operations; "legacy wastes;" and wastes from decontamination and decommissioning/transition operations. It also includes all Toxic Substances Control Act regulated wastes, such as polychlorinated biphenyl-contaminated fluids and/or equipment. Note that cleanup/stabilization activities that generate wastes do not necessarily occur at a single point in time, but may have a duration of several years during which time wastes are produced. By definition, these activities are not considered to be routine (periodic and/or on-going), because *the waste is a direct result of past operations and activities*, rather than a current process. Newly generated wastes that are produced during these "one-time operations" are considered to be a secondary wastestream, and are separately accounted for whenever possible. This secondary (newly generated) waste usually results from common activities such as handling, sampling, treatment, repackaging, shipping, etc.

> **Example:** Twenty drums of unknown waste are retrieved from an old dump site. The waste must be sampled and characterized before any treatment or disposal options can be determined. What kinds of waste are generated by this particular activity?

Primary Waste: the original 20 drums of waste (including the drums) which were retrieved. The 20 drums of waste were generated by past operations, and are not considered newly generated wastes.

Secondary Waste: any newly generated waste which results from the retrieval, sampling, or characterization process (e.g., anti-contamination clothing, sample vials, syringes, chemicals, containers, contamination control structures, etc.).

DECOMMISSIONING - Actions taken to reduce the potential health and safety impacts of contaminated DOE facilities, including activities to remove a facility from operation, followed by decontamination, entombment, dismantlement, or conversion to another use.

DOE AREA OFFICES - The first line DOE field element that carries the organizational responsibility for (1) managing and executing assigned programs, (2) directing contractors who conduct programs, and (3) assuring that environment, safety, and health protection are integral parts of each program.

DOE FIELD OFFICES - The first line DOE field element that carries the organizational responsibility for (1) managing and executing assigned programs, (2) directing contractors who conduct programs, and (3) assuring that environment, safety, and health protection are integral parts of each program.

DOE OPERATIONS OFFICES - In the absence of a DOE Area Office, the first line DOE field element that carries the organizational responsibility for (1) managing and executing assigned programs, (2) directing contractors who conduct programs, and (3) assuring that environment, safety, and health protection are integral parts of each program.

FISCAL YEAR - For DOE, the twelve-month period used for accounting purposes, beginning October 1 and ending September 30.

HAZARDOUS WASTE - A solid waste, or combination of wastes, that because of its quantity, concentration, or physical, chemical, or infectious characteristics, may (a) cause or significantly contribute to an increase in mortality or an increase in serious irreversible, or incapacitating reversible illness, or (b) pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, or disposed of, or otherwise managed. Hazardous waste is further defined in this report as:

Resource Conservation and Recovery Act (RCRA) regulated - solid waste, not specifically excluded from regulation under 40 CFR 261.4, or delisted by petition, that is either a listed hazardous waste (40 CFR 261.30 - 261.33) or exhibits the characteristics of a hazardous waste (40 CFR 261.20 - 261.24).

State regulated - any other waste not specifically regulated under RCRA, which may be regulated by State or local authorities, such as used oil.

Toxic Substances Control Act (TSCA) regulated - Individual chemical wastes (both liquid and solid), such as polychlorinated biphenyls, which are regulated by the Toxic Substances Control Act.

HIGH-LEVEL RADIOACTIVE WASTE - Irradiated reactor fuel, liquid wastes resulting from operation of the first cycle solvent extraction system or equivalent, and the concentrated wastes from subsequent extraction cycles or equivalent in a facility for reprocessing irradiated reactor fuel, and solids into which such liquid wastes have been converted (10 CFR 60.2).

LOW-LEVEL RADIOACTIVE WASTE - Radioactive waste not classified as high-level waste, transuranic waste, spent nuclear fuel, or byproduct material (specified as uranium or thorium tailings and waste in accordance with DOE Order 5820.2A).

MIXED WASTE - Waste that contains both radioactive and hazardous components, as defined by the Atomic Energy Act, Toxic Substances Control Act, or Resource Conservation and Recovery Act. Mixed waste is further defined here as low-level mixed, and Toxic Substances Control Act mixed.

POLLUTION PREVENTION - Preventing or reducing the generation of pollutants, contaminants, hazardous substances, or wastes at the source, or reducing the amount for treatment, storage, and disposal through recycling.

Waste minimization/pollution prevention can be applied to all pollution-generating activities at DOE, including:

- Manufacturing and production operations
- Weapons dismantlement
- Maintenance
- General operations
- Transportation
- Research, development, and demonstration
- Laboratory research
- Decommissioning activities
- Legacy waste and contaminated site cleanup

Waste minimization/pollution prevention can be achieved through:

- Source Reduction - equipment or technology selection or modification, process, or procedure modification; reformulation or redesign of products; substitution of raw materials; and improvements in housekeeping, maintenance, training, or inventory control. Increased efficiency in the use of raw materials, energy, water, or other resources, including affirmative procurement. Protection of natural resources by conservation.
- Segregation - the practice of separating or isolating contaminated materials from non-contaminated materials; or the separation/isolation of one waste type from another in an attempt to minimize the amount of the more noxious (and costly) material for disposal.
- Recycle/Reuse - the use, reuse, or reclamation of waste materials.

