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DOE/OR-968

September 1991

ENVIRONMENTAL RESTORATION AND WASTE MANAGEMENT SITE-SPECIFIC PLAN FOR THE OAK RIDGE RESERVATION

U.S. Department of Energy
Field Office
Oak Ridge, Tennessee

MASTER

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contributed to the preparation of this document and should not be considered an eligible contractor for its review.

DOE/OR--968

DE92 000028

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FY 1992

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Date Issued - September 1991

Prepared by
Science Applications International Corporation
Oak Ridge, TN 37831
under subcontract 95K-TK690C

Prepared for
U.S. Department of Energy
Office of Environmental Restoration and Waste Management
under budget and reporting code EW 20

MARTIN MARIETTA ENERGY SYSTEMS, INC.
managing the
Oak Ridge National Laboratory
Oak Ridge Y-12 Plant
Oak Ridge K-25 Site
Paducah Gaseous Diffusion Plant
under contract DE-AC05-84OR21400
and the
Portsmouth Gaseous Diffusion Plant
under contract DE-AC05-76OR00001
for the
U.S. DEPARTMENT OF ENERGY

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1.0 INTRODUCTION

1.1 PURPOSE

The United States Department of Energy (DOE) is committed to achieving and maintaining environmental regulatory compliance at its waste sites and facilities, while responding to public concerns and emphasizing waste minimization. DOE publishes the Environmental Restoration and Waste Management Five-Year Plan (FYP) annually to document its progress towards these goals.

The purpose of this Site-Specific Plan (SSP) is to describe the activities, planned and completed, undertaken to implement these FYP goals at the DOE Field Office-Oak Ridge (DOE/OR) installations and programs; specifically, for the Oak Ridge Reservation (ORR), Oak Ridge Associated Universities (ORAU), and Hazardous Waste Remedial Action Program (HAZWRAP). Activities described in this SSP address hazardous, radioactive, mixed, and sanitary wastes, along with treatment, storage, and disposal of current production waste and legacy waste from past operations. The SSP is presented in sections emphasizing Corrective Activities (CA), Environmental Restoration (ER), Waste Management (WM), Technology Development (TD), and Transportation; and includes descriptions of activities, resources, and milestones by installation or program.

1.2 DESCRIPTION OF THE OAK RIDGE RESERVATION

The ORR includes three installations: the Oak Ridge Y-12 Plant (Y-12), Oak Ridge National Laboratory (ORNL), and the Oak Ridge K-25 Site (K-25). All three sites are located in Oak Ridge, Tennessee, and managed for DOE by Martin Marietta Energy Systems, Inc. (Energy Systems).

Each installation has accumulated large amounts of radioactive and hazardous wastes and, as a result of ongoing operations, continues to generate these materials. As documented in DOE's FYP, a number of activities are scheduled to take place at the installations on the reservation. Over the next several years there will be a major initiative to correct problems left from past operational practices and to improve current waste management techniques.

1.2.1 Y-12

Y-12 was built in 1943 as part of the Manhattan Project to separate uranium isotopes using the electromagnetic process. When the process was discontinued after World War II, Y-12's role was changed to manufacturing and developmental engineering. The mission of the plant includes production of nuclear weapon components and subassemblies, development and fabrication of test hardware for the weapon design laboratories, fabrication support for other Energy Systems plants, and support for Federal agencies.

The combination of production, development engineering, and support activities at Y-12 represents an integrated capability not normally available in production complexes. From a high-technology base of operations, the plant can handle essentially all aspects of manufacturing. The major areas of effort include chemical processes, fabrication systems, metals and ceramics, instrumentation and characterization, nuclear materials processing, and waste management.

In handling unique and special materials, Y-12 must control radioactive and toxic materials to protect employees and the public and must maintain a high degree of security to protect the materials produced at the site from sabotage or theft.

1.2.2 ORNL

ORNL began in 1943 as part of the Manhattan Project. The original purpose of the site was to operate the Graphite Reactor and an associated nuclear fuel reprocessing pilot plant to obtain information needed in the design of the Hanford production reactors and associated fuel processing operations. Since the start of operations at the ORNL site in 1943, significant changes have occurred in the scope of research and development (R&D) efforts and the supporting waste management requirements. While early site development focused on direct support of defense programs during and following World War II, the unique facilities formed the nucleus of the multidisciplinary research laboratory that now exists.

Today, ORNL conducts R&D activities for other U.S. government agencies, as well as for private industry and institutional organizations. Currently, these research efforts focus in the areas of (1) magnetic fusion, (2) nuclear fission, (3) basic and applied biological and environmental research, (4) conservation and renewable energy, (5) fossil energy, and (6) basic research in physical sciences. The Laboratory involves industry in its programs and encourages cooperative use of its facilities, formally through users' groups and informally through professional contacts and participation. ORNL also provides universities and secondary schools with ready access to major research facilities, state-of-the-art research capabilities, training facilities for faculty and students, and opportunities for collaborative research.

The diversity of these programs and the complement of unique research facilities that support these activities present equally diverse environmental, waste management, safety, and health protection challenges. Control and treatment of waste streams from the ORNL facilities have been continuing responsibilities of DOE and its managing site contractors since the beginning of Laboratory operations. Effluent monitoring aids waste management operations and ensures the safety of on-site personnel, the environment, and the general public.

1.2.3 K-25

K-25 -- formerly the Oak Ridge Gaseous Diffusion Plant (ORGDP) -- was constructed as part of the Manhattan Project between 1943 and 1945, with major additions and upgrades to the process during the 1950s and 1970s. The original mission was to produce enriched uranium hexafluoride for defense purposes and later for power reactors. Because of declining demand, the uranium enrichment process at K-25 was placed in standby in 1985 and shut down in 1987. Another uranium enrichment process using gas centrifuge technology was terminated in 1985. These shutdown site facilities require surveillance and maintenance (S&M), and centrifuge facility cleanup and decontamination are planned so that the buildings can be used for other purposes. The first phase of decontamination and decommissioning (D&D) of gaseous diffusion process facilities is a major site activity. Today, K-25 has a multipurpose mission: it is the location of many contractor central staff functions; it operates waste treatment facilities such as the K-1435 Toxic Substances Control Act (TSCA) Incinerator; it serves as the center for applied technology; and it supports development of the Advanced Vapor Laser Isotope Separation (AVLIS) uranium enrichment technology.

1.3 PROGRAM OVERVIEW

1.3.1 Y-12

Site contamination at the 811-acre Y-12 site includes hazardous materials, low-level radioactive material (primarily uranium), and mixed wastes resulting primarily from the weapons production process. The contaminated sites in need of ER include past-practice waste disposal sites, waste storage tanks, spill sites, and contaminated inactive facilities. In addition, significant inventories of mercury are present on-site and off-site in the East Fork Poplar Creek (EFPC) floodplain soils and sediments.

Potential health risks exist from off-site migration of contamination, principally mercury. Health and safety risks posed by certain contaminants at some solid waste management units (SWMUs) and the public's concern for several key units, particularly EFPC, have increased the need for immediate action. However, a 1985 study by the Centers for Disease Control (CDC) and the Tennessee Department of Health and Environment (TDHE) (now the Tennessee Department of Environment and Conservation [TDEC]) concluded that residents of Oak Ridge are not likely to be at increased risk from significantly higher mercury levels in the local environment. Mercury concentrations found in urine and hair samples during the study were within background range.

The conduct of waste management programs at Y-12 demands an integrated approach to a number of different but interrelated activities. The overall goal is full compliance with all current regulations and planning for compliance with future regulations while providing full support for Y-12 programmatic activities. WM Program activities include those

associated with treatment, storage, and disposal of industrial, hazardous, radioactive and mixed waste as well as those activities required for program continuity. A list of Y-12 WM facilities is provided in Table 1.1.

Y-12 generates and manages low-level radioactive waste (LLW), hazardous waste, mixed waste, and industrial sanitary waste. Radioactive and mixed process wastewaters are treated on-site. Solid LLW is disposed of on-site or stored, depending on radionuclide concentration and waste form. Solid LLW disposal on-site ceases in 1991. Mixed waste is being stored until commercial treatment or on-site capabilities become available. Hazardous and polychlorinated biphenyl (PCB) wastes are shipped off-site for commercial disposal. Industrial/sanitary solid wastes are disposed of on-site in permitted landfills.

WM priorities include the reduction in the quantity of hazardous and mixed solid and liquid wastes generated at Y-12 (emphasis will be placed on the reduction or elimination of waste at the source, thereby reducing the need for treatment/storage/disposal); improvement in segregation of waste at the source; incorporation of requirements for handling liquid and solid waste into waste generator's procedures; reduction in cycle time to meet the Plant standard of 75 days maximum at accumulation areas; increased use of statistical process control for measured waste data; establishment and implementation of division specific waste minimization plans; and conducting WM activities within DOE, State and Federal requirements.

Another important aspect is the need to maintain a significant, credible technical base within the WM organization in support of their programs. This support is required across waste types and is essential for establishing and keeping a program in compliance with all applicable laws, regulations and DOE orders.

In FY 1990, approximate quantities of liquid, solid, and gaseous wastes treated or disposed by Y-12 Waste Operations were as follows:

Liquid (in thousands)	
Hazardous (Resource Conservation and Recovery Act [RCRA])	7,027 gal
Liquid LLW (LLLW)	1,377 gal
Mixed	940 gal
Industrial	45,036 gal
PCB	24 gal

Solid (in thousands)	
Industrial	3,439 ft^3
Hazardous (RCRA)	4 ft^3
Solid LLW (SLLW)	387 ft^3
Mixed	28 ft^3
PCB	2 ft^3
Scrap/Metal	52 ft^3

Table 1.1 Y-12 Waste Management Facilities

Facility	Bldg. No.	Waste Category
TREATMENT		
Central Poll Control Facility	9623	mixed, liquid mopwaters & non-nitrate bearing acidic and caustic waste
Plating Rinsewater Treat. Facility	9623	mixed, liquid rinsewaters containing heavy metals
West End Treatment Facility	9616-7	mixed, liquid nitrate-bearing wastes
Waste Coolant Process Facility	9983-78	low-level, liquid machine coolant
Uranium Chip Oxidation Facility	9401-5	low-level, solid natural uranium machine turnings
Waste Material Prep. Facility	9401-4	low-level, solid diversified uranium-contam. scrap
STORAGE		
West Tank Farm		mixed, sludge
Uranium Oxide Storage Vaults		low-level, solid depleted uranium oxide
RCRA Staging and Storage Fac.	9720-31	hazardous, PCB interim storage of drums before offsite disposal
Organic Liquid Storage	OD-7	mixed, PCB, liquid
Waste Oil Solvent Drum Storage	9811-1	mixed, hazardous, PCB, liquid
Organic Liquid Storage Area	OD-9	mixed, hazardous, PCB, liquid
Organic Liquid Storage Area	OD-10	waste oil, recyclables, hazardous, liquid
Containerized Waste Storage Area		solid mixed
Classified Waste Storage Area	9720-25	low-level, mixed, solid
PCB Waste Storage	9404-7	PCB, mercury, mixed uranium contam.
Mixed/PCB Waste Storage	9720-9	mixed, PCB
Interim Drum Yard		hazardous, mixed outdoor gravel pad solvent contam. debris
RCRA/PCB Container Storage Area	9720-58	PCB, solid
Non-SNM Warehouse	9720-12	low-level
Non-Uranium Contam. Salvage Yard		clean metals, sell not recycle
Waste Materials Prep. Fac.	9720-28	low-level, solid diversified uranium-contam. scrap
DISPOSAL		
Bear Creek Burial Ground		low-level, solid
Sanitary/Industrial Landfill II		solid for ORR
Industrial Landfill IV		classified waste
CONTINUITY OF OPERATIONS		
Trash Monitor. Station	9828-6	solid, monitors uranium & other radioactive isotopes in solid, low-level waste

Major objectives for Y-12 include:

CA:

- bring Y-12 into compliance with its National Pollutant Discharge Elimination System (NPDES) Permit and Federal, State, and local water regulations
- compliant treatment and disposal of fly ash and bottom ash

ER:

- investigate and remediate the contaminated sites at Y-12
- complete closure of RCRA land units
- complete submittal of RCRA Facility Investigation (RFI) plans
- begin remediation of EFPC and vicinity
- continue S&M of inactive contaminated facilities

WM:

- minimize the risk of contaminating the environment;
- minimize employee risk by continuing to implement the DOE as-low-as-reasonably-achievable (ALARA) policy;
- minimize public risk by continuing to implement the DOE ALARA policy;
- comply with established regulations, DOE orders, and quality assurance (QA) requirements;
- prepare for compliance with proposed regulations and DOE orders;
- minimize waste generation through modifications at the sources of generation within the plant;
- segregate waste according to waste acceptance criteria;
- reduce the volume and hazards of waste through improved treatment;
- conduct long-range planning for facilities to treat existing waste and future generated waste.

TD:

- demonstrate use of arc saw.

1.3.2 ORNL

Most of ORNL's environmental contamination results from past waste management practices. A wide variety of liquid and solid wastes, primarily radioactive or mixed wastes, has been disposed of on-site; 300 contaminated sites have been identified on the 2900-acre site.

The major sources of waste have been radioisotope production, experimental reactors, hot cells and pilot plants (chemical separations or fuel reprocessing), research (physical, chemical, and biological), accelerators, and analytical laboratories. Solid wastes from other

sites contributed a large fraction of both the material and the radioactivity buried in solid waste storage areas (SWSAs) between 1955 and 1963; during this time ORNL served as the Southern Regional Burial Ground of the Atomic Energy Commission. A number of ORNL sites are known or suspected to contain buried transuranic (TRU) wastes; however, site radionuclide inventories appear to be dominated by fission products (Sr-90, Cs-137), tritium, and activation products (e.g., Co-60) rather than by TRU (or uranium).

Waste management and remedial actions are complicated by unfavorable environmental conditions, including high seasonal rainfall, the shallow groundwater table, elevated levels of calcium and magnesium in water, and complex hydrogeology. Because of the large number of sites to be considered and the hydrogeologic complexity of the ORNL area, the remedial action strategy is oriented toward waste area groupings (WAGs). The ORNL sites have been placed within 20 such groupings, defined by watersheds that contain contiguous and similar remedial action sites, each representing distinct small drainage areas within which similar contaminants were introduced.

A significant number of facilities at ORNL have been declared surplus because the programs for which they were built have been completed. Because the potential exists for release of radioactivity to the environment from these facilities, these facilities will be decontaminated and decommissioned. Until decommissioning is complete, those facilities that contain substantial amounts of residual radioactive material must be monitored and maintained to ensure containment. The inventory of surplus contaminated facilities includes experimental reactors, technology support facilities, hot cells, isotope processing facilities, research laboratories, and decontamination facilities. To meet the objective of adequate containment and site control, a structured program of S&M has been established to collectively manage all activities relating to surplus contaminated facilities.

Effects of operations on the environment at ORNL are routinely monitored and reported to relevant regulatory agencies. Programs to determine impacts on the atmosphere, surface water, and groundwater are conducted by ORNL. Results have indicated that ORNL does not emit or release materials to the off-site environment that significantly reduce the quality of the air, surface water, or groundwater.

Based on environmental monitoring results, as indicated in the ORR Environmental Report (ES/ESH-8/VI and VII), no immediate or short-term off-site health risks have been identified in connection with ER or D&D activities. However, both surface and groundwater contamination and off-site radionuclide contamination occur. Off-site contamination consists primarily of contaminated sediments in the Clinch River and possible contamination from cesium plots in the 0800 Area near the White Oak Creek Embayment. Both areas are under remedial investigation. Remedial investigation will identify the extent of any contamination and expected risks. An off-site groundwater monitoring program is in place to detect off-site groundwater contamination.

The mission of WM is to provide quality waste management capability in compliance with applicable requirements. This mission is carried out through strategic planning, development of new or upgraded facilities, and routine waste collection, treatment, storage, and disposal. Radioactive (low level as well as transuranic), hazardous, mixed radioactive and hazardous medical/infectious and solid sanitary/industrial wastes are managed by the WM component. Waste forms include gaseous, liquid, sludge and solid. WM operates 34 facilities which are listed in Tables 1.1 and 1.2 with locations shown on the ORR map in Appendix C.

Funding for WM activities has increased steadily since fiscal year (FY) 1985. As shown in Figure 1.1, expense funding has grown from about $3.5 million in FY 1985 to about $31 million in FY 1990. Expected expense funding from all sources in FY 1991 is about $34 million. In addition, capital funding (line item and general plant projects [GPPs]) during the FY 1985 through FY 1990 period has been available at a level of about $15 million annually. These funding levels have provided the basis for continuing long-range strategic planning as well as several important WM facility upgrades that include the Nonradiological Wastewater Treatment Plant (NRWTP), which was constructed at a cost of $18 million. This plant achieved compliance operation in March 1990. Two important activities associated with management of LLLW include an aggressive waste minimization campaign that resulted in reduction of the LLLW generation rate by about 60% during the period FY 1985 through FY 1990 and the solidification of about 47,500 gallons of LLLW during FY 1989. ORNL has also successfully adapted the tumulus approach for disposal of SLLW. These and many other ongoing and planned projects and activities typify ORNL WM accomplishments during the past several years.

Waste operations activities include developing and implementing waste management strategies, conducting routine waste management operations, demonstrating improved waste operations including technology development, and executing a formal ORNL waste reduction program. Activities are underway to provide for the treatment and off-site disposal of contact-handled (CH) and remote-handled (RH) TRU waste stored at ORNL.

Expanded storage capacity will be provided for radioactively contaminated mixed PCB and hazardous waste; Class L-III and L-IV SLLW. Industrial waste is disposed of in the Y-12 Centralized Sanitary Landfill. Hazardous wastes are sent off-site for commercial treatment and disposal. Liquid process wastes are treated on-site and the effluent is discharged according to NPDES permit requirements.