Environmental restoration activities are directed toward removal and treatment of legacy waste and pollutants already generated by past production and manufacturing operations. In the process of conducting restoration activities, additional waste and pollutants may be generated (e.g., decommissioning of a plant and equipment; dismantlement of weapons systems). Waste minimization/pollution prevention techniques should be employed during these activities to prevent or reduce the generation of new wastes and pollutants.

PRIMARY WASTE - See Cleanup/Stabilization Waste definition.

PROGRAM SECRETARIAL OFFICE (PSO) - An office within DOE, headed by an Assistant Secretary or Organizational Director, that reports and has management responsibility over designated multi-program Operations Offices and National Laboratories. These offices include Defense Programs (DP), Energy Efficiency and Renewable Energy (EE), Environmental Management (EM), Energy Research (ER), Office of Scientific and Technical Information (ET), Office of Fossil Energy (FE), Human Resources and Administration (HR), Nuclear Energy (NE), and Office of Civilian Radioactive Waste Management (RW).

RCRA REGULATED WASTE - See Hazardous Waste definition.

RECYCLING/REUSE - See Pollution Prevention definition.

REPORTING SITE - A specific DOE site that meets the minimum threshold reporting requirement for providing data for the *Annual Report of Waste Generation and Pollution Prevention Progress*.

RETURN-ON-INVESTMENT (ROI) POLLUTION PREVENTION PROJECTS - Specific pollution prevention projects that rapidly pay for themselves (preferably in three years or fewer) through reducing future pollutant generation.

ROUTINE OPERATIONS WASTE - Normal operations waste produced by any type of production, analytical, and/or research and development laboratory operations; treatment, storage, or disposal operations; "work-for-others;" or any other periodic and recurring work that is considered ongoing. The term "normal operations" refers to the type of ongoing process (e.g., production) *not* to the specific activity that produced the waste. Periodic laboratory or facility clean-outs and spill cleanups which occur as a result of these processes are also considered normal operations.

SANITARY WASTE - Wastes, such as garbage, that are generated by normal housekeeping activities and are not hazardous or radioactive. Process wastewater is not included in the scope of this Report.

SECONDARY WASTE - See Cleanup/Stabilization Waste definition.

SEGREGATION - See Pollution Prevention definition.

SITE - A geographic entity comprising land, installations, and/or facilities required to perform program objectives for which DOE has (or shares) responsibility for environmental restoration or waste management activities. A site generally has all of the required management functions within its organizational structure. Examples of sites include the Hanford Site, Savannah River Site, Brookhaven National Laboratory, Kansas City Plant, Pantex Plant, and the Oak Ridge Y-12 Plant.

SITE-WIDE POLLUTION PREVENTION PROGRAM ACCOMPLISHMENTS - Waste minimization accomplishments that affect the entire site, rather than just a single process or PSO-specific activity. Site-wide accomplishments include efforts directed at all employees at the reporting site, such as a narrative description of recycling programs (paper, aluminum cans, etc.).

SOURCE REDUCTION - See Pollution Prevention definition.

STORAGE - Holding radioactive, hazardous, or sanitary waste for a temporary period, at the end of which the waste is treated, disposed, or stored elsewhere.

TRANSURANIC WASTE - Waste that is contaminated with alpha-emitting radionuclides with an atomic number greater than 92 (heavier than uranium), half-lives greater than 20 years, and concentrations greater than 100 nanocuries per gram of waste.

TREATMENT - Any method, technique, or process, including neutralization, designed to change the physical, chemical, or biological character or composition of any radioactive, hazardous, or sanitary waste, so as to neutralize, recover energy or material resources from the waste; to render the waste nonhazardous, safer to transport, store, or dispose; to render the waste amenable for recovery or storage; or to reduce its volume.

WASTE GENERATION - Any waste produced during the current calendar year. Does not include waste produced in previous years that is being re-packaged, treated, or disposed in the current calendar year. Does include secondary waste generated by the treatment, storage, or disposal of previously generated wastes (e.g., clothing, gloves, waste from maintenance operations, etc.).

WASTE MINIMIZATION - An action that economically avoids or reduces the generation of waste by source reduction, reduces the toxicity of hazardous waste, improves energy usage, or recycling. This action will be consistent with the general goal of minimizing present and future threats to human health, safety, and the environment.

WASTESTREAM - A waste or group of wastes with similar physical form, radiological properties, Environmental Protection Agency waste codes, or associated Land Disposal Restriction treatment standards. The waste or group of wastes may be the result of one or more processes or operations.

WASTE TYPE - Definition of waste based on physical properties or characteristics (e.g., high-level, transuranic, low-level radioactive, low-level mixed, hazardous, or sanitary).