TABLE 1.2 ORNL WASTE MANAGEMENT FACILITIES LIQUID AND GASEOUS WASTE OPERATIONS DEPARTMENT

Building		Operations
	LLLW	
LWCT	•	Collection and Monitoring Tanks/Transfer System (hard-piped) Covers system from source generators to VB#1
LWBT	•	Above Ground Transport of LLLW Bottling and trucking
2537	•	Five 50,000-gal Tanks at Evaporator (C-1, C-2, W-21, W-22, and W-23)
2531	•	Evaporator System Process Equipment
7830	•	Melton Valley Storage Tanks (W-24 through W-31)
7877	•	LLLW Solidification Facility
7860	•	New Hydrofracture Facility
	Process Waste/Non-Rad System	
3544	•	Process Waste Treatment Plant Process Equipment
2600/ 7961	•	Six Process Waste Collection Tanks (including New Pumping Station F-4001),
3608	•	Non-Rad Wastewater Treatment Plant (Building 3608)
PWCT	•	Collection, Monitoring, Transfer System Covers system from source generator to new tanks or pump stations
	Off-Gas and Cell-Ventilation System	
3039	•	3039 Stack Area
	Miscellaneous	
7935	•	Equipment Cleaning Facility

(1) Liquid Waste Collection and Transfer
(2) Valve Box No. 1
(3) Liquid Waste Bottling and Trucking
(4) Process Waste Collection and Transfer

TABLE 1.3 ORNL WASTE MANAGEMENT FACILITIES
SOLID WASTE OPERATIONS DEPARTMENT

Building	Operations
7823	Underground storage building used for storage of solid LLW and TRU waste
7824	Waste Examination Assay Facility (WEAF) - used for the nondestructive assay of SLLW and TRU waste
7826 & 7834	Retrievable Waste Storage Facility for CH-TRU waste
7827 & 7829	Retrievable storage wells provide retrievable storage of RH-TRU waste, LLW exceeding shallow land disposal limits, fuel elements, or reactor components
7831	Waste Compactor Facility
7841	Contaminated equipment storage area
7822	SWSA 6: 7824 - Storage Facility Tumulus I & II - SLLW disposal facilities Silos, wells, trenches - SLLW (low range and high range), fissile, asbestos, biological, and suspect waste disposal 7878 - SWSA 6 storage area
7855	RH-TRU Cast Storage Facility
7879	TRU/LLW Staging Facility
7651	Clean oil storage
7652	Hazardous bulk liquids and solids
7653	Lab Pack chemicals, explosives, and water reactive metals and chemicals
7654	Mixed waste
7507W	Mixed waste
7507	PCBs
7934	Photographic waste
7659 (Sandia Site)	Leaking gas cylinder storage
7667	Detonation Facility

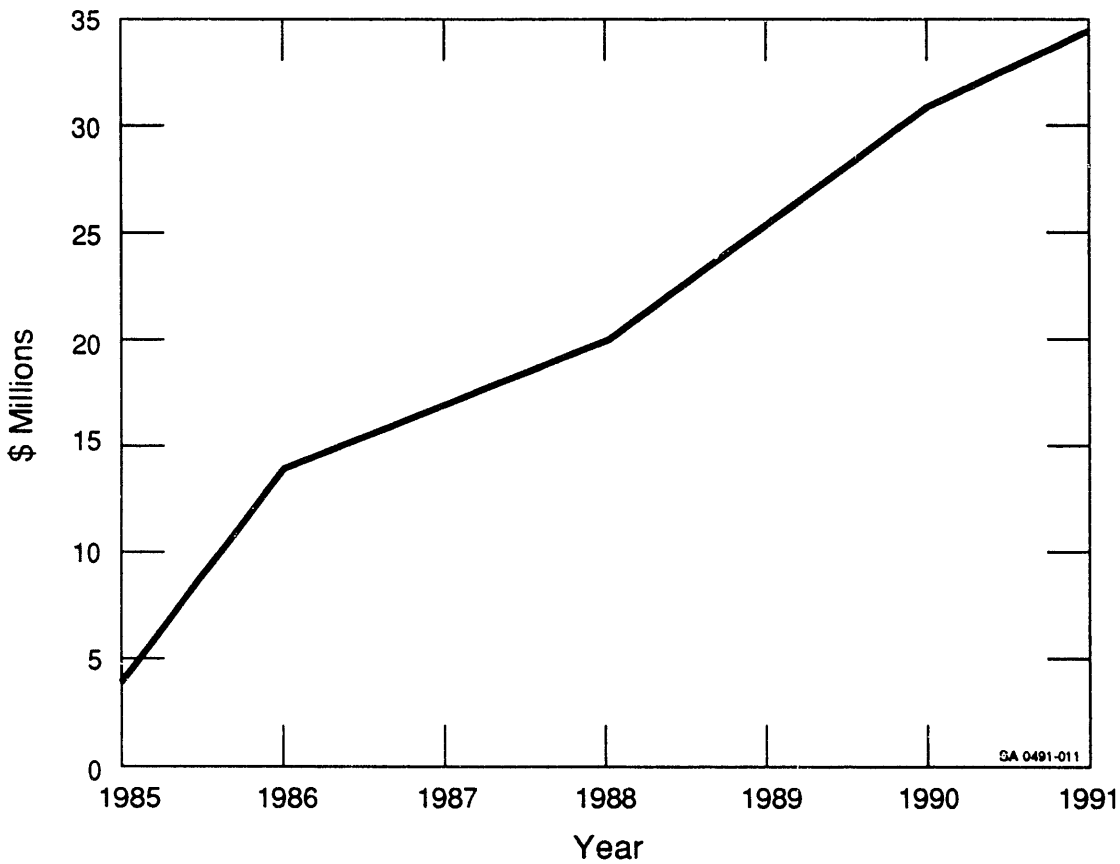


Figure 1.1. Funding for ORNL waste management activities has increased steadily since FY 1985.

In FY 1990, approximate quantities of liquid, solid, and gaseous wastes treated by ORNL WM were as follows:

Liquid Waste (in millions)		Solid Waste (in thousands)	
LLLW	0.380 gal	SLLW	45 ft^3
Process water	76 gal	Hazardous	336 lbs
NRWTP	100 gal	Sanitary/Industrial	23 yds^3
		Mixed	19 lbs

Gas Wastes (in thousands)

Central ORNL Stack 159 ft^3/min

Major objectives for ORNL include:

CA:

- Complete the Design Criteria for the Melton Valley LLLW Collection and Transfer (CAT) Project
- Complete construction of the Bethel Valley LLLW CAT system upgrades

ER:

- Complete White Oak Creek Embayment removal action
- Complete WAG 6 RFI, Corrective Measures Study/Environmental Assessment (CMS/EA), Remedial Action plan (RAP), and Record of Decision (ROD)
- Complete WAG 6 closure
- Develop and maintain a comprehensive monitoring program for contaminated sites
- Identify and implement interim corrective measures (ICMs) to protect human health and the environment prior to final site remediation
- Characterize, assess risk, evaluate removal alternatives, and implement ICMs associated with inactive LLLW tank contents
- Complete Phase I Remedial Investigations (RIs), identify operable units (OUs), and initiate remedial action decision process associated with all WAGs

WM:

- Continue operation of waste facilities in compliance with all applicable requirements and regulations;
- Upgrade liquid radioactive waste collection and treatment capability;
- Continue use of enhanced SLLW disposal technologies;

- Comply with provisions of the pending Federal Facilities Agreement (FFA);
- Coordinate central aspects of Laboratory-wide waste reduction program; and
- Continue implementation of strategic operational support activities including capital project development, waste characterization, waste certification, and long-range planning.

TD:

- Initiate co-metabolic demonstration

1.3.3 K-25

Operation of K-25 has created facilities and sites that contain hazardous materials and wastes (Table 1.4). The sites include burial grounds, storage facilities, underground storage tanks (USTs), surface impoundments, treatment facilities, process equipment and lines, accumulation areas, and other areas having the potential for releasing hazardous constituents to the environment. A total of 140 SWMUs have been identified at K-25. A multiple facility activity (shown, however, with K-25 activities) is underway to address transport of radionuclides, metals, and organic compounds beyond the boundary of the DOE ORR that have contaminated off-site public surface waters, predominately the Clinch River.

The gaseous diffusion facilities include several very large buildings and a number of smaller buildings with a combined under-roof area of about 140 acres. These facilities contain extensive amounts of asbestos insulation, potential RCRA-regulated oils and chemicals, PCBs, special nuclear materials, and residual radionuclides. The PCBs were contained in the insulating fluids of large pieces of electrical equipment and in the gaskets in the ventilation ducts of several process buildings. Lubricating oil, entrained in the ventilation ducts during past operations, leaches the PCBs from the gaskets as the oil passes through the gaskets and drips onto the floor and equipment below the ducts. The gasket and oil drips containing PCBs are noncompliant with the TSCA regulations, and the scheduled removal of the gaskets is included in a proposed TSCA Federal Facility Compliance Agreement (FFCA) between the DOE and the Environmental Protection Agency (EPA). The gas centrifuge buildings, with 325,000 square feet of floor space, contain contaminated and classified centrifuge equipment and process materials.

Waste management activities at K-25 include generation and treatment, storage, and disposal of low-level, classified, hazardous, mixed, PCB, and sanitary wastes, and minimization of the amount of wastes generated that require treatment, storage, or disposal. New and improved waste disposal facilities will be prepared for managing SLLW generated on the ORR. These facilities will include both above- and below-grade facilities. The Oak Ridge Filter Test Facility will be operated to provide QA inspection and testing of every High Efficiency Particulate Air (HEPA) filter procured for all DOE facilities east of the Mississippi River, and the TSCA Incinerator will treat RCRA hazardous and TSCA wastes, including mixed wastes.

Table 1.4 K-25 Waste Management Facilities

Facility	Operations
K-1025-C	Hazardous Waste Storage Building
K-1302	Gas Cylinder Storage Unit
K-1232	Hazardous Waste Treatment Unit Hazardous Waste Storage Unit
K-311-1	Radiogenic Lead Storage Vault
K-1425	Waste Oil/Hazardous Waste/PCB Storage Unit Waste Oil/Hazardous Waste/PCB Storage Tanks
K-1419	Sludge Fixation Unit Sludge Fixation Unit Storage Tanks
K-1417	Concrete Block Casting and Storage Area
K-1420-A	Flammable Liquid Storage Unit
K-306-1	PCB/Hazardous Waste Container Storage Unit
K-306-1 Vault 23-A	Hazardous Waste Storage Unit
K-301 Vaults 4, 4A, 4B	Hazardous Waste Storage Unit
K-305 Vaults 19, 19B	Hazardous Waste Storage Unit
K-711	Hazardous Waste Storage Unit
K-1202	Hazardous Waste Storage Unit
K-310-1	Hazardous Waste Storage Unit
K-309 Vault 2A	Hazardous Waste Storage Unit
K-309-3	Hazardous Waste Storage Unit
K-302-4	Hazardous Waste Storage Unit
K-302 Vault 8A	Hazardous Waste Storage Unit
K-726	PCB Container Storage Unit
K-303-4	PCB Container Storage Unit
Vault 15A	LLW Storage
Vault 16A	LLW Storage
K-306-7	LLW Storage
K-303-5	LLW Storage
K-309-2	LLW Storage
K-310-2	LLW Storage
Vault 1X	LLW Storage

Personnel exposure to friable, asbestos-bearing materials is a concern in and around the gaseous diffusion facilities. Shut-down facilities with asbestos are routinely monitored, with asbestos removal or repair occurring as warranted. The other radioactive and hazardous materials in the shut-down facilities are also routinely monitored to minimize the potential for off-site releases.

K-25 generates 7,390,900 lbs/yr of hazardous, low-level, and mixed wastes. Approximately 129,726,100 lbs of these K-25 wastes are presently in interim storage in 30 locations at K-25 awaiting final disposition.

The current inventory of K-25 hazardous wastes is 248,600 lbs with an annual generation of 51,000 lbs. These wastes are hazardous, as listed or defined by EPA waste codes, or are characteristically hazardous as determined by ignitability, corrosivity, reactivity, or toxicity. These hazardous wastes are not radioactively contaminated and are disposed of off-site at commercial disposal facilities, when possible, or are stored in RCRA-permitted storage facilities until appropriate disposal alternatives are identified. The hazardous wastes consist of solids (PCBs, batteries, discarded commercial chemical products, etc.), liquids (PCB liquids, photographic solutions, etc.), and gaseous (gas cylinders) streams.

The current inventory of LLW is 68,510,000 lbs of solids, primarily contaminated with uranium, 96% of which are Class I wastes with the remainder, Class III wastes. Approximately 1,271,200 lbs of SLLW (scrap metal, demolition scrap and dirt, personnel safety equipment, uranium trapping media, etc.) are expected to be generated each year. These LLW are being placed in interim storage awaiting a final disposition alternative to be identified. Some LLLW is generated at K-25 each year in the K-1420 Uranium Decontamination Facility; however, this stream is not segregated from the liquid mixed waste stream generated in the K-1420 facility, and the generation rate/inventory is listed below with the liquid mixed wastes. Since the diffusion and centrifuge processes at K-25 are shut down, only minute quantities of gaseous LLW are generated at the site. The current inventory of mixed wastes at the site is 66,300,000 lbs, 2,210,000 lbs of which were generated by Y-12. An annual generation rate of 6,068,700 lbs of mixed wastes from K-25 operations is anticipated. The mixed wastes are hazardous, as listed or defined by EPA waste codes, or are characteristically hazardous as determined by ignitability, corrosivity, reactivity, or toxicity, and are also radioactively contaminated, predominantly from uranium. The mixed waste currently in storage consists primarily of the stabilized K-1407-B and -C Pond and raw sludges. The mixed waste streams expected to be generated at K-25 consist of solids (K-1407-H Central Neutralization Facility [CNF] sludges, K-1435 TSCA Incinerator ash, PCBs, etc.) and liquids (spent solvents, alkaline solutions, etc.). The mixed wastes generated at K-25 are currently being placed in interim storage awaiting identification of a final disposition strategy. A significant amount of the solid and liquid mixed wastes will be treated in the K-1435 TSCA Incinerator once the incinerator is on line.

Major objectives for K-25 include:

CA:

- reduce steam plant toxicity
- rehabilitate sewage collection system

ER:

- complete fixation of sludges from surface impoundments
- complete centrifuge equipment disposal
- complete design and remediation of USTs
- begin removal of PCB-impregnated gaskets
- continue S&M of shutdown facilities

WM:

- provide regulatory-compliant operation of K-25 liquid WM facilities and multiplant waste storage facilities
- implement waste certification and consolidated waste storage plans
- design and construct LLW disposal facilities
- start full operation of the TSCA Incinerator
- provide regulatory-compliant operation of TSCA Incinerator
- design and construct central waste treatment, storage, and disposal facilities for waste generated from ER projects

TD:

- conduct D&D workshop

1.3.4 Funding Summary

Fiscal year funding summary tables for CA, ER, WM, and TD Programs are provided in Tables 1.5 and 1.6. Funding levels were provided by DOE/Headquarters (DOE/HQ) and broken out by funding case by year by site. Individual ADSs are addressed in later sections of this SSP under their specific category. DOE/HQ has recently modified the definition of CA so that only activities currently receiving an official notice of violation (NOV) from a regulatory body can be classified as a CA. As a result, projects previously identified as CA in the FY 1990 SSP but currently not receiving NOVs have been transferred to WM beginning in FY 1993.

FY 1991 funding represents currently known funding levels, while FY 1992 funding represents the U. S. Office of Management and Budget (OMB) target levels. FY 1993 levels are bracketed by the Preliminary Unvalidated Case (PUC) and the Validated Target Level (VTL) case. The PUC represents a preliminary estimate of funding to ensure protection of the public and worker health and safety, to carry out agreements entered into by DOE, to ensure compliance with applicable environmental requirements, and to implement other desired improvements. The VTL case provides a 10 percent annual

increase for the defense-related Environmental Restoration and Waste Management (EM) program. This growth rate exceeds that of any other defense-funded program within DOE. The program grows at 10 percent per year even in the context of declining statutory caps for the overall defense category, which was mandated by Congress. Under the VTL case, consistent with EM prioritization philosophy, priority 1 activities would be funded at the largest percentage of the PUC. For example, by definition CA are priority 1 activities, therefore, the PUC and VTL funding for CA are the same.

Table 1.5. Fiscal Year Funding Summary by Program, ORR
PUC ($000)

Program/Site	1991	1992	1993	1994	1995	1996	1997
CA							
Y-12	6000	15777	1030	600	300	0	0
ORNL	8433	7279	16400	12000	10482	0	0
K-25	1232	12608	554	583	0	0	0
Total	15665	35664	17984	13183	10782	0	0
ER							
Y-12	17521	27014	58818	159112	168460	99315	75762
ORNL	52118	86860	101409	152917	148082	151469	153526
+ K-25	104257	140042	369984	291637	300916	318873	318003
Total	173896	253916	530211	603666	617458	569657	547291
WM							
Y-12	42710	71932	70775	80845	130345	169415	179715
ORNL	28264	54035	89296	122835	185550	209550	172200
* K-25	20336	53536	99370	159359	223809	221631	148136
Total	91310	179503	259441	363039	539704	600596	500051
TD							
Y-12	18620	22589	12364	8796	3039	3175	5622
ORNL	6197	16476	16635	12332	11610	10670	10500
K-25	730	3511	2341	2013	1440	940	150
Total	25547	42576	31340	23141	16089	14785	17272

+ Includes Central ER Division Management Support.
* Includes Central WM Division Management Support.

Table 1.6. Fiscal Year Funding Summary by Program, ORR
VTL ($000)

Program/Site	1991	1992	1993	1994	1995	1996	1997
CA							
Y-12	6000	15777	1030	600	300	0	0
ORNL	8433	7279	16400	12000	10482	0	0
K-25	1232	12608	554	583	0	0	0
Total	15665	35664	17984	13183	10782	0	0
ER							
Y-12	17521	27014	32600	36106	36814	33498	34172
ORNL	52118	86860	76200	84688	89331	83961	83639
+ K-25	104257	140042	214513	251029	267219	242785	279923
Total	173896	253916	323313	371823	393364	360244	397734
WM							
Y-12	42710	71932	64920	74116	76933	81973	90171
ORNL	28264	54035	58747	62118	67282	81973	90171
* K-25	20336	53536	72371	73533	76932	81975	90171
Total	91310	179503	196038	209767	221147	245921	270513
YD							
Y-12	18620	22589	12364	8796	3039	3175	5622
ORNL	6197	16476	16635	12332	11610	10670	10500
K-25	730	3511	2341	2013	1440	940	150
Total	25547	42576	31340	23141	16089	14785	17272

+ Includes Central ER Division Management Support.
* Inlcudes Central WM Division Management Support.

The FY 1991 and FY 1992 activities discussed in this plan are those that can be accomplished with available funds. The FY 1993 VTL case will support routine daily site operations. Many projects to further develop and improve operations are planned and discussed in this document, and will be accomplished as additional funds become available. Milestone schedules provided in this plan, especially for FY 1993-1997, are subject to change as FY budgets are established and as project needs are better defined and prioritized.

1.3.5 Technology Development

The major objective for TD is to develop and demonstrate advanced technologies and provide technical assistance in support of the site environmental restoration and waste management activities. Technical areas of expertise include:

- site characterization
- bioremediation

- waste minimization
- robotics
- emissions control
- decontamination and decommissioning
- transportation
- technology transfer

1.3.6 Hazardous Waste Remedial Actions Program (HAZWRAP)

The primary focus of HAZWRAP is to provide support to the DOE Environmental Restoration and Waste Management (EM) organization, through the DOE/OR, in developing, promoting, and applying innovative and cost-effective hazardous waste management and environmental technologies to resolve DOE national problems and concerns. HAZWRAP provides support in:

- strategic planning
- development and maintenance of the waste information system
- establishment of national priorities
- budget allocation
- technical reviews and monitoring
- technology research, development, demonstration, testing, and evaluation

2.0 REQUIREMENTS FOR IMPLEMENTATION

2.1 FEDERAL AND STATE REGULATIONS

The legal requirements of the Atomic Energy Act, other Federal and State statutes and regulations, and DOE orders, as well as the consent decrees, court orders, and agreements relevant to the ORR, are discussed in this section. Interagency agreements, compliance agreements, and consent orders between ORR installations and Federal, State, and local regulatory agencies are also discussed in Section 10. The major Federal and State statutes applicable to CA, ER, and WM are summarized below.

RCRA, as amended by the Hazardous and Solid Waste Amendments of 1984 (HSWA), regulates the multifaceted problems associated with hazardous waste management. The primary objective of RCRA is to protect human health and the environment. The secondary objective is to conserve valuable material and energy resources by providing assistance to State and local governments for prohibiting open dumping; regulating the management of hazardous wastes; encouraging recycling and treatment of hazardous wastes; providing guidelines for solid waste management; and promoting beneficial solid waste management, resource recovery, and resource conservation systems. RCRA provides cradle-to-grave tracking of the fate and disposal of hazardous wastes from generator to transporter to treatment, storage, or disposal. Those disposal sites that were closed or abandoned before November 19, 1980 (effective date of the RCRA regulations), are regulated under the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA).

Anyone, including operators of a Federal facility, who generates, transports, treats, stores, or disposes of hazardous waste and anyone who produces, burns, distributes, or markets any hazardous waste-derived fuels or stores hazardous material in underground tanks must comply with RCRA by notifying the EPA or authorized states of their activities.

As amended by HSWA, RCRA sec. 3004(u) requires corrective actions for releases of hazardous constituents. RCRA sec. 3004(v) mandates off-site corrective actions. The RCRA provisions for corrective actions overlap to some degree with CERCLA provisions, creating the need for coordination of RCRA and CERCLA activities. RCRA will impact all major categories of tasks contemplated by this plan, including CA, ER, and WM.

The State of Tennessee is authorized to administer its own RCRA program in lieu of the Federal program, except for those RCRA provisions imposed by HSWA, and has RCRA authorization to regulate mixed hazardous and radioactive wastes. The Tennessee Hazardous Waste Management Act and its implementing regulations are administered by the TDEC. The Tennessee Hazardous Waste Reduction Act of 1990 requires a 25% reduction in the generation of production-related hazardous waste by 1995. Region IV of EPA administers the Federal RCRA program, including the HSWA provisions.

CERCLA as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA), provides a Federal mechanism to respond to the hazards posed by abandoned disposal sites and Federal authority to respond to current uncontrolled releases of hazardous and radioactive (since May 1989) substances from a vessel (including transportation vehicles) or from any on-shore or off-shore facilities. The act imposes strict liability on a broad class of potentially responsible parties and establishes funding (the "Superfund") that enables the government either to order the responsible parties to clean up the spill or to seek reimbursement from the responsible parties after the government has completed cleanup.

CERCLA also imposes reporting requirements on owners and operators of currently operating vessels and facilities. Any releases of a reportable quantity of "hazardous substances" must be reported, and the responsible party must clean it up. A "hazardous substance" is anything included on a "list of lists" compiled by referring to four other major environmental statutes under which toxic or hazardous substances are identified. EPA is authorized to expand the CERCLA list by adding compounds or mixtures which, when released into the environment, may present substantial danger to public health, welfare, or the environment.

Section 105 of CERCLA states that the government's cleanup activity must be conducted in accordance with the National Contingency Plan (NCP). The NCP establishes a blueprint for cleaning up releases to the water, land, or air and assigns response authority to Federal and State governments and private parties. The NCP details response procedures, including both immediate removal and long-term remedial actions. Section 105 also authorizes EPA to designate sites for inclusion on the National Priorities List (NPL) of sites requiring remedial action. The ORR was placed on the NPL on December 21, 1989.

SARA amended CERCLA by inter alia, adding provisions specifically aimed at Federal facilities, and by increasing EPA enforcement authority. As amended by SARA, CERCLA provides the framework for determining cleanup standards, schedules, and evaluating remedies.

A pending FFA between EPA Region IV, TDEC, and DOE requires ORR cleanups to be conducted in compliance with both RCRA and CERCLA/SARA. The FFA is intended to satisfy the requirements for an interagency agreement under section 120 of CERCLA. The agreement recognizes DOE's responsibilities under NEPA and the impact the NEPA process may have on developing schedules retained under the agreement. The agreement establishes a procedural framework and schedule for developing, coordinating, implementing, and monitoring appropriate response actions at the site in accordance with CERCLA, RCRA, the NCP, NEPA, and Tennessee law.

Specifically, the FFA establishes requirements for performing RIs and feasibility studies (FSs) and identifies the nature, objective, and schedule of response actions to be taken at the site. The agreement identifies operable units and the implementation of final remedial actions. The agreement also establishes requirements for underground LLLW tank systems

to ensure structural integrity, containment and detection of releases, and source control for LLW tank systems pending final remedial action at the site.

A draft FFCA between DOE and EPA provides a schedule for bringing the shut-down K-25 into compliance with TSCA.

The National Environmental Policy Act (NEPA) requires every Federal agency to publicly address the environmental impact of major Federal actions that may significantly affect the environment before such actions are initiated. These concerns are addressed in documents such as environmental assessments (EAs) or environmental impact statements (EISs), which are made available to the public and are circulated to other interested agencies.

DOE Notice 5400.4 establishes DOE policy on integrating NEPA and CERCLA processes for ER projects.

The TSCA regulates, among other things, the use and disposal of materials containing more than 50 parts per million of PCBs. TSCA applies to CA, ER, and WM projects that deal with PCBs. PCB-related projects may also be regulated by CERCLA and RCRA.

The Clean Air Act (CAA) is a comprehensive and complex Federal statute designed to prevent and control air pollution from stationary and mobile sources. It authorizes EPA to establish national standards for air quality that must be met by the states through compliance with EPA-approved State Implementation Plans. These plans are also required to contain standards for preventing significant deterioration of air quality in areas where the ambient standards are already being met. Permits are required for specific air emissions. CAA requirements may also become applicable or relevant and appropriate requirements (ARARS) for CERCLA cleanups. Radionuclides are also regulated under the CAA.

The new CAA was passed by Congress on November 15, 1990. It contains sections which will revise the permitting program for operating sources and will impose regulations on 189 chemicals that are designated air toxins. Implementing regulations will be issued in the future. The ORR is seeking approval of its compliance plan for meeting monitoring requirements of the National Emission Standards for Hazardous Air Pollutants (NESHAP) for radionuclides.

Air emissions from ORR facilities are managed in accordance with DOE Orders (5480.1A, 5480.4, and 5820.2A, described in Section 2.2) and guidelines of the CAA as regulated by the TDEC Division of Air Pollution Control. TDEC has the primary responsibility for ensuring compliance with the CAA within the State of Tennessee and for protecting and maintaining Tennessee ambient air quality standards pursuant to the Tennessee Air Quality Control Act. TDEC's Division of Air Quality administers the air permits program.

The Clean Water Act (CWA) sets standards for and regulates discharges into surface waters and sets pretreatment standards for discharges into publicly owned treatment works.

Facilities that directly discharge wastewater must obtain a NPDES permit. CWA regulations address technology-based effluent limitations, water quality-based effluent limitations, new source performance standards (NSPSs), control strategies for toxic pollutants, and thermal discharges. Water quality criteria established under the Act may become ARARs for CERCLA cleanups.

At the State level, water pollution is controlled through the Tennessee Water Quality Control Act and implementing regulations. The NPDES permit program is administered by the Division of Water Quality Control within TDEC.

The Safe Drinking Water Act (SDWA) sets regulatory standards for organic chemicals and other pollutants in drinking water through two regulatory programs, National Drinking Water Standards for Public Water Systems and Underground Well Injection. SDWA Primary Drinking Water Standards are frequently used to establish groundwater protection standards pursuant to RCRA and CERCLA.

In summary, CERCLA/SARA, RCRA, and TSCA provide the principal legal stimuli for undertaking environmental restoration. The Atomic Energy Act, CAA, CWA, and SDWA primarily determine the rigor of the response required to protect human health and the environment. For major Federal environmental actions, NEPA also defines the process by which decisions are made and implemented.

2.2 DOE ORDERS

DOE and DOE contractors are subject to the requirements of DOE Orders in addition to the requirements of Federal and State regulatory agencies. Therefore, DOE Orders will impact the CA, ER, and WM processes as well. DOE Orders of significance to these tasks are summarized below.

DOE Order 5820.2A, Radioactive Waste Management (9/26/88), establishes policies, guidelines, and minimum requirements for managing radioactive and mixed wastes. This order requires that DOE LLW be managed to protect public health and safety and to preserve the environment. Waste management systems performance assessment of all aspects of waste generation is required, including waste reduction, segregation, minimization, and characterization; waste acceptance criteria; waste treatment, storage, shipment, and disposal; and disposal site selection, design, operation, and closure/post-closure.

Chapter V of DOE Order 5820.2A sets forth requirements for decommissioning radioactively contaminated facilities. Planning for facility decommissioning must be initiated during the design phase for new facilities and before termination of operations for existing facilities and must consider the two-year budget cycle to ensure adequate funding availability.

Decommissioning project activities include facility characterization, the environmental review process (NEPA, RCRA, CERCLA, SARA), and technical engineering planning, which includes a Decommissioning Project Plan. Status reports on project activities must be prepared in accordance with DOE Order 1332.1A or 4700.1.

Post-decommissioning activities involve final chemical and radiological surveys and preparation of a project final report. The responsible field organization will compile a Project Data Package. Long-term maintenance, surveillance, and other safety controls will be provided by the responsible program organization. The decommissioned property may be released from DOE ownership according to the requirements of DOE Order 4300.1B. DOE Order 5700.6B requires that QA be maintained by using the applicable requirements of American National Standards Institute/America.. Society of Mechanical Engineers Nuclear Quality Assurance (ANSI/ASME, NQA-1), 1989, "Quality Assurance Program Requirements for Nuclear Facilities."

DOE Order 5400.2A, Environmental Compliance Issue Coordination (1/31/89), establishes the DOE requirements for coordinating significant environmental compliance issues by creating a process within DOE for resolving conflicting compliance issues.

DOE Order 5400.3, Hazardous and Radioactive Mixed Waste Management (2/22/89), establishes DOE hazardous and radioactive mixed waste policies and requirements. The order clarifies DOE's interpretation of the definition of "byproduct material" (10 CFR 962) as it relates to RCRA regulation of mixed wastes, and establishes the lines of authority at DOE/HQ for RCRA implementation.

DOE Order 5400.5, Control of radioactivity in discharge (e.g., liquid wastewater effluents).

DOE Order 5480.14, CERCLA requirements are now addressed in DOE Order 5480.14; however, a draft order (5400.yy) is in circulation which will replace 5480.14. The draft order provides DOE policy resolving RCRA/CERCLA overlap issues, integrating NEPA with RCRA/CERCLA processes, and resolving organizational conflict of interest issues for RCRA/CERCLA contractors.

DOE Order 5480.19, Conduct of Operations Requirements for DOE Facilities (7/9/90), establishes requirements and guidelines for departmental elements to use in developing directives, plans, and/or procedures relating to the conduct of operations at DOE facilities.

Other relevant DOE Orders include **DOE Order 5400.1,** General Environmental Protection Program (11/9/88), which establishes the environmental protection program for DOE operation, and **DOE Order 5480.1B,** Environment, Safety, and Health Program for DOE Operations (9/23/86), which outlines (1) environmental protection safety and (2) health protection policies and responsibilities.

2.3 FEDERAL AND STATE AGREEMENTS

As mentioned earlier, the State of Tennessee has authorization to administer its own RCRA program in lieu of the Federal program (except for those provisions of RCRA imposed by HSWA) and has the authority to regulate mixed hazardous and radioactive wastes. The Tennessee Hazardous Waste Management Act and its implementing regulations are administered by TDEC. Region IV of EPA administers the Federal RCRA program, including the HSWA provisions.

The following agreements are major site-specific requirements, which serve as bases for tasks discussed in this site-specific plan.

Memorandum of Understanding Between DOE, EPA, and TDEC for Y-12 (5/26/83)

This memorandum of understanding (MOU) clarifies compliance objectives agreed upon by DOE, EPA, and TDEC during a meeting held on April 8, 1983. The MOU provides the actions agreed upon by the parties as constituting preliminary measures towards DOE achievement of full compliance with all Federal and State pollution control laws at Y-12. The MOU outlines actions that DOE is required to take pertaining to discharges to the Upper EFPC; pollutants discharged from New Hope Pond, the New Hope sludge disposal area, S-3 ponds, burial ground oil pond, isolation area, disposal pits, and oil land farm; contamination of EFPC and Bear Creek; a groundwater study for Y-12; and a master monitoring plan for the plant.

FFCA/EPA Region 7741V, DOE (Y-12) (3/9/85)

This FFCA assures DOE compliance with the CWA and implementing regulations at Y-12. The agreement includes a compliance schedule and reporting requirements specifically designed to correct deficiencies in wastewater treatment at Y-12. The compliance schedule, Attachment A to the FFCA, lists and describes construction projects and includes dates for completion. Attachment B to the FFCA contains Category III discharge elimination plans.

An amendment to the FFCA (3/26/85) extends the schedule for the central pollution control facility and establishes a schedule for the proper control and disposal of fly ash from the steam plant.

A second amendment (9/12/86) modified the schedule for the central pollution control facility and the West End treatment facility.

Agreement in Principle Between DOE and State of Tennessee (5/1991)

DOE agreed to provide grants to the State of Tennessee for the TDEC's independent oversight of environmental programs at the ORR. The grants support TDEC personnel to review and respond to FFA documents including RI, FS, remedial design, and ROD reports. The State will also conduct independent monitoring and sampling, both onsite and offsite.

2.4 STATE ORDERS

TDEC Order (9/15/83)/Division of Water Quality Control, No. 83-228 (12/6/84)

This order (pursuant to which DOE agreed to the relief listed) requires that DOE submit a report to TDEC which includes a map of all discharge pipes from Y-12 into Upper EFPC, an effluent description of these discharges, and a determination of which discharge points will be eliminated. DOE is further required to provide an effluent sampling proposal; NPDES permit application for those effluents; plans for managing process waste streams; characterization of wastes deposited at New Hope Sludge Disposal Area; report on the United Nuclear Corporation disposal site; report on the unclassified material in the Classified Burial Ground; and characterization of waste in all other classified disposal sites in the Upper EFPC watershed area. DOE is also required to cease any remaining process or area source discharges for which application for NPDES permits have not been made.

TDEC Order/Division of Water Quality Control, No. 83-228 (9/15/83)

DOE agreed to the following relief measures in this complaint and order pertaining to Bear Creek. DOE is required to cease disposal and/or discharge into the S-3 ponds of all materials, except for those necessary to treat the S-3 ponds. DOE is required to cease disposal of solid wastes in the current burial ground disposal pits. DOE is required to submit to the TDEC a plan and schedule for the rehabilitation of Bear Creek; report to characterize wastewater discharged from the burial ground oil pond; NPDES permit application for the discharge; report inventorying waste deposited in the burial ground oil pond watershed; and a written proposal and schedule for remedial action for the Bear Creek watershed area.

TDEC Order for Correction/Division of Solid Waste Management, No. 84-374-11 (12/6/84)

This order for correction requires DOE to submit RCRA Part A Permit applications and closure and post-closure plans for the S-3 ponds, New Hope Pond, Bear Creek burial grounds, and the oil land farm.

TDEC Order for Correction/Division of Solid Waste Management, No. 84-374, 84-2121AG (12/6/84)

This order requires DOE to comply with the interim status standards of Tennessee hazardous waste regulations for all mixed waste facilities until hazardous waste permits are issued by TDEC. DOE is further required to comply with the conditions of hazardous waste permits issued by TDEC and to submit a schedule to TDEC for submittal of all RCRA Part B Permit applications for mixed waste facilities.

TDEC Order/Division of Solid Waste Management, No. 87-3310 (3/17/88)

DOE is ordered to remove (and over pack, if necessary) all drums of hazardous waste from any standing water within Y-12. DOE is further required to take all required measures to ensure that no releases of untreated runoff water contain hazardous waste constituents. DOE is required to close the remaining active portion of the S020 container storage area in accordance with the order.

A listing of Federal and State agreements and Unilateral Environmental Orders is also presented in Appendix B. Funded activities are in place to address all agreements and orders.

3.0 ORGANIZATION/MANAGEMENT

3.1 ORGANIZATION

The three sites on the ORR are managed for the DOE by Energy Systems. As the managing contractor, Energy Systems manages the environmental, safety, and health (ES&H) programs at the sites and supports the DOE/OR organization in the management of the overall ES&H program. Energy Systems has a strong environmental management organization and has further reorganized to parallel recent changes in the DOE/OR ER and WM Organization.

Within Energy Systems, total oversight of all ES&H activities, as well as interface roles on behalf of Energy Systems, is the responsibility of Environmental and Safety Activities (ESA), a central staff organization reporting directly to the President of Energy Systems. All oversight, policy, and regulatory interaction within Energy Systems is the responsibility of this organization. ESA has direct interface with the DOE/OR Assistant Manager for Safety and Environment and with the Assistant Manager for ER and WM (AMERWM).

At each site, ES&H organizations are charged with ensuring that the site meets the goals of full compliance with all current regulations and anticipation of, participation in, and planning for complying with future regulations. Although these organizational units report to the respective Energy Systems site manager, they also report in a matrix manner to the central ESA organization. An organizational overview for the Energy Systems ER, WM, and TD program is shown in Figure 3.1-1.

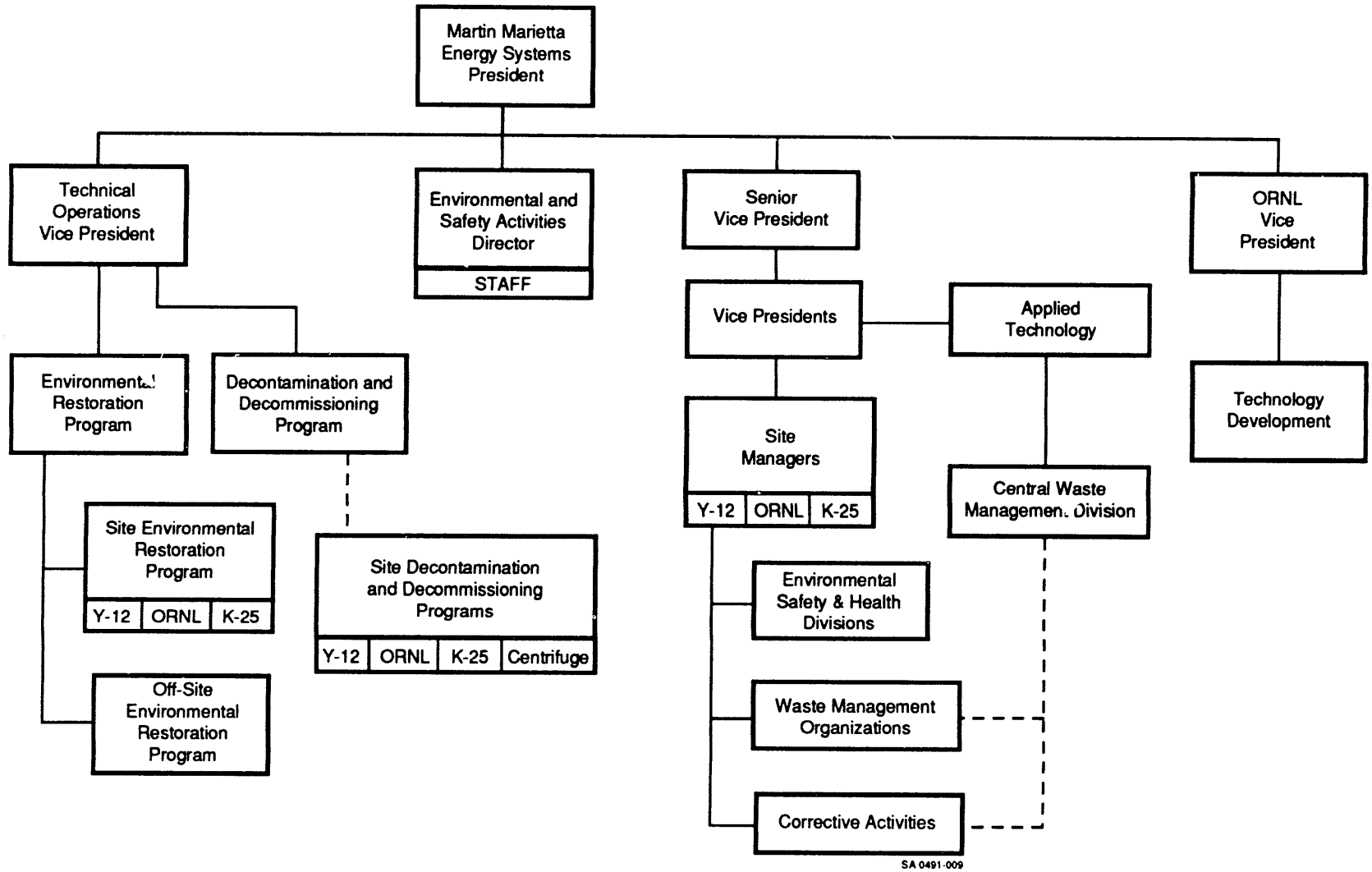
DOE/OR has placed the management responsibility for all ER and WM activities under the AMERWM. Within the AMERWM organization are four divisions: Environmental Restoration, Waste Management Division, Former Sites Restoration, and the Weldon Spring Site. Both the Former Sites Restoration and the Weldon Spring Site activities are independent of the activities covered under this site-specific plan.

The following considers the Energy Systems organization for CA, ER, TD, and WM.

3.1.1 Corrective Activities and Waste Management Operations

The DOE/OR responsibility for overall planning, budget development, programmatic management, and execution of CA and waste operations activities at all EM owned facilities rests with the Waste Management Division under the AMERWM. This office is the Contracting Officer's Representative for these facilities. These activities are implemented by the Energy Systems site manager. The DOE Site Office at each site continues to be responsible for facilities at that site which are owned by their respective DOE program.

Figure 3.1-1 Organizational Overview: Energy Systems Environmental Restoration and Waste Management



Energy Systems has established the new Central Waste Management Division (CWMD) within the Applied Technology Organization. This Division is responsible for implementing the WM and CA programs for ORR. The mission of the CWMD covers four broad areas:

- Five-plant WM programs coordination
- Program planning and technical support for all radioactive, hazardous, medical and infectious, mixed, and sanitary waste operations and waste reduction at the Energy Systems facilities
- Development, coordination, and operations of centralized waste treatment, storage, and disposal facilities
- Budget planning and program reporting for the WM and CA portions of the DOE Environmental Restoration and Waste Management Program

The line responsibility for WM for current operations continues to reside at the site of waste generation. Energy Systems ESA is responsible for oversight of CA and WM from the standpoints of policy and regulatory interaction.

3.1.2 Environmental Restoration

The Energy Systems organizational entity responsible for ER activities is the Energy Systems Environmental Restoration Division (ES-ERD). The ES-ERD is a centralized organization reporting to the Energy Systems Vice President for Technical Operations and is responsible for program management and implementation of ER activities for K-25, Y-12, ORNL, Paducah Gaseous Diffusion Plant in Kentucky, Portsmouth Gaseous Diffusion Plant in Ohio, and the off-site locations of EFPC and Clinch River. Responsibilities of the ES-ERD also include programmatic implementation of remedial investigation, and technical and financial reporting. The DOE/OR organization responsible for implementation of ER activities is the Environmental Restoration Division under the AMERWM.

The Energy Systems D&D Program Office also reports to the Vice President of Technical Operations and is responsible for the management oversight of D&D programs at the three sites. Management oversite includes developing strategies, prioritizing budgets, ensuring consistency of approaches, focusing communication, and compiling progress/status reports. Plant management at the sites is responsible for activities that include maintenance and surveillance of inactive sites and facilities as well as D&D of surplus facilities.

The ES-ERD interfaces with plant management at the sites on activities for which the ES-ERD has implementation responsibility via an on-site program manager who is part of the ES-ERD organization. The responsibilities of Energy Systems plant management and the central organizations, ES-ERD and ESA, are summarized as follows:

ES-ERD:

- Sampling and analyzing of groundwater wells that support remedial investigations
- Establishing priorities and allocating funds between sites for remedial investigations, interim corrective measures, and final remediations
- Identifying new treatment/storage facilities required exclusively for remediation and
- Ensuring that subcontractors engaged in remedial investigations and remediations have in place effective health and safety procedures

Energy Systems:

- Continuing routine maintenance, surveillance and compliance monitoring of inactive sites before and after remedial actions are completed
- Completing RCRA closures that were in progress in FY 1989
- Overseeing overall health, safety, and environmental activities during all work conducted at the site, worker health and safety plans and procedures developed by ES-ERD subcontractors engaged in remedial investigations and remediation at the site are to be reviewed and approved by plant management
- Implementing D&D activities unless these activities are an integral part of remediating a land unit, in which case ES-ERD is responsible

The total oversight of all environmental programs, as well as management of the regulatory interface and interaction, on behalf of Energy Systems is the responsibility of the Central Environmental and Safety Activities organization.

3.1.3 Technology Development

The Waste R&D Programs (WRDP) Office is responsible for managing all technology development work within Energy Systems. This centralized organization is functionally located within the operating structure of ORNL and reports to the Associate Director for Advanced Energy Systems who, in turn, reports to the Vice-President and Director of ORNL.

The WRDP is responsible for ensuring commitments are met within the established funding levels. Management at each site is responsible for managing the people and facilities associated with TD projects.

The Office of Technology Development (OTD) has designated a Technical Program Officer at each Operations Office to have the overall responsibility for TD activities. The Energy Systems counterpart to the Technical Program Officer is the Technical Program Manager, who is also the director, WRDP. The Technical Program Officer and Technical Program

Manager regularly interact in the management of the TD program. The Technical Program Officer is in the AMERWM organization at OR.

The Technical Program Manager interfaces with the ERD and CWMD to ensure development activities address Energy Systems needs, as well as benefit the DOE complex. To ensure results obtained at one DOE site are exchanged with other DOE sites, the Technical Program Manager participates in regular meetings with other Technical Program Managers and Technical Program Officers.

A workshop will be held in Oak Ridge in the summer of 1991 to identify D&D needs in Oak Ridge and the status of applicable technologies. The results of the workshop will be used by DOE for the planning of a D&D integrated demonstration.

3.1.4 The Hazardous Waste Remedial Actions Program (HAZWRAP)

HAZWRAP consists of seven program areas, four that primarily support DOE and three that primarily support other Federal agencies. HAZWRAP is staffed by approximately 180 Energy Systems employees with approximately 30 contractor people as support. The program areas are:

Program	Primary Support
• Airborne Hazardous Substances	DOD
• Environmental Restoration Program	DOE
• Information and Data Systems	DOE
• Pollution Prevention	DOD
• Remedial Actions Planning Programs	DOD
• Technology Programs	DOE
• Waste Operations	DOE

3.2 MANAGEMENT

The assigned technical personnel of the Energy Systems site environmental and WM organizations and the Central Environmental Restoration Program (ERP) and waste organizations coordinate the activities to be performed under the plan in a manner appropriate to the activities. The CWMD is responsible for coordinating and implementing the WM and CA programs for the ORR. These activities include program and budget planning and reporting. The site WM organizations continue to have line responsibilities for current operations. ER activities are coordinated through the Energy Systems ERP organization that has the responsibility for program implementation at each of the three sites on the ORR and two additional off-site locations. The ESA, ERP, and site staff work closely with the individual site representatives to ensure that appropriate documentation is in place for activities conducted at each of the sites.

The overall Energy Systems appraisal activities for ES&H functions are the responsibility of the Energy Systems Quality organization. Technical and staff support for the appraisal activities is provided through ESA. The central ESA organization and the site organizations perform audits and surveillance of ES&H activities at the sites.

Management of these activities include assurance that work to be done has been identified, planned, scheduled, and budgeted prior to authorization and that there is proper control over initiation of, or changes to, authorized activities. It also ensures appropriate scheduling, monitoring, and changes of milestones. Management provides for planned procurement and contracting activities, and realistic contingency planning. Performance is monitored through use of standard procedures for collecting and reporting cost, schedule, and technical performance data. These reports are transmitted monthly to the DOE/OR AMERWM organization.

4.0 CORRECTIVE ACTIVITIES

Section 4.0 describes projects that are required to bring facilities managed by the DOE/OR into compliance with applicable Federal, State, and local requirements and with DOE Orders or policy. Both operating and shutdown facilities are included in the category. CA are divided into three groups according to the type of environmental cleanup addressed by the projects: air, water, and solid waste (Table 4.0-1).

All ORR facilities have extensive environmental compliance programs designed to identify and correct practices that violate current regulations and to minimize the potential for future violations.

CA being carried out to bring ORR facilities into compliance include changing processes to reduce pollutants, constructing new waste treatment facilities, improving pollution control systems, and improving monitoring and sampling of waste streams.

All CA projects by definition are Priority 1 activities. The interim WM priority system defines Priority 1 projects as those activities that are necessary to prevent near-term adverse impacts to workers, the public, or the environment, and ongoing activities required to maintain safe conditions or prevent significant program and/or resource impacts.

DOE/HQ has recently modified the definition of CA so that only activities currently receiving an official notice of violation from a regulatory body can be classified as a CA. As a result, projects previously identified as CA in the FY 1990 Site-Specific Plan but currently not receiving notice of violations have been transferred to WM beginning in FY 1993.

Table 4.0-1. FY 1992 CA Projects

Category	Projects by Category	Projects by Site		
		Y-12	ORNL	K-25
Air	1	0	0	1
Water	9	6	0	3
Solid	4	1	3	0
Total	14	7	3	4

FY funding summaries for CA are provided in Table 4.0-2. Funding levels described in this SSP are based on a Preliminary Unvalidated Case (PUC) and a Validated Target Level (VTL) case. The PUC represents a preliminary estimate of funding to ensure protection of the public and worker health and safety, to carry out the agreements entered into by

DOE, to ensure compliance with applicable environmental requirements, and to implement other desired improvements.

The VTL case provides a 10 percent annual increase for the defense-related EM Program. This growth rate far exceeds that of any other defense-funded program within DOE. The program grows at 10 percent per year even in the context of declining statutory caps for the overall defense category which were insisted upon by Congress. Under this case, consistent with the EM prioritization philosophy, priority 1 activities would be funded at the largest percentage of the PUC. Priority 4 activities would receive the lowest percentage of the field-office requested funding. Neither the PUC nor the VTL necessarily reflects the actual amount of money that will be allocated to the EM Program between FY 1993 and FY 1997. Actual funding will depend upon further priority setting in the context of the annual budget and appropriations process. In this CA section the PUC and VTL funding levels are equal.

Table 4.0-2. CA Fiscal Year Funding Summary, ORR ($000)

Site	1991	1992	1993	1994	1995	1996	1997
Y-12	6000	15777	1030	600	300	0	0
ORNL	8433	7279	16400	12000	10482	0	0
K-25	1232	12608	554	583	0	0	0
Total CA	15665	35664	17984	13183	10782	0	0

4.1 Y-12

4.1.1 Overview

4.1.1.1 Description - Y-12 has several ongoing CA to bring facilities into compliance with Federal, State, and local regulations and DOE orders.

ER and WM at Y-12 demand an integrated approach to several different but interrelated activities. The overall goal is full compliance with all current regulations, anticipation and participation in developing future regulations, and planning for complying with those future regulations.

All environmental projects and programs at Y-12 are designed to provide comprehensive and effective environmental management and to improve environmental quality while bringing Y-12 into full compliance with all Federal and State laws and regulations, such as the CAA, CWA, CERCLA of 1980 and subsequent SARA, RCRA and subsequent HSWA, and TSCA. These acts are under the authority of the EPA.

Air pollutants at Y-12 are divided into criteria and noncriteria pollutants. Criteria pollutants are those for which an ambient air quality standard has been established. Noncriteria pollutants include various other air contaminants primarily affecting public welfare (as opposed to public health). The following are examples of noncriteria pollutants: (1) hazardous air contaminants including asbestos, beryllium, mercury, vinyl chloride, and radionuclides; and (2) nonhazardous contaminants including fluoride, sulfuric acid mists, hydrogen sulfide, and total reduced sulfur. Y-12 Air Pollution Control Program ensures that Y-12 properly addresses all air pollution regulations and maintains full compliance with the CAA. The primary impact of the CAA on Y-12 is the requirement for airborne effluent permits that are an integral part of the State's strategy for ensuring that ambient air quality is maintained in accordance with the Act.

Air pollution emissions from Y-12 operations are minimized by installing air pollution control equipment and developing process modifications designed to reduce air emissions.

Y-12 generates a large variety of hazardous, low-level radioactive, and conventional liquid wastes. Many capital projects and environmental management activities have been undertaken to reduce the impact of these wastes on the surrounding environment. Y-12 has identified six CA for water: Nonpermitted Plant Drains Project, Treatment Plant Discharges Project, Cooling Water Discharges Project, Non-Point Source Pollution Control Project, Cooling Towers Project, and the Sanitary Sewer Rehabilitation Project. The purpose of these projects is to bring Y-12 into compliance with the CWA, its NPDES Permit, the State of Tennessee Water Quality Control Act (TWQCA), and the City of Oak Ridge Industrial Users Permit and Sewer Use Ordinance.

Solid waste generated at Y-12 includes radioactive, mixed (hazardous and radioactive), and hazardous wastes as well as classified and conventional wastes. Y-12 has identified one solid waste CA, the Steam Plant Ash Disposal Facility (SPAD).

The Solid Waste Management Program at Y-12 is complex, reflecting the wide variety of waste streams generated by plant activities. Many storage facilities have been constructed or upgraded to meet RCRA and other regulatory requirements, and many more storage facilities are being planned because treatment and disposal facilities are not available for the radioactive and mixed wastes. The long-range objective of the solid WM strategy is to generate only conventional wastes and, when this is not feasible, to minimize the amount of classified, hazardous, and radioactive waste generated.

4.1.1.2 Resources - The resources necessary to complete CA at Y-12 are standard construction materials and prime construction contractors. Identification of resources required is provided in the following media-specific sections.

4.1.1.3 Schedule & Milestones - There are no Y-12 CA DOE/HQ milestones. All milestones shown in the ADSs are DOE/OR milestones.

- Monitoring Station/Engineering Report: DOE/OR (C260-02R) 10/91
- Design of Drain Reroutes (GPP #1): DOE/OR (C244CA-03R) 12/91
- Feasibility Study of Treatment Schemes: DOE/OR (C245-01R) 2/92
- GPP #1 Design of Chlorine Reduction Stations: DOE/OR (C246-03R) 4/92
- Design of Drain Reroutes (GPP #2): DOE/OR (C244CA-04R) 6/92
- Project Design of Disposal Facilities: DOE/OR (C204-05R) 9/92
- Conceptual Design of Chlorine Reduction Line Item: DOE/OR (C246-05R) 12/92
- Conceptual Design of Treatment Schemes: DOE/OR (C247-02R) 12/92
- Procure/Install Ozonation Units (I): DOE/OR (C250-02R) 12/92

4.1.1.4 Funding

Table 4.1-1. CA Fiscal Year Funding Summary, Y-12
($000)

Category	1991	1992	1993	1994	1995	1996	1997
Air	0	0	0	0	0	0	0
Water	0	7655	1030	600	300	0	0
Solid Waste	6000	8122	0	0	0	0	0
Total CA	6000	15777	1030	600	300	0	0

4.1.1.5 Accomplishments - Funding for Y-12 CA for water was first made available in February, 1991. Since then, funding has been used to initiate studies and perform preliminary planning to determine the feasibility and scope of the projects discussed in Section 4.1.3. For the SPAD Facility, various project documents (i.e. Conceptual Design Report, Design Criteria, Safety Assessment) have been approved, and NEPA documentation is being reviewed by DOE.

4.1.2 Air

4.1.2.1 Description - Y-12 has identified no CA for air.

4.1.2.2 Resources - None required.

4.1.2.3 Schedule & Milestones - None required.

4.1.2.4 Funding - None required.

4.1.3 Water

4.1.3.1Description - Y-12 has identified six CA for water. The purpose of these activities is to bring Y-12 into compliance with the CWA, its NPDES Permit, the TWQCA, and the City of Oak Ridge Industrial Users Permit and Sewer Use Ordinance. Y-12 is currently in violation of its NPDES Permit, and it is anticipated that the future permit will require even more stringent discharge standards. The current noncompliances include miscellaneous wastewater discharges and drain lines into EFPC that are not specifically listed on the existing permit. In addition, some process discharges have been shown by biological testing to be toxic to aquatic life. Temperature, pH, chlorine, and metal violations of existing permit limitations are being experienced. The inflow amount allowed by the City of Oak Ridge Industrial Users Permit has been exceeded due to inflow, infiltration, and extraneous noncontaminated water. Therefore, a package of CA (all Priority 1) has been designed to address these problems. (Note: Per a determination by DOE/HQ, these activities will be reclassified as WM activities starting in FY 1993 and assigned a Priority of 1-B.)

The Nonpermitted Plant Drains Project (OR-0244-CA and OR-0244-WM) involves reconnecting sinks, drains, and other miscellaneous water sources from the storm drain system to the sanitary sewer system, where appropriate, to eliminate improper discharges to EFPC. In FY 1992, development of design packages for various locations will continue, as will reconnection of some of the sources. Construction of a line item project that will reroute the sinks and drains in Buildings 9202, 9203, and 9995 will be initiated in FY 1993.

The Treatment Plant Discharges Project (OR-0245-CA and OR-0245-WM) will modify and improve Y-12's on-site wastewater treatment facilities to reduce toxicity problems. Preliminary engineering studies to determine appropriate treatment unit additions needed to comply with the NPDES Permit, toxicity requirements mandated by State and Federal regulations, and other considerations will be completed and conceptual design work for the proposed line item will be initiated in FY 1992. Design of the line item, which will provide for the addition of treatment units to enhance treatment capability at various treatment plants, will continue through FY 1995, then construction will commence.

The Cooling Water Discharges Project (OR-0246-CA and OR-0246-WM) will reduce the loading to EFPC from once-through cooling water discharges. The Chlorine Reduction Study is phased to provide incremental reduction of chlorine with installation of treatment equipment at key outfalls where multiple sources are discharged, by recirculation, or by other identified methods of chlorine dissipation. In FY 1992, a general plant project will provide for chlorine reduction stations to be built at designated outfalls. This phased approach will continue through FY 1998 with other general plant projects that will decrease the chlorine levels and a line item project, which should reduce the chlorine levels in the stream to below water quality standards.

The Non-Point Source Pollution Control Project (OR-0247-CA and OR-0247-WM) will provide treatment systems and/or source control methods to reduce pollutants from runoff

or groundwater flow through contaminated areas. In FY 1992, Best Management Practices developed in FY 1991 will be implemented, and conceptual design will be initiated for a FY 1995 line item, which may include wastewater treatment facilities to treat groundwater infiltration and contaminated runoff and secondary containment for hazardous/toxic materials storage areas.

The Cooling Towers Project (OR-0250-CA and OR-0250-WM) will reduce chlorine loading to EFPC through the procurement and installation of ozonation units on large recirculating cooling towers. Procurement specifications and installation drawings will be developed in FY 1992, and units for three towers will be procured and installed. This phased approach will continue over the following three years.

The Sanitary Sewer System Rehabilitation Project (OR-0260-CA and OR-0260-WM) provides for the design and construction of a new sanitary sewer monitoring station and a phased program for the elimination of infiltration/inflow in sewer lines. Design of the project will be accomplished in FY 1992 and submitted to the City of Oak Ridge and the TDEC for approval, and construction will be initiated. Construction of the new station and rehabilitation of the sewer lines should be completed in FY 1994.

4.1.3.2 Resources - Resources for completing the activities described above include standard construction material such as piping and valves, and prime construction contractors. Water treatments units, such as ozonation units, will also be required.

4.1.3.3 Schedule & Milestones -

• Environmental Documentation for Ozonation Units: DOE/OR (C250-01R)	2/91
• Environmental Documentation for Drain Reroutes: DOE/OR (C244CA-01R)	6/91
• Non-Production Building Survey: DOE/OR (C244CA-02R)	6/91
• Chlorine Study: DOE/OR (C246-01R)	6/91
• Sewer System Rehabilitation Report: DOE/OR (C260-01R)	6/91
• Monitoring Station/Engineering Report: DOE/OR (C260-02R)	10/91
• Design of Drain Reroutes (GPP #1): DOE/OR (C244CA-03R)	12/91
• Final Environmental Feasibility Study for Chlorine Reduction Line Item: DOE/OR (C246-02R)	12/91
• Feasibility Studies for Non-Point Source Pollution Control: DOE/OR (C247-01R)	12/91
• Environmental Documentation for Sewer System Rehabilitation: DOE/OR (C260-03R)	12/91
• Feasibility Study for Treatment Schemes: DOE/OR (C245-01R)	2/92
• GPP #1 Design of Chlorine Reduction Schemes: DOE/OR (C246-03R)	4/92
• Design of Drain Reroutes (GPP #2): DOE/OR (C244CA-04R)	6/92

- Environmental Documentation for Chlorine Reduction Stations: DOE/OR (C246-04R) 12/92
- Conceptual Design for Chlorine Reduction Stations: DOE/OR (C246-05R) 12/92
- Conceptual Design for Treatment Schemes: DOE/OR (C247-02R) 12/92
- Procure/Install Ozonation Units (I): DOE/OR (C250-02R) 12/92

4.1.3.4 Funding

Table 4.1-2. Water CA Fiscal Year Funding, Y-12 ($000)

ADS No.	1991	1992
OR-0244-C1	0	1150
OR-0244-CA	0	585
OR-0244-WM	0	0
OR-0245-CA	0	3190
OR-0245-WM	0	0
OR-0246-CA	0	500
OR-0246-WM	0	0
OR-0247-CA	0	630
OR-0247-WM	0	0
OR-0250-CA	0	830
OR-0250-WM	0	0
OR-0260-CA	0	420
OR-0260-WM	0	0
OR-0261-CA	0	350
Total	0	7655

4.1.4 Solid Waste

4.1.4.1 Description - Solid wastes generated by Y-12 include radioactive, hazardous, and mixed (radioactive and hazardous) wastes. On January 9, 1987, the TDEC determined that the current discharge of coal as slurry from the Y-12 Steam Plant into Rogers Quarry through McCoy Branch was in violation of the TWQCA, and also in violation of the CWA. This mandated that Y-12 eliminate the ash discharge and provide interim measures to minimize the discharge until it stops entirely. Fly ash discharge to the quarry has been eliminated. Long-term facilities (SPAD, OR-0204-CA, priority 1) will be constructed to dewater the bottom ash sluice water by July 1993. The project will completely eliminate the discharge of ash sluice water to McCoy Branch and Rogers Quarry.

The SPAD Facility is designed to bring the disposal of coal ash from the Y-12 Steam Plant into environmental compliance and provide additional landfill capacity for disposal of sanitary/industrial wastes generated by the three Oak Ridge facilities. This line item project includes the Wet Bottom Ash Handling Facility, Class IV landfill, and Class I landfill with a leachate collection and treatment system.

The landfill will include a leachate collection system and a treatment facility for processing the collected leachate prior to discharge. The leachate discharge from this system will be treated and regulated under the TWQCA as an NPDES discharge. This landfill would provide a method for the disposal and handling of wet bottom ash and sanitary/industrial wastes from all three sites. This project is anticipated to be completed by mid-FY 1993.

4.1.4.2 Resources - The resources necessary to complete the SPAD facility are standard construction materials and prime construction contractors. Two burial trenches are planned to be opened as a part of this project. Additional trenches will be opened as needed.

4.1.4.3 Schedules - Milestones

- Environmental Documentation: DOE/OR (C204-01R) 7/91
- Landfill Design: DOE/OR (C204-02R) 9/91
- Leachate Treatment Design: DOE/OR (C204-03R) 9/92
- Project Design: DOE/OR (C204-04R) 9/92
- Design/Build Wet Bottom Ash Handling Facility: DOE/OR (C204-05R) 12/92

4.1.4.3 Funding

Table 4.1-3. Solid Waste CA Fiscal Year Funding, Y-12 ($000)

ADS No.	1991	1992
OR-0204	6000	8122

4.2 ORNL

4.2.1 Overview

4.2.1.1 Description - ORNL CA consist of upgrade and replacement of portions of the active LLLW CAT systems and compliance with RCRA Subtitle I provisions for petroleum and hazardous substance tanks. These activities are included in ADSs OR-302, and OR-304. The two line item projects will upgrade and replace part of the active ORNL LLLW CAT System. These construction projects consist of an ongoing FY 1988 line item project [total estimated cost (TEC), $35M] to replace a portion of the Bethel Valley LLLW system and a proposed FY 1992 line item project (TEC, $41M) for the Melton Valley portion of the system. The existing LLLW CAT System, located in the Bethel and Melton Valleys of ORNL, provides LLLW service to a number of unique national research and development facilities that support the missions of programs reporting to the Director of Energy Research within the DOE. The LLLW CAT System must be upgraded to comply with provisions of the pending FFA for the ORR which includes the ORNL LLLW system. Provisions

applicable to the active LLLW require double containment, enhanced leak detection capability, cathodic protection, and compatibility between tank construction materials and wastes.

4.2.1.2 Resources - Bethel Valley and Melton Valley LLLW CAT Upgrade projects will use double-lined, stainless steel piping for at least a portion of the systems.

4.2.1.3 Schedule & Milestones - Major milestones for ORNL CA include:

- Complete construction of the Bethel Valley LLLW-CAT system: DOE/HQ (C302-05H) 9/95
- Complete construction of Melton Valley LLLW-CAT system upgrade: DOE/HQ (C304-05H) 12/97

4.2.1.4 Funding

Table 4.2-1. CA Fiscal Year Funding Summary, ORNL ($000)

Category	1991	1992	1993	1994	1995	1996	1997
Air	0	0	0	0	0	0	0
Water	0	0	0	0	0	0	0
Solid Waste	8433	7279	16400	12000	10482	0	0
Total CA	8433	7279	16400	12000	10482	0	0

4.2.1.5 Accomplishments - In compliance with FFCA schedules, completed construction of an $18M Nonradiological Wastewater Treatment Plant (NRWTP) in 1989 and began operation in 1990. The NRWTP treats nonradioactive process wastes for removal of organics and heavy metals including chromium, cadmium, zinc, and mercury.

Accomplishments through FY 1991 for the Bethel Valley project (ADS OR-302), included completion of detailed design and start of construction on (1) the Transported Waste Receiving Facility (TWRF) Building (2649), (2) the Monitoring Control Station (MCS) (Building 2099) for the High Radiation Level Analytical Laboratory, (3) the external piping to connect these facilities and the Central Off-Gas Scrubber Facility (Building 3092) to the central LLLW collection system, (4) the internal piping upgrade for the High Radiation Level Analytical Laboratory (Building 2026), and (5) the upgrade of the Central Off-Gas Scrubber Facility (Building 3092). Also in FY 1991, fabrication and testing of the LLLW collection tanks for the remaining MCSs and TWRF were completed, along with (1) construction of Building 7077, (2) demolition of Buildings 2567 and 2511 for site preparation for the TWRF, and (3) initial decontamination of Buildings 2026 and 3092 was performed.

Accomplishments through FY 1991 for the Melton Valley (ADS OR-304) included completion of the Systems Requirement Document (SRD), the Conceptual Design Report (CDR) validation, the design criteria, a draft management plan, design start Readiness Review, and the Preliminary Safety Analysis Report (PSAR).

4.2.2 Air

4.2.2.1 Description - ORNL has identified no CA for air.

4.2.2.2 Resources - None required.

4.2.2.3 Schedule & Milestones - None required.

4.2.2.4 Funding - None required.

4.2.3 Water

4.2.3.1 Description - ORNL has identified no CA for water.

4.2.3.2 Resources - None required.

4.2.3.3 Schedule & Milestones - None required.

4.2.3.4 Funding - None required.

4.2.4 Solid

4.2.4.1 Description - In accordance with the RCRA definition of a solid activity, activities in ADSs OR-302, OR-304, and OR-310-AA have been classified as solid CA. The LLLW CAT system must be upgraded to comply with provisions of the pending FFA for ORR. The provisions require secondary containment and leak detection capability, cathodic protection, and compatibility between construction materials and wastes that will contact these materials. Most parts of the existing LLLW CAT system do not have full secondary containment or leak detection capability, except for a few short-line segments and tanks constructed most recently. Provisions pertinent to the active portions of the LLLW CAT System are essentially identical to the RCRA Subtitle C regulations which require that all underground hazardous waste tank systems meet published standards for secondary containment and leak detection.

The Subtitle I UST Management Program (ADS OR-310-AA) provides necessary planning and activities to ensure ORNL compliance with RCRA Subtitle I requirements for underground petroleum and hazardous substances tanks. The program costs reflect the

minimum regulatory requirements to implement UST tightness testing, inventory management, monitoring, upgrade/replacement or closure (removal), and site remediation. This program began in 1989 and was originally scheduled to be complete by 1998. However, reduced funding has protracted this schedule. Approximately 30 USTs and their interconnecting piping systems will be addressed by activities in this ADS. Tanks are addressed in order based on assessed risk. It is estimated that at least 35% of ORNL's USTs will require corrective action because of product leakage.

Construction of the Bethel Valley LLLW CAT System will continue throughout FY 1992 and is scheduled to be completed in late FY 1993. Decontamination work on Buildings 2026 and 3092 will also be finished at that time. Also in FY 1992, construction of the MCS (Building 2099) and the external piping that connects this facility to the LLLW collection system, and 50% of the construction of the TWRF is scheduled to be completed.

The detailed design for the Melton Valley LLLW CAT System is scheduled for FY 1992 and part of FY 1993. Construction is to be completed in FY 1997.

The driver for the Bethel Valley and Melton Valley LLLW System Upgrades is the pending FFA. Regulations include DOE Order 5480.14 and the CWA. The primary driver for the UST construction is compliance with RCRA Subtitle I (40 CFR Part 280) requirements for underground petroleum and hazardous substances tanks.

4.2.4.2 Resources - Bethel Valley and Melton Valley LLLW CAT Upgrade projects will use double-lined, stainless steel piping for at least a portion of the systems.

4.2.4.3 Schedule & Milestones

• Complete detailed design of the Bethel Valley LLLW-CAT system (Work Breakdown Structure [WBS] 3.37): DOE/HQ (C302-01H)	1/91
• Complete readiness review for construction for the fixed-price package: DOE/OR (C302-02R)	1/91
• Complete design criteria for Melton Valley LLLW-CAT system upgrade: DOE/HQ (C304-01H)	9/91
• Complete Architect Engineer (A-E) selection for the Melton Valley LLLW-CAT system upgrade: DOE/OR (C304-02R)	6/92
• Complete construction of the MCS Bldg. 2099 and external piping package: DOE/OR (C302-03R)	9/92

4.2.4.4 Funding

Table 4.2-2 Solid Waste CA Fiscal Year Funding, ORNL
($000)

ADS No.	1991	1992
OR-0302	7883	3311
OR-0304	550	3968
OR-0310-AA	0	0
Total	8433	7279

4.3 K-25

4.3.1 Overview

4.3.1.1 Description - The CA Program at K-25 focuses on correction of regulatory noncompliances associated with the CAA and CWA. Projects are scheduled to improve the air emissions from the K-25 Steam Plant and to correct effluent discharge problems that result in NPDES noncompliances. There are no solid WM noncompliances.

4.3.1.2 Resources - No special resources have been identified.

4.3.1.3 Schedule & Milestones - Major milestones for K-25 CA projects are:

- Complete video survey and repair 25% of collection system: DOE/HQ (C404-01H) 9/91
- Coal pile removal and reclamation: DOE/OR (C403-02R) 7/92
- Boiler #9 installation: DOE/OR (C402-03R) 8/92
- Softener effluent drain installed: DOE/OR (C403-03R) 9/92
- Storm drain rerouting: DOE/OR (C403-04R) 9/92
- Repair second quarter of collection system: DOE/HQ (C404-02H) 9/92
- Complete equipment testing and initiate monitoring: DOE/OR (C433-05R) 9/92

4.3.1.4 Funding

Table 4.3-1. CA Fiscal Year Funding, K-25
($000)

Category	1991	1992	1993	1994	1995	1996	1997
Air	200	0	0	0	0	0	0
Water	1032	12608	554	583	0	0	0
Solid	0	0	0	0	0	0	0
Total	1232	12608	554	583	0	0	0

4.3.1.5 Accomplishments - The first of two gas/oil boilers (OR-402) has been installed to replace the existing coal-fired boilers at the K-25 Steam Plant. The management and coordination of the second package boiler procurement and installation contracts will occur in FY 1991. Preliminary engineering work has been performed on the softener effluent drain portion of the Toxicity Reduction projects (OR-403) and is underway on the other two components (removal of the coal storage yard and storm drain rerouting). Utilities department staff conducted flow studies to determine major areas of infiltration of the sewage collection system (OR-404). A video survey was performed on approximately 30 percent of the collection system. The remaining portion of the sewage collection system will be surveyed in FY 1991 to determine what repairs are needed. Preliminary proposals for the purchase and installation of the NPDES monitoring equipment (OR-433) at K-25 have been received from vendors. An engineering estimate has been completed. The project's scope is receiving additional consideration in anticipation of the new NPDES permit requirements. All activities are focused on correction of regulatory non-compliances associated with the CAA and CWA.

4.3.2 Air

4.3.2.1 Description - K-25 has only one identified air CA, the installation of Boiler #9 (OR-402). A 50,000 pph natural gas/No. 2 fuel oil-fired package boiler will be procured and installed into the new west addition of the K-25 Steam Plant (K-1501). The management and coordination of the package boiler procurement and boiler installation contracts will occur in FY 1991. The receipt and installation of the boiler are expected to be FY 1992 activities and will include check-out and start-up of Boiler #9. This activity is planned to be completed in FY 1992.

4.3.2.2 Resources - Resources for completing the installation of Boiler #9 will be a standard industrial-grade package boiler, earth-moving equipment, and miscellaneous equipment and materials.

4.3.2.3 Schedules & Milestones - Major milestones for K-25 CA air project are:

- Exercise Boiler #9 installation option: DOE/OR (C402-01R) 8/91
- Boiler #9 delivered on-site: DOE/OR (C402-02R) 3/92
- Boiler #9 installation: DOE/OR (C402-03R) 8/92

4.3.2.4 Funding

Table 4.3-2. Air CA Fiscal Year Funding, K-25
($000)

ADS No.	1991	1992
OR-402	200	0

4.3.3 Water

4.3.3.1 Description - Several water CA are necessary to bring K-25 into compliance with the anticipated NPDES permit. Other CA may be identified after K-25 has been issued the new permit. K-25 has three water CA: toxicity reduction (OR-403), sewage collection system rehabilitation (OR-404), and NPDES monitoring equipment (OR-433).

The intent of the toxicity reduction projects (ADS OR-403) is to reduce flows to the Central Neutralization Facility (CNF) to avoid noncompliance with the NPDES permit. Procurement and installation of Boiler #9 at the K-25 Steam Plant must be accomplished before coal can be removed from the coal storage yard. The coal storage yard must be returned to its natural condition to allow modification of the drainage system. Modification of the water treatment softener effluent lines to gravity flow underground will eliminate the potential for freezing and resulting leaks, which violate the NPDES permit. Separation of the waste streams will also optimize the use of the treatment facilities. Work during FY 1991 on the toxicity reduction GPP will include additional engineering work on the projects, resulting in a completed preliminary proposal and safety, QA, and NEPA documentation for capital project initiation. The majority of the coal storage yard will be emptied and reclaimed (some soil removed, fill dirt added, and grass planted). Waste drain lines from the water treatment softeners will be rerouted and placed underground. Storm drain lines from the coal storage yard area will be rerouted from treatment facilities to a receiving stream. By the end of 1997, all components of the toxicity reduction program should be complete. Waste from the K-25 Steam Plant area should be minimized, with remaining waste streams segregated to optimize usage of treatment facilities.

The intent of the sewage collection system rehabilitation project (ADS OR-404) is to eliminate violations of the NPDES permit due to water infiltration into the sewage collection system. Currently, heavy rainfall over an extended period of time results in flow to the K-1203 sewage treatment plant exceeding its treatment capacity. Violations of the NPDES permit result from these conditions. For the sanitary collection system upgrade activity, engineers are preparing the necessary design information for replacement of sewer lines identified as problems in a video survey. A video survey of the remainder of the system is planned for FY 1991. As much of the system will be repaired as funding allows. Additional percentages of the sewage collection system will be repaired as funding allows. By September 1997, the entire sewage collection system will be either lined or replaced where necessary.

The NPDES monitoring equipment project (ADS OR-433) will provide equipment and instruments necessary to monitor storm drains SD-100, SD-170, SD-180, and SD-190 in compliance with the NPDES permit requirements. The monitoring will include pH and conductivity measurements, flow metering, and flow proportional composite sampling. Vendor proposals for purchase and installation of the NPDES monitoring equipment will be solicited. The equipment will also be purchased, installed, and tested. Completion of the NPDES monitoring equipment upgrade program is anticipated in late FY 1992.

4.3.3.2 Resources - No special resources have been identified.

4.3.3.3 Schedules & Milestones - Major milestones for K-25 CA water projects are:

- Preliminary engineering for reducing steam plant toxicity: DOE/OR (C403-01R) 9/91
- Complete video survey and repair 25% of collection system: DOE/HQ (C404-01H) 9/91
- Request equipment proposal from vendors: DOE/OR (C433-01R) 12/91
- Receive equipment proposal from vendors: DOE/OR (C433-02R) 2/92
- Purchase equipment: DOE/OR (C433-03R) 5/92
- Coal pile removal and reclamation: DOE/OR (C403-02R) 7/92
- Install equipment: DOE/OR (C433-04R) 8/92
- Complete equipment testing and initiate monitoring: DOE/OR (C433-05R) 9/92
- Softener effluent drain installed: DOE/OR (C403-03R) 9/92
- Storm drain rerouting: DOE/OR (C403-04R) 9/92
- Repair second quarter of collection system: DOE/HQ (C404-02H) 9/92

4.3.3.4 Funding

Table 4.3-3. Water CA Fiscal Year Funding, K-25 ($000)

ADS No.	1991	1992
OR-403	507	11193
OR-404	525	525
OR-433	0	890
Total	1032	12608

4.3.4 Solid

4.3.4.1 Description - K-25 has identified no solid waste CA.

4.3.4.2 Resources - None required.

4.3.4.3 Schedules & Milestones - None required.

4.3.4.4 Funding - None required.

5.0 ENVIRONMENTAL RESTORATION

ER projects assess and clean up DOE sites and facilities that are no longer active in ongoing operations. Waste of various types has accumulated at the ORR sites from defense and research operations spanning nearly five decades. ER is divided into four areas of activity: (1) assessment of nature and extent of environmental contamination; (2) remedial actions to clean up inactive waste sites that have the potential for releasing contaminants, (3) D&D to clean up surplus facilities, and (4) research, development, and demonstration (RD&D) to apply new technology to enhance restoration activities.

It is ORR policy to comply with both the letter and spirit of all applicable Federal, State, and local regulations and with DOE policies governing environmental protection. Historical practices at many DOE sites, although consistent with the standards of their time, did not fully recognize the potential hazards of certain materials. Many of these past practices are considered inadequate by modern standards. ER activities are conducted to ensure that all inactive ORR facilities meet current requirements for environmental cleanup and waste management.

The fundamental goal of ER is to ensure that risks to the environment and to human health and safety posed by inactive and surplus facilities and sites contaminated by radioactive, hazardous, or mixed wastes are either eliminated or reduced to prescribed, safe levels. This goal is achieved by meeting separate strategic objectives established for remedial action and D&D. The six objectives identified for remedial action are to (1) identify inactive, contaminated facilities and sites at ORR nuclear installations; (2) assess these facilities and sites to determine the nature and extent of contamination; (3) confine and contain existing contamination to the extent necessary to minimize further spread; (4) coordinate with regulatory authorities for negotiated agreements specifying the requirements and schedule for cleaning up the identified facilities and sites; (5) ensure that cleanup strictly complies with these agreements; and (6) provide long-term monitoring to ensure continuing compliance.

The four strategic objectives for D&D are to (1) maintain facilities awaiting either decontamination or decommissioning in a manner that limits worker, public, and environmental exposure to potential hazards; (2) assess ORR facilities to determine the nature and extent of contamination; (3) decontaminate facilities designated for reuse to the extent necessary for compliance with approved health and safety standards; and (4) decommission all other facilities in accordance with requirements set forth in an approved environmental compliance plan.

R&D activities in ER will be evaluated to emphasize those expected to provide return of benefits in as short a time as possible. R&D in ER has three objectives: (1) provide an improved technical and economic basis for eliminating or minimizing environmental and health hazards by developing improved and new assessment and cleanup technologies; (2)

reduce the potential for public exposure by developing automated, remote handling technologies; and (3) broaden the available technical base by adapting technologies not previously considered for R&D application in ER.

DOE has established four priority levels for ER reflecting discrete goals: (1) to limit immediate or short-term health risk and contamination; (2) to comply with in-place or pending agreements; (3) to reduce out-year risk, promote out-year compliance, address public concern, and protect DOE missions; and (4) to accelerate overall compliance.

ER assessment, cleanup, and R&D activities are organized into four interim priority categories that reflect discrete circumstances connected with the various activities:

> Priority 1 ER activities (1) protect workers and public from near-term (i.e., within five years) potential health risks, (2) contain near-term, off-site spread of groundwater and soil contamination, (3) prevent unnecessary disruption of ongoing assessment and cleanup work, and (4) provide preclosure S&M, primarily for D&D facilities.
>
> Priority 2 ER activities, not otherwise assigned to Priority 1, are required by in-force agreements or agreements expected to be enforced during 1992.
>
> Priority 3 ER activities, not otherwise assigned to Priorities 1 and 2, are judged to be the best approach to meeting DOE/OR's goals to (1) reduce the potential for health and environmental risk, (2) promote regulatory compliance, (3) reduce public concern, and (4) ensure no disruption in DOE's missions.
>
> Priority 4 ER activities are those not covered under Priorities 1, 2, and 3, primarily D&D activities at locations where no present imperatives or significant benefits are associated with immediate cleanup.

Assignment of an ER activity to a specific priority category reflects the current circumstances associated with that activity. Such circumstances will be reviewed by DOE annually; any significant change in circumstances may change the priority of the activity. This program of regular priority review is intended to ensure that a priority designation accurately reflects the true circumstances associated with an activity at any given time.

Table 5.0-1 presents funding estimates for ER activities, by category for the FY 1992. FY 1993 through FY 1997 funding levels described in the SSP are based on a Preliminary Unvalidated Case (PUC) and a Validated Target Level (VTL) case. The PUC represents a preliminary estimate of funding to ensure protection of the public and worker health and safety, to carry out the agreements entered into by DOE, to ensure compliance with applicable environmental requirements, and to implement other desired improvements.

The VTL case provides a 10 percent annual increase for the defense-related EM Program. This growth rate far exceeds that of any other defense-funded program within DOE. The program grows at 10 percent per year even in the context of declining statutory caps for the overall defense category which were insisted upon by Congress. Under this case, consistent with the EM prioritization philosophy, priority 1 activities would be funded at the largest percentage of the PUC. Priority 4 activities would receive the lowest percentage of the field-office requested funding. Neither the PUC nor the VTL necessarily reflects the actual amount of money that will be allocated to the EM Program between FY 1993 and FY 1997. Actual funding will depend upon further priority setting in the context of the annual budget and appropriations process.

Table 5.0-1. ER Projects

Category	Projects by Category	1992 Budget by Category ($000,000)	Projects by Site		
			Y-12	ORNL	K-25
Assessment	17	46.8	3	12	2
Remediation	25	39.7	11	11	3
D&D*	18	78.8	1	4	13
Total	60	136.6	15	21	18

*including S&M

ER projects at ORR facilities and major milestones are detailed in the following sections.

5.1 Y-12

5.1.1 Overview

5.1.1.1 Description - Y-12 contains many facilities that have been used for treating, storing, or disposing of hazardous waste and hazardous substances. Examples include landfills, incinerators, drum storage areas, above-ground storage tanks, USTs, surface impoundments, and treatment facilities. The hazardous wastes treated, stored, or disposed of in the facilities include waste acids containing heavy metals, chlorinated solvents, and PCBs.

The first step in the remedial action process is to identify sites that have potential for releasing hazardous wastes to the environment. An assessment or investigation is then performed to determine whether the groundwater, surface water, air, or soil affected by the facility contains hazardous contaminants. If the investigation indicates that environmental media are not contaminated, the environment adjacent to the site is declared clean and the investigation work is documented. If the investigation indicates that the environmental media at the facility are contaminated, appropriate remedial actions are developed and implemented. After site remediation, S&M ensure the effectiveness of remediation.

5.1.1.2 Resources - Resource requirements for each subtask are described in the following sections of this document.

5.1.1.3 Schedule - Milestones - Major milestones for ER at Y-12 are:

- Begin remediation of United Nuclear Corporation Disposal Site 7/91
- Submit RI report for EFPC 5/92
- Submit FS report for EFPC 7/92
- Issue permits for closure activities and post-closure activities 9/92

5.1.1.4 Funding

Table 5.1-1. ER Fiscal Year Funding Summary, Y-12
PUC ($000)

Category	1991	1992	1993	1994	1995	1996	1997
Assessment	5532	8165	8168	10762	14684	16398	11081
Remediation	11543	18403	42650	126600	128042	49741	39872
D&D	446	446	8000	21750	25734	33176	24809
Total ER	17521	27014	58818	159112	168460	99315	75762

Table 5.1-2. ER Fiscal Year Funding Summary, Y-12
VTL ($000)

Category	1991	1992	1993	1994	1995	1996	1997
Assessment	5532	8165	4440	4705	5679	5545	5655
Remediation	11543	18403	23160	26322	26336	25623	26237
D&D	446	446	5000	5079	4799	2330	2280
Total ER	17521	27014	32600	36106	36814	33498	34172

5.1.2 Assessment and Characterization

5.1.2.1 Chestnut Ridge Assessment (OR-277, Priority 2)

5.1.2.1.1 Description - This task includes the assessment of sites that contain or may contain hazardous, radioactive, or mixed waste in the area of Chestnut Ridge. Included are the development of both the plans and primary documents for RCRA Facility Assessments (RFAs), RFIs and CERCLA Preliminary Assessments/Site Investigations (PA/SIs) and RIs. These activities involve the following two phases: 1) RFAs or PA/SIs to identify the releases or potential releases requiring further investigation, 2) RFI or RI activities to fully characterize the extent of releases. This task also involves any needed support in

preparation of CERCLA FSs. Finally, this task includes activities in support of the NEPA documentation prepared as part of the RFI/RI or FS process.

The RFI plans for Filled Coal Ash Pond and Sanitary Landfill II have been submitted to the regulators. Fieldwork has been completed at the Filled Coal Ash Pond site. Filled Coal Ash Pond and Spoil Area I comprise the Group III sites that will be submitted in a single RI.

5.1.2.1.2 Schedules - Milestones

- Submit RI plans for Sanitary Landfill II to regulators (OR-0277) 7/91
- Submit RI report for Filled Coal Ash Pond (in "Group III" RI report) (OR-277) 12/91
- Initiate field work for Sanitary Landfill II (OR-277) 4/92

5.1.2.1.3 Impacts of VTL Funding - Under the PUC funding scenario, biological monitoring of McCoy Branch (below Filled Cool Ash Pond site) will continue until FY 1995. Investigations will continue at Sanitary Landfill II as planned through FY 1997. Under the VTL funding scenario, no activity at all is planned for FY 1993. All assessment work will resume in FY 1994 with additional costs due to 1) loss of project continuity and 2) additional expenses to remobilize field teams and/or contractors. All activities will be delayed in excess of one year under VTL funding.

5.1.2.1.4 Funding

Table 5.1-3. ER Assessment (Chestnut Ridge)
Fiscal Year Funding Summary, Y-12
($000)

ADS NO.	1991	1992
OR-0277	715	1207

5.1.2.2 Upper EFPC (UEFPC) Watershed Assessments (OR-279, Priority 2)

5.1.2.2.1 Description - Three ADSs (216G3, 219G1, and 210G1), previously listed separately, were combined to form ADS 279 for the UEFPC watershed. This task includes the assessment of contamination in the UEFPC watershed. Included are the development of both the plans and primary documents for RCRA, RFAs, RFIs, and CERCLA, PA/SIs, and RIs. These activities involve the following two phases: 1) RFAs or PA/SIs to identify the releases or potential releases requiring further investigation, 2) RFI or RI activities to fully characterize the extent of releases. This task also involves any needed support in preparation of CERCLA FSs.

In an effort to expedite field work, numerous sites were arranged in five groupings. The five groups included in this ADS are:

GROUPS	INDIVIDUAL SITES
Group I	Rust spoil area, Tank 2116u, Waste Coolant Processing Facility
Group II	Bldg. 81-10, Coal Pile Trench, S-2 Site, Salvage Yard
Group IV	Z-Oil System, UEFPC, Mercury Use Area, Line Yard, Abandoned Nitric Acid Pipeline, SY-200 Yard
HSWA Sites	(I)-YS-335, YS-338/201; (II)-YS-200, YS-313, YS-227/228; (III)-YS-321, YS-326/225
PA/SI Sites	Tanks 2077, 2078, 2079, 2081, and laundry sump; Bldg. 9418-3 and Tank 2064u.

The UEFPC watershed area encompasses the majority of the main area of Y-12. There are several sites located in this area that have had activities that have led to potential contamination. These activities include, but are not limited to: suspected leaking tanks, mercury use areas, and uncontained spills of waste coolants. RFIs will be conducted to determine extent and location of contamination.

RI plans have been submitted to regulators on the UEFPC, Mercury Use Areas, Line Yard, and Z-Oil. RI reports have been submitted to regulators for Beta-4 Tanks and the Plating Shop container areas.

5.1.2.2.2Schedules - Milestones

• Complete Site Characterization Summary (SCS) for Group I sites (OR-0279)	6/91
• Complete SCS for Group II sites (OR-0279)	6/91
• Phase I sampling on Group IV sites (OR-0279)	10/91
• Submit revised Group I RI plan to regulators (OR-0279)	12/91
• Complete SCS for HSWA 1, 2, 3 (OR-0279)	5/92
• Complete SCS Group IV (OR-0279)	5/92
• Phase II fieldwork for Group II (OR-0279)	11/92

5.1.2.2.3Impacts of VTL Funding

VTL funding would result in the following: Delay initiation of Phase II sampling and first analysis for the Group IV sites from FY 1993 to FY 1994, the baseline RA and RI report would not be completed until FY 1995, and the FS would not be initiated until FY 1996;

delay new PA/SI work on an additional site from FY 1993 until FY 1994; delay initiation of Phase II sampling for HSWA sites to FY 1994, delay the baseline RA and the RI report until FY 1995; and delay initiation of the FS until FY 1996; work to be initiated on treatability studies would be delayed until FY 1994; Phase II sampling and lab analysis on Group I sites would be delayed to FY 1994, the baseline RA and RI report would be delayed to FY 1995 and the FS initiation delayed to FY 1996.

5.1.2.2.4 Funding

Table 5.1-4. ER Assessment (Upper EFPC)
Fiscal Year Funding Summary, Y-12
($000)

ADS NO.	1991	1992
OR-0279	2895	3247

5.1.2.3 EFPC Assessment Activities (OR-0209 GI Priority 1)

5.1.2.3.1 Description - EFPC originates on the Y-12 site and flows through the City of Oak Ridge, Tennessee. EFPC floodplain soils are contaminated with mercury and other constituents from Y-12 operations. This task includes support to DOE in preparing an EIS, and CERCLA RI/FS.

Work required to support the RI/FS process could include drilling, sampling, waste management, laboratory analyses, technical support, and surveying. Results of the RI/FS process will feed the remedial design in ADS 209G2.

Current estimates are based on costs incurred in preparing design documents for comparable efforts. An FFA between DOE, TDEC, and Region IV EPA addressing these and other ER activities is being negotiated.

5.1.2.3.2 Schedule - Milestones

- Installation of wells (OR-209-G1) 1/91
- Internal field report for well installation (OR-209-G1) 3/91
- RI report to regulators (OR-209-G1) 5/92
- FS/EIS report to regulators (OR-209-G1) 7/92

5.1.2.3.3 Funding

Table 5.1-5. ER Assessment (EFPC)
Fiscal Year Funding Summary, Y-12
($000)

ADS NO.	1991	1992
OR-0209 G1	167	300

5.1.2.3.4 Impacts of VTL Funding

- Reduced site support for RI/FS activities.
- Treatability study not complete until FY 1994. Under PUC, it would be completed in FY 1993.

5.1.3 Remediation

5.1.3.1 EFPC Remediation Activities (OR-0209 G2, Priority 1)

5.1.3.1.1 Description - This task includes support to DOE in preparing remedial design and implementing remedial actions.

Work required to remediate the creek areas could involve excavation of contaminated materials; redirection of the creek; and treatment, storage, and disposal of contaminated materials. Results of RI/FS activities (209G1), when completed, will help to more explicitly define the extent of work to be conducted, budget requirements, and schedule.

Current estimates are based on costs incurred in preparing design documents for comparable efforts.

5.1.3.1.2 Schedule - Milestones All milestones are ADS level activities.

5.1.3.1.3 Funding

Table 5.1-6. ER Remediation (EFPC)
Fiscal Year Funding Summary, Y-12
($000)

ADS NO.	1991	1992
OR-0209 G2	0	3000

5.1.3.1.4 Impacts of VTL Funding - Schedules for remedial design and awarding of construction contracts are compressed. Funding for the VTL case delays start of the activities, but the start date for construction is fixed by CERCLA at 15 months after the ROD. Compression of the schedule will likely result in higher planning costs and a less efficient design.

5.1.3.2 Closure and Post Closure Activities, Phases I (OR-0211, Priority 1)

5.1.3.2.1 Description - The overall objectives of Phase I, closure activities and post-closure activities (CAPCA), were to initiate closure of eight RCRA land-based sites by November 8, 1988, and to complete closure in accordance with approved closure plan requirements. The closure plan for the sites, except Kerr Hollow Quarry, require that a five-part modified RCRA cap be constructed over the sites. The cap components are 24 inches of compacted clay, 30 mil polyvinyl chloride (PVC) liner, geosynthetic drainage net, filter fabric, and 18 inches of clay. Overall closure schedules according to TDEC-approved closure plans are:

Site	Required Closure	Completed FY 1991	Planned (FY 1992)
S-3 ponds	12/88	Complete	
Oil retention ponds	5/90	Complete	
Bear Creek Burial Ground (BCBG)			
- Area A	8/89	Complete	
- Area B, walk-in pits	TBD*	Complete design;	Complete
C-East,		begin construction	
- Area C-West	9/90	Complete	
Oil land farm (OLF)	2/90	Complete	
Chestnut Ridge security pits	12/88	Complete	
Chestnut Ridge sediment disposal basin	1/89	Complete	
New Hope Pond (NHP)	8/90	Complete	
Kerr Hollow Quarry	TBD*		Complete
Close out East Borrow Area			Complete

*TBD = To Be Determined

Major closure activities in FY 1992 will include completing closure on Kerr Hollow Quarry and BCBG Area B, C-East and walk-in pits. The East Borrow Area and West Borrow Area will be decommissioned. The completion of the closure at Kerr Hollow Quarry is dependent on favorable resolution of waste management and safety-related issues to allow

the resumption of shredding activities. The closure approach for Bear Creek Burial Ground B, C-East and walk-in pits will be determined upon resolution of safety-related issues. Revised schedules for these remaining closures are pending.

5.1.3.2.2 Resources - Standard resources are expected to be sufficient.

5.1.3.2.3 Schedule - Milestones

- Complete closure of Kerr Hollow Quarry: DOE/OR TBD
- Decommission East Borrow Area: DOE/OR TBD
- Complete cap on BCBG B, C-East and walk-in pits and D: DOE/OR TBD
- Decommission West Borrow Area: DOE/OR TBD

5.1.3.2.4 Funding

Table 5.1-7. ER Remediation (CAPCA I) Fiscal Year Funding Summary Y-12 ($000)

ADS NO.	1991	1992
OP-0211	1425	0

5.1.3.3 CAPCA, Phase II Assessment (OR-243 G1, Priority 2)

5.1.3.3.1 Description - Post-closure activities in CAPCA Phase II include continued monitoring of groundwater conditions, support for FS/CMS and development of alternate concentration limits (ACLs) for the CAPCA sites that will require groundwater remediation.

Work required will include drilling and sampling to further characterize the occurrence of dense nonaqueous phase liquids (DNAPL) below BCBG, field tests, modelling and risk assessment. These efforts will support RCRA Post-Closure Permits.

Risk assessments and groundwater studies are not yet complete; therefore, post-closure scope/costs are considered tentative. Discussions with TDEC/EPA are ongoing to determine risk assessments and post-closure requirements.

5.1.3.3.2 Schedule - Milestones

- Core holes (5) for DNAPL delineation (OR-243-G1) 9/91
- CMS/FSs for GWRF's at S-3, NHP and BCBG/OLF (OR-243-G1) 9/92
- ACL demonstrations (OR-243-G1) 9/92

- RCRA Post-Closure Permits for CAPCA sites (OR-243-G1) 9/92

5.1.3.3.3 Funding

Table 5.1-8. Remediation (CAPCA II) Fiscal Year Funding Summary, Y-12 ($000)

ADS NO.	1991	1992
OR-0243 G1	1465	2800

5.1.3.3.4 Impacts of VTL Funding

- One core hole for delineation of DNAPL below BCBG is postponed from FY 1993 to FY 1994.

5.1.3.4 CAPCA, Phase II (OR-243 G2, Priority 2)

5.1.3.4.1 Description - Post-closure activities in CAPCA Phase II include continued monitoring of groundwater conditions and, possibly, treatment facilities if required for groundwater remediation. (See Section 5.1.3.2 for Phase I description).

Long-term efforts will be based on results of extensive groundwater monitoring, which began in FY 1983. Contaminant levels are high enough to warrant groundwater treatment, when assessment is completed, facilities will have to be designed and constructed to provide for groundwater treatment (to acceptable alternate concentration levels, yet to be negotiated with TDEC/EPA). These estimates assume groundwater will be treated to meet drinking water standards, with modular equipment construction.

Risk assessments and groundwater studies are not yet complete; therefore, post-closure scope/costs are considered tentative. Discussions with TDEC/EPA are ongoing to determine risk assessments and post-closure requirements.

5.1.3.4.2 Schedule - Milestones[1]

- Identify permitting strategy for disposal area remediation action (DARA) solid storage facility (SSF) (OR-243-G2) 6/91
- Mixed waste amenability study (OR-243-G2) 12/91
- Post-Closure Permit for CAPCA sites (OR-243-G2) 9/92

[1] Contingent upon issuance of post-closure permits.

- DARA, SSF, RCRA Part B Permit (OR-243-G2) 11/92
- Remedial design for gwtf (OR-243-G2) 9/93
- Recommendation for mixed waste disposal options (OR-243-G2) 9/91

5.1.3.4.3 Funding

Table 5.1-9. Remediation (CAPCA II) Fiscal Year Funding Summary, Y-12 ($000)

ADS NO.	1991	1992
OR-0243 G2	6888	6300

5.1.3.4.4 Impacts of VTL Funding

- Completion of remedial design for groundwater treatment facilities delayed from FY 1993 to FY 1994.

- Completion of a mixed waste treatment demonstration delayed from FY 1996 to FY 1997.

5.1.3.5 Chestnut Ridge - Remediation (OR-278)

5.1.3.5.1 Description - These activities will follow assessment work and consist of remedial design and cleanup of releases from past waste management practices at RCRA and CERCLA/SARA facilities and sites. The project will design and implement remedial activities for RCRA 3004(u) sites. Corrective measures could include one or all of the following: removal of contaminated soils and sediment; installation of groundwater monitoring wells; on-site treatment, storage, and/or disposal of contaminated materials; and site remediation. Work conducted by this project will be subject to terms outlined in the FFA being negotiated by DOE, TDEC, and EPA. Assessment work will not have progressed to a point where remediation can begin in FY 1992. One removal action is anticipated for Chestnut Ridge in this planning cycle. Nonhazardous fly ash will be removed from McCoy Branch.

5.1.3.5.2 Schedules - Milestones

- Begin removal action at McCoy Branch (OR-278) 10/92
- Complete removal action at McCoy Branch (OR-278) 3/94

5.1.3.5.3 Funding

Table 5.1-10. ER Remediation (CMS)
Fiscal Year Funding Summary, Y-12
($000)

ADS NO.	1991	1992
OR-0278	0	0

5.1.3.5.4 Impacts of VTL Funding

- The McCoy Branch removal action is compressed into FY 1994. The PUC assumption is that the removal action is spread over two years.

5.1.3.6 UEFPC - Remediation (OR-280)

5.1.3.6.1 Description - Completion of closure of the petroleum USTs at the Rust Fuel Facility (9754-1), cleanout of mercury contamination sumps, and design of a treatability demonstration for mercury in plant effluent underground ore storage tanks will begin in FY 1992 if the State approves the closure plans. Removal actions will follow assessment work if warranted.

5.1.3.6.2 Schedule - Milestones

- NEPA for sump cleanout (OR-280) 6/91
- Eliminate steam condensate from Mercury-contaminated sumps (OR-280) 7/91
- Reroute uncontaminated sumps (OR-280) 9/91
- Close Rust Fuel Facility (9754-1) (OR-280) 9/92
- Clean Mercury contaminated sumps (OR-280) 9/92
- Design Mercury treatability demo for plant effluent (OR-280) 9/92

5.1.3.6.3 Funding

Table 5.1-11. ER Remediation (UEFPC)
Fiscal Year Funding Summary, Y-12
($000)

ADS NO.	1991	1992
OR-0280	1765	6303

5.1.3.6.4 Impacts of VTL Funding

- Construction of a treatment system for mercury in the plant effluent is delayed from FY 1995 - 97 to beyond this planning cycle.
- Removal actions (2) for the Group I and IV sites are delayed by one year. (PUC Schedule FY 1992 - 93).
- Removal actions (2) for the Group I and IV sites delayed beyond this planning cycle. (PUC Schedule FY 1993 - 94).

5.1.3.7 Bear Creek Drainage Basin - Remediation ADS (OR-282)

5.1.3.7.1 Description - No projects are scheduled for FY 1992. Removal actions are anticipated to follow assessment work. Design of the cap and seepage collection systems for the Rust Spoil Area is scheduled to start in FY 1993. Construction of the Rust Spoil Area cap and seepage collection system is scheduled to be complete in FY 1997.

5.1.3.7.2 Schedule - Milestones

• Begin Bear Creek Valley (BCV) removal action (OR-282)	10/92
• Complete BCV removal action (OR-282)	9/94

5.1.3.7.3 Funding

Table 5.1-12. ER Remediation (BCV) Fiscal Year Funding Summary, Y-12 ($000)

ADS NO.	1991	1992
OR-0282	0	0

5.1.3.7.4 Impacts of VTL Funding

- Delay completion of a removal action from FY 1993 to 1994.

5.2 ORNL

5.2.1 Overview

5.2.1.1 Description - Past research and development and waste management activities at ORNL have produced a significant number of surplus, inactive facilities contaminated with

low-level radioactive and/or hazardous chemical wastes. Such sites include SWSAs, waste ponds and seepage pits, radioactive waste processing and transfer facilities, research laboratories, dedicated environmental research areas, experimental reactors, radioisotope development facilities, and the areas surrounding these sites.

Implementation of the ORNL ERP begins with identification of sites requiring corrective actions and will end with final certification of site closure remediation or decommissioning activities. Between these two milestones is a structured path of program planning, site characterizations, alternatives assessments, continued S&M, and necessary ICMs. Some of these activities will be accomplished over relatively short time frames while others may extend for many years. The path that will be chosen for each site depends on several variables, including site characteristics, site-specific regulatory requirements (i.e., RCRA Interim Status, RCRA 3004(u), CERCLA/SARA, etc.), and resource availability.

Depending on the priority established for a given project after detailed assessment, one of two basic actions will be implemented: (1) remedial actions will be deferred, and the facility will be placed into a monitored protective storage mode or (2) site closure remediation or final decommissioning will be carried out to place each facility into a permanently stabilized condition requiring only periodic monitoring to verify site performance. The final long-term closure process will involve comprehensive planning to determine the overall strategy for remedial actions in the White Oak Creek watershed and surrounding areas. As part of each of these actions, various planning documents, characterization activities, technology evaluations, and design studies must be completed before decisions are made about site disposition. Regulatory interfaces and approvals will be required at several points within the process. Ultimately, all remedial action sites included in the ORNL inventory will pass through decommissioning or closure to ensure long-term containment and disposal of residual radioactive or hazardous materials. The schedule for decommissioning or closure, however, will depend on project priorities established through regulatory interaction and approved funding levels.

The ORNL ERP has been divided into three major tasks: assessment, remediation, and D&D. Assessment includes identification, preliminary inspection, and characterization of sites, evaluation and selection of associated cleanup alternatives, and the preparation of decision documents (i.e., RAP, ROD, and NEPA documentation). Remediation includes design and implementation of cleanup actions and remediation of inactive LLLW tank contents. D&D includes assessment and cleanup activities associated with surplus facilities not governed by RCRA or CERCLA. Each task includes numerous subtasks as described in the following sections.

5.2.1.2 Resources - Resource requirements are described for each subtask.

5.2.1.3 Schedules - Milestones - Major milestones for ER at ORNL are:

- Submit revised WAG 6 closure plan to EPA/TDEC 7/91

- Submit WAG 6 RFI report to EPA/TDEC 9/91
- Complete White Oak Creek Embayment removal action 12/91
- Complete Building 3001 storage canal interim closure 12/91
- Submit WAG 1 Phase I RI report to EPA/TDEC 9/92
- Submit WAG 6 CMS/EA to EPA/TDEC 12/92

5.2.1.4 Funding

Table 5.2-1. ER Fiscal Year Funding Summary, ORNL
PUC ($000)

Category	1991	1992	1993	1994	1995	1996	1997
Assessment	24912	37758	29217	34051	33645	31557	27502
Remediation	19250	37535	69671	110516	104930	108964	113105
D&D	7956	11567	2521	8350	9507	10948	12919
Total	52118	86860	101409	152917	148082	151469	153526

Table 5.2-2. ER Fiscal Year Funding Summary, ORNL
VTL ($000)

Category	1991	1992	1993	1994	1995	1996	1997
Assessment	24912	37758	31282	30112	37005	25971	23381
Remediation	19250	37535	41624	46471	45348	51556	53808
D&D	7956	11567	3294	8105	6978	6434	6450
Total	52118	86860	76200	84688	89331	83961	83639

5.2.1.5 Major Accomplishments

Installation of a basic WAG well network for groundwater monitoring was completed in FY 90. This well network will be an integral part of a long-term comprehensive environmental medial monitoring program to evaluate the actual and potential migration of contaminants from WAGs.

The RCRA closure schedule for WAG 6 was renegotiated with EPA-Region IV and TDEC to incorporate CERCLA requirements and more realistic construction schedules based on better definition of remedial action alternatives being considered. WAG 6 RFI field activities were completed in FY 1990 with the issuance of the RFI report scheduled for end FY 1991.

A removal action was initiated in FY 1991 at the White Oak Creek Embayment to control Cs-137 contaminated sediment transport to the Clinch River.

Interim closure of the Building 3001 Storage Canal was initiated in FY 1991 to control leakage of its contents to surrounding groundwater.

5.2.2 Assessment and Characterization

5.2.2.1 Site Investigations

5.2.2.1.1 Description - The activities in ADS OR-322 provide for essential baseline and continued monitoring to evaluate the actual and potential migration of contaminants from WAGs at ORNL via surface, subsurface, and biological pathways; evaluation, development, and implementation of risk-based prioritization methodologies; and special studies to determine major mechanisms of contaminant transport to assist in monitoring and characterization. Continual monitoring will provide an observation of WAG behavior over time as well as detection of any problems requiring immediate action. Data will be utilized to support the PA/SI, RI/FS, S&M and ICM activities for the ORNL ERP. Management and updating of the ORR FFA Appendix C comprehensive list of contaminated sites requiring, or potentially requiring remediation, is also supported by this activity. Biological monitoring of ORNL waste sites is provided through the Biological Monitoring and Abatement Program (BMAP) supportive of the RI/FS activities. The BMAP is an ongoing program required by the NPDES permit issued to ORNL in 1986. Funding for the BMAP portion of the monitoring program is split between the EW and EX programs (i.e., ADS OR-322 and OR-323, respectively).

The activities associated with these ADSs are critical components of the monitoring program for ORNL contaminated sites. This monitoring program will assist ORNL in maintaining safe conditions, preventing potential significant impacts to human health and the environment as a result of contaminant release and in prioritizing the assessment and remediation of contaminated sites. Therefore, these activities have been designated Priority 1 activities. They also support the PA/SI, RI/FS, and ICM tasks, which are required in the pending FFA between the DOE/OR, the EPA-Region IV, and the TDEC. The BMAP portion of these activities is also required by the NPDES permit issued to ORNL.

Installation of ORNL's basic WAG well network for perimeter groundwater monitoring was completed in FY 1990, and well development was completed in FY 1991. Preparation of an addendum to the RFA was deleted at the direction of the regulatory agencies. Draft BMAP reports, required by the ORNL NPDES permit, were submitted to DOE/OR in FY 1990 and FY 1991. Additional FY 1991 activities include the definition of a comprehensive ORNL site monitoring program; sampling and analysis of WAG perimeter groundwater monitoring wells; surface water monitoring; evaluation of potential pathways for subsurface contaminant migration; identification of potential ICMs; detailed evaluation of prioritization and risk assessment methodologies including sensitivity and uncertainty analyses to identify critical parameters; BMAP activities in support of RI/FS; the PA/SI and documentation of potential contaminated sites; and maintenance of the ORR FFA Appendix C list of

contaminated sites. These activities will continue during the period FY 1993 - FY 1997. Additional activities planned for FY 1993 include the implementation of a sediment monitoring program, field verification of stormflow modeling, and incorporation of fracture data from deep groundwater regimes into transport models. The VTL FY 1993 funding scenario will have no impact on these activities.

5.2.2.1.2 Resources - Standard resources are generally expected to be sufficient.

5.2.2.1.3 Schedules - Milestones

• Submit annual BMAP report to DOE/OR	4/91
• Issue final WAG perimeter groundwater well installation report	6/91
• Issue groundwater level and streamflow report	6/91
• Issue streamflow monitoring station sediment removal work plan	9/91
• Issue source term definition report	9/91
• Submit annual site monitoring report	9/91
• Issue site prioritization report	10/91
• Issue hydrostatic head measuring station construction report	10/91
• Issue long-term sediment monitoring strategy	11/91
• Issue groundwater producing fractures report	11/91
• Issue stormflow transport report	12/91
• Submit annual BMAP report to DOE/OR	4/92
• Submit annual site monitoring report to DOE/OR	9/92

5.2.2.1.4 Funding

Table 5.2-3. ER Assessment (Site Investigation)
Fiscal Year Funding Summary, ORNL
($000)

ADS No.	1991	1992
OR-0322	4068	2658
OR-0323	25	14
Total	4093	2672

5.2.2.2 Remedial Investigations/Feasibility Studies

5.2.2.2.1 Description - The largest single current ORNL ERP activity is the implementation of a comprehensive RI/FS program, initiated in 1986, to (1) define the nature and extent and the public health and environmental impacts of contamination and (2) develop, evaluate, and recommend remedial action alternatives to control migration of that contamination from each WAG. The RI/FS will be carried out by WAG based on regulatory-approved priorities and schedules. RI work plans, including associated sampling

and analysis plans (SAPs) have been prepared and submitted for review, comment, and approval to EPA-Region IV and the TDEC for all 13 ORNL WAGs. Due to the age of most of these plans, the SAPs will need revision to incorporate new information, guidance, and regulatory comments prior to implementation.

The RI/FS process for each WAG will involve an evaluation of existing information; identification of additional data necessary to characterize each WAG, to evaluate the risk or potential risk to the public health and environment, and to develop and evaluate potential remedial action alternatives; and collection of this data through implementation of a Phase I RI field activities and analysis. Based on the results of the Phase I RI, OUs will be identified. These OUs will be categorized, with regulatory agency approval, into those requiring no further action, those with sufficient information to complete the FS, and those needing additional information requiring a Phase II RI. A Phase I RI approach will be utilized to minimize those OUs requiring a Phase II RI.

Technology screening and development and preliminary screening of remedial action alternatives will be conducted concurrent with RIs. Following the detailed analysis of remedial action alternatives for each OU, Lee Wan and Associates (LWA), the DOE/OR Technical Support Contractor, will prepare the FS, the RAP and the ROD. LWA, or another contractor as deemed appropriate by DOE/OR, will also prepare appropriate NEPA documentation, which will be incorporated, in most cases, with the FS.

RI/FS activities are required to meet the terms and conditions set forth in the pending FFA, the existing DOE/OR RCRA HSWA permit, and DOE Order 5400.4. Failure to proceed with this task as expeditiously as possible will result in a perceived noncompliance with the intent of the FFA. No penalties have been negotiated to date for delays in FFA deliverables or actions. Deliverables and actions are negotiated annually with the TDEC and EPA-Region IV. RI/FS activities are presently considered to be Priority 2 except for those associated with WAGS 1 and 6. Activities associated with WAGs 1 and 6 are considered to be Priority 1 as they are ongoing and, if terminated, will result in significant increased costs.

WAG 1 Phase I RI field activities were initiated, and a revised WAG 10 RI implementation plan was submitted to the EPA-Region IV and the TDEC in FY 1990. Also, the WAG 6 RFI field activities were completed and a WAG 6 Site Characterization Summary Report submitted to the EPA-Region IV and the TDEC in FY 1990. FY 1991 activities include completion of WAG 1 Phase I RI field activities and initiation of preparation of the WAG 1 Phase I RI Report Preparations; preparation and submission of RI work plans for WAGs 2, 11, and 13 to the regulatory agencies for review, comment, and approval; initiation of WAG 2 Phase I RI field activities and initiation Phase II long-term monitoring plan preparation; revision of the WAG 5 Phase I RI SAP; initiation of WAG 5 Phase I RI field activities; preparation and submittal of the WAG 6 RFI report; and initiation of the WAG 6 detailed remedial action alternatives assessment.

FY 1992 activities will include completion and submittal of the WAG 1 Phase I RI Report to the regulatory agencies; completion of WAG 2 Phase I RI field activities and submission of a Phase II long-term monitoring plan to the regulatory agencies for review, comment, and approval; submission of the revised WAG 5 SAP to the regulatory agencies for review, comment, and approval and continuation of Phase I RI field activities; revision of the WAG 7 SAP and its submittal to the regulatory agencies for review, comment, and approval; initiation of Phase I RI field activities associated with WAGs 7 and 10; completion of the WAG 6 detailed remedial action alternatives assessment; and initiation of preparation of WAG 6 CMS/NEPA documentation.

FY 1993 activities include the preparation of Phase II RI work plans for WAG 1 OUs, as required, their submittal to the regulatory agencies for review, comment and approval; and initiation of Phase II field activities; preparation of the WAG 2 Phase I RI report, its submittal to the regulatory agencies for review, comment, and approval, and initiation of Phase II long-term monitoring; revision of SAPs for WAGs 3, 4, and 9 and their submittal to the regulatory agencies for review, comment, and approval, initiation of Phase I RI field activities in WAGs 3, 4, and 9; continuation of Phase I RI field activities in WAG 10; completion of Phase I RI field activities and initiation of preparation of Phase I RI reports in WAG 5 and 7; completion of the CMS/NEPA documentation and preparation of RAP/ROD documentation for WAG 6. The VTL funding scenario will result in deferring initiation of WAG 3 and 9 Phase I RI field activities until FY 1994.

Table 5.2-5. ORNL Waste Area Groupings (WAGs)

WAG No.	Title	ADS No.*
1	Main Plant Area	OR-324-AA OR-325-AA (EX)
2	White Oak Creek/White Oak Lake	OR-324-AB
3	SWSA 3	OR-324-AC
4	SWSA 4	OR-324-AD
5	SWSA 5	OR-324-AE
6	SWSA 6	OR-363
7	LLLW Pits and Trenches	OR-324-AF
8	Melton Valley Area	OR-325-AB (EX)
9	Homogenous Reactor Experiment	OR-324-AG
10	Hydrofracture	OR-324-AH
11	White Wing Scrap Yard	OR-324-AJ/ OR-325-AC (EX)
13	Environmental Research Areas	OR-324-AK/ OR-325--AD (EX)
17	ORNL Services Area	OR-324-AM/ OR-325-AE (EX)

*Funding provided by EW except for those in parentheses.

5.2.2.2.2 Resources - Standard resources are generally expected to be sufficient for most activities. Nonstandard techniques/equipment may be identified and used during the WAG 10 RI if high levels of radioactivity are encountered.

5.2.2.2.3 Schedules - Milestones

- Submit response to EPA/TDEC comments to WAG 1 Phase I RI plan 5/91
- Submit WAG 6 RFI report to EPA/TDEC 9/91
- Submit revised WAG 5 Phase I RI SAP to EPA/TDEC 11/91
- Submit WAG 2 Phase II monitoring plan to EPA/TDEC 3/92
- Submit revised WAG 7 Phase I RI SAP to EPA/TDEC 5/92
- Submit revised WAG 10 Phase I RI SAP to EPA/TDEC 6/92
- Submit WAG 1 Phase I RI report to EPA/TDEC 9/92
- Submit WAG 6 CMS/EA to EPA/TDEC 12/92

5.2.2.2.4 Funding

Table 5.2-6. ER Assessment (RI/FS) Fiscal Year Funding Summary, ORNL ($000)

ADS NO.	1991	1992
OR-0324-AA	10304	2825
OR-0324-AB	597	1025
OR-0324-AC	0	100
OR-0324-AD	0	125
OR-0324-AE	808	6034
OR-0324-AF	0	9751
OR-0324-AG	0	0
OR-0324-AH	0	2893
OR-0324-AJ	0	0
OR-0324-AK	0	0
OR-0324-AM	0	0
OR-0325-AA	400	2430
OR-0325-AB	0	0
OR-0325-AC	0	0
OR-0325-AD	0	0
OR-0325-AE	0	0
OR-0363	3721	1455
OR-0380	100	50
OR-0381	326	175
Total	16256	26863

5.2.2.3 WAG Surveillance and Maintenance

5.2.2.3.1 Description - Past R&D and waste management activities at ORNL have resulted in a significant inventory of areas where contamination exists associated with surplus facilities and inactive waste management sites. This inventory consists of former solid waste storage areas, LLLW seepage pits and trenches, inactive underground LLLW tanks, process ponds, LLLW waste line leak sites, inactive research areas, and other contaminated sites. Monitoring of these sites is a continuing responsibility to ensure that areas of radioactive and hazardous material contamination are properly controlled and contained pending facility decommissioning or closure. These activities focus on containing contamination and establishing control boundaries at individual sites in accordance with DOE orders relative to radiological, industrial hygiene, and environmental protection. These activities do not, however, comprise or replace the environmental compliance monitoring required of ORNL.

The structured program of S&M funded by ADS OR-311-AA and ADS OR-312 has been established to provide for collective management of activities in three principal areas: (1) S&M planning, (2) routine S&M, and (3) special maintenance projects. The planning function involves establishing surveillance requirements, evaluating inspection reports and surveillance data, and supervising all routine and special maintenance activities. Routine S&M consists of scheduled site inspections, radiological surveillance, and periodic maintenance as a result of inspections and monitoring. Special maintenance projects are planned and implemented to correct serious site deficiencies that are beyond the scope of

routine maintenance. ADS OR-311-AB provides basic support for ORNL waste management functions for treatment, storage, and disposal of all wastes generated during ER activities. These waste-producing streams are derived from two components: (a) direct production of waste as a result of S&M, ICMs, RIs, and site remediation; and (b) collection and treatment of contaminated groundwater that enters liquid waste collection systems in and around contaminated sites and surplus facilities. Responsibility for the activities associated with ADS OR-311-AB will be transferred from the ERP to the WM Program in FY 1993. ADS OR-311-AA and ADS-OR-311-AB are funded by EW and ADS OR-312 is funded by EX. These activities are presently classified as Priority 1, being required to ensure health and safety of on-site and off-site populations and the protection of the environment.

S&M activities have been conducted for a number of years. Notable accomplishments include scoping surveys of many contaminated sites where none previously existed; removal and disposal of past waste legacies throughout Bethel and Melton Valleys, S&M of the SWSA 6 RCRA-capped areas, and completion of numerous special projects such as removal of radioactive sources and debris from the Building 3001 Storage Canal and erection of deer control fences. Routine S&M will be conducted as scheduled during FY 1991 at all sites, scoping surveys will be conducted at high priority sites, radioactive source and debris removal will be completed at the Building 3001 Storage Canal, and access controls will be upgraded at the White Wing Scrap Yard and the North and South Tank Farms. Routine S&M, special projects, and related planning and management activities will continue in FY 1992 and FY 1993. The VTL FY 1993 funding scenario will have no impact on these activities.

5.2.2.3.2 Resources - Standard resources are generally expected to be sufficient.

5.2.2.3.3 Schedules - Milestones

•	Complete Building 3001 Storage Canal debris removal	2/91
•	Complete annual summary report of S&M activities	9/91
•	Complete annual summary report of fugitive waste volumes	9/91
•	Complete annual summary report of S&M activities	9/92
•	Complete annual summary report of fugitive waste volumes	9/92

5.2.2.4.4 Funding

Table 5.2-8. ER Assessment (S&M) Fiscal Year Funding Summary, ORNL ($000)

ADS NO.	1991	1992
OR-0311-AA	2122	2892 (10361)
OR-0311-AB	2035	4750 (575)
OR-0312	315	511
Total	4472	8153

5.2.3 Remediation

5.2.3.1 ORNL ICMs

5.2.3.1.1 Description - ADS OR-329 and ADS OR-330 provide for ICMs or removal actions conducted to contain, remove, or treat contamination resulting from releases of hazardous constituents from contaminated sites to protect human health and/or the environment prior to completion of final site remediation. ADS OR-328 provides for the in situ stabilization of an inactive liquid waste holding pond at the old hydrofracture facility (OHF). ADS OR-329 is funded by the EW and ADS OR-328 and ADS OR-330 are funded by EX. The activities associated with ADS OR-329 and ADS OR-330 are considered to be Priority 1, being protective of human health and/or the environment. These activities are also required to meet the terms and conditions set forth in the ORR FFA, the ORR RCRA HSWA permit, and DOE Order 5400.4. Tiger Team findings relative to the need for a well and corehole plugging and abandonment (P&A) program and surface water contamination control are also drivers for this activity. The activities associated with ADS-328 are considered to be Priority 2, being critical to the evaluation of remedial action alternatives in order to reduce uncertainties and costs associated with in situ stabilization of sediments.

The major activity in FY 1991 associated with ADS-329 is the implementation of a removal action to control Cs-137 contaminated sediment transport from the White Oak Creek Embayment to the Clinch River. Elevated Cs-137 sediments were discovered during characterization studies associated with the Watts Bar Reservoir. Other tasks include SWSA 6 ICM environmental monitoring; ICM long-range planning and prioritization; and installation of access control measures at the White Wing Scrap Yard (WAG 11). The following scope of work has been identified for FY 1992: the continuation of SWSA 6 ICM environmental monitoring; preparation/approval of engineering estimates/cost analyses (EE/CAs) associated with removal of Cs-137 contaminated soils in WAG 13 (Environmental Research Areas); completion of leachate collection-treatment/source control assessments associated with SWSA 4 and 5 seeps; completion of an inventory, characterization, and prioritization of wells and coreholes and the preparation of P&A plans and procedures; and

development of a plan for, and initiation of, access control upgrades at contaminated sites.

FY 1993 activities for ADSs OR-329 and OR-330 include continuation of SWSA 6 ICM environmental monitoring; preparation and approval of an EE/CA for an ICM associated with surfacial contamination at the White Wing Scrap Yard; preparation of the design for the closure of transuranic trenches in SWSA 5 North; completion of the removal action at WAG 13; preparation of an EE/CA and initiation of an ICM to control the source of contamination of the SWSA 4 and 5 seeps; continuation of the collection/treatment of leachate at the SWSA 4 and 5 seeps if required; initiation of well/corehole P&A; initiation of installation of access controls at sites requiring remediation; preparation of an EE/CA and initiation of the design for the closure of WAG 1 settlement basins; completion of a survey of contaminated trees; completion of a survey of the applicability of in situ vitrification (ISV) for the LLLW pits and trenches (WAG 7); completion of a study to identify the sources of mercury-contaminated soils/sediments in WAG 1; and completion of an EE/CA for an ICM associated with surface contaminated soil at Building 3019. The VTL FY 1993 funding scenario will result in the deferral of the following activities until FY 1994: WAG 11 ICM EE/CA; SWSA 5 North ICM design; WAG 1 settlement basins EE/CA; contaminated tree survey; collection/treatment of SWSA 4 and 5 seeps leachate; WAG 1 mercury-contaminated soils/sediments ICM characterization; Building 3019 surface soil contamination ICM EE/CA; and well/borehole P&A implementation. There would also be no management reserve to cover currently unidentified ICMs.

No activities are planned for ADS OR-328 in FY 1991 and FY 1992. Activities planned for FY 1993 include sampling of pond sediments to facilitate treatability studies; preparation and approval of a work plan; preparation and approval of NEPA documentation and other project plans and procedures; initiation of procurement activities; and sampling of groundwater wells around the OHF Pond. The VTL FY 1993 funding scenario would result in the deferral of all these activities until FY 1994.

5.2.3.1.2 Resources - ICMs may require nonstandard resources, such as the use of ISV technology, because of site physical characteristics and the nature of contaminants. These resources will be defined as ICMs are identified and developed.

5.2.3.1.3 Schedules - Milestones

• Complete WAG 11 access controls	9/91
• Complete White Oak Creek Embayment removal action	12/91
• Complete WAG 13 ICM EE/CA	9/92
• Complete well/borehole P&A pre-implementation activities	9/92

5.2.3.1.4 Funding

Table 5.2-9. ER Remediation (ICMs) Fiscal Year Funding Summary, ORNL ($000)

ADS NO.	1991	1992
OR-0328	0	0
OR-0329	5116	7388
OR-0330	0	2577
Total	5116	9965

5.2.3.2 ORNL Cleanup Actions

5.2.3.2.1 Description - The activities associated with ADS OR-322-AA include the preliminary engineering, remedial design, remedial action implementation, and verification of long-term, comprehensive responses at WAGs other than WAG 6 and WAG 10. ADS OR-332-AB activities include the design, implementation, and verification of the closure of WAG 6. ADS OR-333 activities include the P&A of injection and monitoring wells associated with the hydrofracture waste disposal injection zone and formation in Melton Valley. These ADSs are funded by EW. ADSs OR-332-AA and OR-333 are considered to be Priority 2, being required to meet the terms and conditions of the pending ORR FFA, the SDWA Underground Injection Code, and Tiger Team corrective action plans. FFA deliverables are negotiated on an annual basis. No FFA deliverables have been established to date for activities associated with these ADSs. The activities associated with ADS-332-AB are considered to be Priority 1, being required to comply with an approved RCRA closure plan and being an ongoing activity which, if terminated, will result in significant increased costs due to subcontractor demobilization/remobilization. The WAG 6 well P&A activity is also part of the ORNL Tiger Team Corrective Action plan.

There are no activities planned for ADS OR-332-AA in FY 1991. In FY 1992 this ADS will provide for review of RI findings; for the initiation of discussions with the remedial design and remedial action contractors; for the development of preliminary schedules and costs for closures of WAGs 1, 5, and 7; and for the preparation of a preliminary baseline design reports for all WAGs. Planned FY 1993 activities include continued and expanded coordination with the remedial design and remedial action contractors as projects progress through the RI phase and the preparation of a baseline design report for WAG 1 closure. The VTL FY 1993 funding scenario will have no impact on these activities.

A study of treatment/disposal alternatives and design criteria for leachate generated during WAG 6 closure activities was completed in FY 1991. Studies associated with infiltration cap alternative designs and borrow sites were deferred until FY 1991. The WAG 6 land survey was also completed. Planned FY 1991 activities include revision of the WAG 6 RCRA closure plan to reflect recent agreements with the regulatory agencies; detailed

characterization of alternate borrow areas and selection of the borrow area site; evaluation of powerline relocation routes and selection of the preferred route; initiation of well and corehole P&A in WAG 6; initiation of a SWSA 6 surface water monitoring station upgrade; update of land survey drawings; completion of a study to determine infiltration cap functional requirements; continuation of trench treatability studies; development of an initial baseline design report; and initiation of the NEPA and other documentation to facilitate the construction of closure support facilities. FY 1992 activities include completion of design and initiation of construction of the borrow area; continuation of well and corehole P&A; design and initiation of construction of closure support facilities; completion of design and initiation of construction of the Tumulus I and II above-ground disposal units infiltration caps; and update of the baseline design report. Planned FY 1993 activities include continuation of construction of the borrow area; initiation of design of the powerline relocation; continuation of well and corehole P&A; continuation of the construction of the Tumulus I and II caps; and bid and award of the remedial design contract. The VTL FY 1993 funding scenario will result in a slowdown of well P&A, construction of Tumulus I and II caps and borrow area; and powerline relocation design. There will be no affect on the final closure date if catch-up funding is available in FY 1994.

There are no activities planned for ADS OR-333 in FY 1991 and FY 1992. Planned activities in FY 1993 include an inventory of all observation, monitoring, and injection wells; procurement of a subcontractor for the P&A program; preparation of a P&A plan for the observation wells; establishment of a monitoring program to assess the observation and injection wells; and the preparation of a baseline design report. The VTL FY 1993 funding scenario would result in the deferral of all of these activities until FY 1994.

5.2.3.2.2 Resources - Closure and remediation of ORNL sites will require many nonstandard resources because of site physical characteristics and the nature of contaminants. These resources will be defined as remedial action alternatives are developed and screened for appropriateness.

5.2.3.2.3 Schedules - Milestones

• Submit revised WAG 6 closure plan to EPA/TDEC	7/91
• Complete preliminary baseline design report for closure of all WAGs	6/92
• Complete installation of WAG 6 closure change facilities	9/92
• Complete upgrade of WAG 6 surface water monitoring station	9/92
• Complete installation of WAG 6 leachate transfer station	12/92

5.2.3.2.4 Funding

Table 5.2-11. ER Remediation (Cleanup)
Fiscal Year Funding Summary, ORNL
($000)

ADS NO.	1991	1992
OR-0332-AA	0	120
OR-0332-AB	4396	19921
OR-0333	0	0
Total	4396	20041

5.2.3.3 Inactive LLLW Tank Systems

5.2.3.3.1 Description - This task provides for the remediation of the contents of all inactive LLLW tanks at ORNL. Remediation of the soils and groundwater that may have been contaminated and removal of the tank shells and associated valves, piping, etc., is covered in ADS OR-332-AA, General Site Closures. Remediation of tank contents includes field investigations and assessments (i.e., waste characterization, leak testing, structural analyses, risk assessments and prioritization), leading to preparation of deliverables required by the ORR FFA; treatability studies; engineering analyses; ICMs of tank contents; final remediation of tank contents; and treatment, storage, and disposal facilities to support these tasks. Removal of the structural vessel per se is not part of those activities unless such an action is integral to ICMs or final remediation of tank contents. This ADS is funded by EW. Activities associated with this ADS are considered to be Priority 1 since they are intended to contain, treat, and remove the tank contents to eliminate any near-term actual or potential environmental and/or human health impact. These activities are also required by the ORR FFA and DOE Order 5400.4.

The sampling, analysis, and reporting of results associated with three previously inaccessible tanks was completed in FY 1990. FY 1991 activities include the initiation of the closures of Building 3001 Storage Canal and RCRA interim-status tank 7860a; field work, assessments, and deliverables in support of the ORR FFA including initiation of alternatives screening; and planning activities for the implementation of ICMs to remove liquid contents from nine of the smaller carbon steel tanks. Planned FY 1992 activities include leak testing, video inspection; tank contents characterization and structural analyses; initiation of work on the detailed alternatives assessment; completion of the interim closure of the Building 3001 Storage Canal; completion of the closure of RCRA interim status tank 7860a; and initiation of contents removal from the nine carbon steel tanks. Planned FY 1993 activities include continuation of assessment activities; monitoring of Building 3001 Storage Canal interim closure; completion of emptying the nine carbon steel tanks; miscellaneous tank removals as required; remedial design evaluations for North Tank Farm, South Tank Farm, and OHF tank contents removal ICMs; and emergency contingency planning. The VTL FY 1993 funding scenario would result in reduced funding for the South Tank Farm ICM design

evaluation and no funding for the North Tank Farm and OHF ICM design evaluations or miscellaneous tank closures. There would also be no management reserve for currently unidentified tank problems.

5.2.3.3.2 Resources - Interim actions and final remediation of the tanks will required non-standard methods and equipment because of the location and age of the tank systems, high levels of radioactivity, concentration of radionuclides, (i.e.,TRU), and physical and chemical characteristics of the stored waste.

5.2.3.3.3 Schedules - Milestones

Within 60 days of effective date of FFA:

- submit schedule providing available structural integrity information to EPA/TDEC:
- submit schedule for providing leak detection test results to EPA/TDEC:
- submit schedule for periodic review and revision of structural integrity assessments to EPA/TDEC:

Within 90 days of effective date of FFA, submit plan and schedule for characterizing risk to EPA/TDEC: DOE/OR

• Complete preliminary alternatives assessment	9/91
• Complete Building 3001 Storage Canal Interim closure	12/91
• Complete tank 7860a closure	12/91

5.2.3.3.4 Funding

Table 5.2-13. ER Remediation (Inactive LLLW Tank Systems)
Fiscal Year Funding Summary, ORNL
($000)

ADS No.	1991	1992
OR-0331	8457	6670

5.2.3.4 Assessment Support for Other DOE Programs

5.2.3.4.1 Description - This activity provides technical assessment and field support to other DOE programs such as the Surplus Facilities Management Program. This activity is designated Priority 1. Failure to fund this activity would cause an unnecessary disruption of ongoing assessment and cleanup work.

5.2.3.4.2 Resources - Standard resources are generally expected to be sufficient.

5.2.3.4.3 Schedules - Milestones - Milestones for the Surplus Facilities Management Program survey task will be established as required between DOE/HQ and ORNL.

5.2.3.4.4 Funding

Table 5.2-17. ER D&D (Assessment Support)
Fiscal Year Funding, ORNL
($000)

ADS NO.	1991	1992
OR-0320	91	70

5.2.3.5 Cleanup Support for Other DOE Programs

5.2.3.5.1 Description - This activity provides technical cleanup and field support services to other DOE programs including the Two Mile Island 2 (TMI 2) recovery effort, Formerly Utilized Sites Remedial Action Program (FUSRAP), Uranium Mill Tailings Removal Action Program (UMTRAP), and critical management information support to DOE/HQ. Activities OR-0316, OR-0317, and OR-0318 are rated Priority 1. Failure to fund these activities would result in the unnecessary disruption of ongoing assessment and cleanup work. ADS OR-0319, Critical Management Information Support to DOE/HQ, is designated Priority 3, providing integrated data and technical information on spent fuels and wastes to DOE/HQ, field offices, and contractors.

5.2.3.5.2 Resources - Standard resources are generally expected to be sufficient.

5.2.3.5.3 Schedules - Milestones - Milestones for the TMI 2 support task are determined on an ad-hoc basis, depending on requests for services. Milestones for the FUSRAP support task will be agreed upon by DOE/HQ, DOE/OR, Bechtel National, Inc., and ORNL. An UMTRAP verification survey milestone schedule will be agreed upon by DOE/Grand Junction, United Nuclear Corporation, and ORNL.

5.2.3.5.4 Funding

Table 5.2-16. ER Remediation (Cleanup Support)
Fiscal Year Funding Summary, ORNL
($000)

ADS No.	1991	1992
OR-0316	0	0
OR-0317	770	600
OR-0318	411	154
OR-0319	100	105
Total	1281	859

5.3 K-25

5.3.1 Overview

5.3.1.1 Description - Operation of the ORGDP, now called the Oak Ridge K-25 Site, for the past 44 years has created facilities and sites that contain hazardous materials and wastes. These sites include burial grounds, process facilities, storage facilities, surface impoundments, treatment facilities, process lines, and accumulation areas, all of which have the potential for releasing contaminants to the environment. Contamination products at K-25 include uranium-contaminated liquid, sludge, and solid TSCA and RCRA hazardous wastes.

The shutdown gaseous diffusion facilities comprise several large buildings and a number of smaller buildings with a combined under-roof area of about 140 acres. These facilities contain extensive amounts of asbestos insulation, RCRA oils and chemicals, PCBs, special nuclear materials, and residual radionuclides. The shutdown gas centrifuge buildings, with 325,000 sq ft of floor space, contain contaminated and classified centrifuge equipment and process materials.

K-25 conducts five ER programs: (1) gaseous diffusion plant (GDP) S&M, (2) GDF D&D, (3) centrifuge S&M, (4) centrifuge cleanup, (5) Central Environmental Restoration Division (CERD), and (6) remedial actions.

5.3.1.2 Resources - Resource requirements are described for each subtask.

5.3.1.3 Schedules - Milestones

- Complete sludge fixation of surface impoundments: DOE/HQ 9/92

5.3.1.4 Funding

Table 5.3-1. ER Fiscal Year Funding Summary, K-25, PUC
($000)

Category	1991	1992	1993	1994	1995	1996	1997
Assessment	9821	22237	54081	59098	62016	68820	50244
Remediation	30570	20686	108919	65192	62216	75316	89564
D&D	49745	76097	108580	102026	116373	108856	103499
CERD	14521	23042	98804	65529	61754	72377	75590
Total	104657	1420062	370384	291845	302359	325369	318897

Table 5.3-2. ER Fiscal Year Funding Summary, K-25, VTL
($000)

Category	1991	1992	1993	1994	1995	1996	1997
Assessment	9821	22237	46383	48920	49222	49772	44872
Remediation	30570	20686	49547	66609	69916	51646	93365
D&D	49745	76097	81354	102026	116373	108856	109450
CERD	14521	23042	37629	33682	31708	32511	32236
Total	104657	142062	214913	251237	267219	242875	279923

5.3.2 Assessment and Characterization

5.3.2.1 Remedial Investigations (OR-0411, Priority 2)

5.3.2.1.1 Description - The purpose of this activity is to perform site characterizations to determine the extent of environmental contamination problems of K-25 SWMUs. These sites will be characterized in a prioritized order. Included in this activity are site investigation (SI) evaluation and reporting.

This activity will also prepare and revise RFI plans. Twenty-three plans are expected to be reviewed by EPA and TDEC and returned for revision. Several new SWMUs that will require submittal of a RFI plan to EPA and TDEC, will be identified.

More detailed information concerning this activity can be found in the documents entitled "RCRA Facility Investigation Plan General Document Oak Ridge Gaseous Diffusion Plant Oak Ridge, Tennessee," K/HS-132, revision 1; Martin Marietta Energy Systems, Inc., May 1989; and "ORGDP Remedial Action Program Plan Oak Ridge Gaseous Diffusion Plant Oak Ridge, Tennessee," K/HS-247, Martin Marietta Energy Systems, Inc., January 1989.

5.3.2.1.2 Resources - Standard industrial equipment and supplies are generally sufficient. However, the need for special equipment or uniquely trained personnel may be identified as the activity progresses.

5.3.2.1.3 Schedule - Milestones

• Submit K1070A data evaluation technical memorandum (DETM) to EPA/TDEC	3/91
• Submit K1407C DETM to EPA/TDEC	6/91
• Submit K1407B DETM to EPA/TDEC	9/91
• Complete baseline of all activities	9/91

5.3.2.1.4 Funding

Table 5.3-3 ER Assessment (RIs)
Fiscal Year Funding Summary, K-25
($000)

ADS No.	1991	1992
OR-0411-CD	0	6189
OR-0411-EW	1867	5938
OR-0437-CD	0	1858
OR-0437-EW	1995	186
OR-0490-CD	0	0
OR-0490-EW	224	943
OR-0491-CD	0	1932
OR-0491-EW	1698	803
Total	5784	17849

5.3.2.2 Off-site Investigations (OR-0413, Priority 1)

5.3.2.2.1 Description - Off-site investigations are multiple-facility and reservation-wide ER activities that address the transportation of water-borne contaminants beyond the boundary of the DOE ORR and the resulting contamination of water, sediments, and biota in off-site surface-water environments. Off-site investigations include the Clinch River Remedial Investigation, and the site characterization, risk assessment, and monitoring activities on the White Oak Creek Embayment.

Contaminants (radionuclides, metals, and organic compounds) released from the DOE Oak Ridge facilities (Y-12, ORNL, K-25) are transported beyond the ORR boundary and into off-site public waterways (the Clinch River and Watts Bar Reservoir) used for drinking water, sport fishing, and recreation. Preliminary scoping studies indicate that (1) contamination of the Clinch River and Watts Bar Reservoir extends throughout the systems, (2) highest levels of contamination occur in deep water and are associated with sediment deposits in the old river channels, (3) numerous metals, organic compounds, and

radionuclides are priority contaminants requiring further investigation, and (4) the off-site contamination does not appear to present an imminent risk to human health or to the environment. A phased RI is in progress to (1) determine the nature and extent of contamination, (2) quantify the potential environmental and human health risks associated with off-site contamination, and (3) identify and perform preliminarily evaluation of appropriate remediation measures.

The public perception that a significant off-site contamination problem exists is an important aspect of the Off-Site Investigations that requires prompt attention, high priority, and a proactive approach. Probable impacts of conducting the Off-Site Investigations in less than a proactive and timely manner are (1) regulatory disapproval of the scope and/or the pace of work, and (2) adverse public and media reaction.

RIs addressing off-site surface-water contamination are specifically included in the FFA for Oak Ridge and are required for compliance with CERCLA and RCRA 3004(v). This activity is co-funded by DOE's Environmental Restoration Program and the Uranium Enrichment Program.

5.3.2.2.2 Resources - Technical equipment and supplies required for the RI/site characterization phases of the Off-Site Investigation are readily available on-site. Eventual remediation measures could require specialized equipment or techniques (e.g.,for sediment removal, sediment isolation, initiation of bioremediation efforts). However, the off-site activities are still in an early phase, and such requirements are highly uncertain at present.

5.3.2.2.3 Schedule - Milestones

- Complete Phase 1 sampling and analysis 3/91
- Submit Clinch River RFI Plan: Responses to Regulators' Comments: EPA & TDEC 4/91
- Submit Phase 1 site characterization summary and risk assessments and Phase 2 sampling and analysis plan for DOE review: DOE/OR 9/91
- Submit Phase 1 site characterization summary and risk assessments and Phase 2 sampling and analysis plan to regulators: EPA & TDEC 12/91
- Complete time-critical CERCLA activity on White Oak Creek Embayment 12/91
- Initiate Phase 2 sampling and analysis 5/92

5.3.2.2.4 Funding

Table 5.3-4. ER Assessment (Off-site)
Fiscal Year Funding Summary, K-25
($000)

ADS No.	1991	1992
OR-0413	4037	4388

5.3.3 Remediation

5.3.3.1 K-1407-B and K-1407-C Sludge Fixation (OR-0409, Priority 1)

5.3.3.1.1 Description - This project entails fixing the hazardous sludges removed during RCRA closure activities from the K-1407-B and K-1407-C surface impoundments to reduce the mobility of the contaminants in the sludges. The waste sludges and liquids are mixed with cement and fly ash to stabilize them according to a waste-specific fixation recipe. The concrete mixture is placed into steel drums, which are then stored above ground at the K-1417 storage yard.

More detailed information concerning this activity can be found in the document entitled "ORGDP Remedial Action Program Plan Oak Ridge Gaseous Diffusion Plant Oak Ridge, Tennessee," K/HS-247, Martin Marietta Energy Systems, Inc., January 1989.

5.3.3.1.2 Resources - Standard industrial equipment and supplies are generally expected to sufficient.

5.3.3.1.3 Schedule - Milestones

- Complete sludge fixation to surface impoundments: DOE/HQ 9/92

5.3.3.1.4 Funding

Table 5.3-5. ER Remediation (Sludge Fixation)
Fiscal Year Funding Summary, K-25
($000)

ADS No.	1991	1992
OR-0409-CD	3480	0
OR-0409-EW	11089	7665
	14569	7665

5.3.3.2 Site Remediation (OR-0412, OR-0492 and OR-0493, Priority 2)

5.3.3.2.1 Description - This activity consists of the design, remediation, and management of sites which are contaminating the environment. The K-1414 diesel fuel tank was found to be leaking, extensively contaminating the K-1414 garage area. At the current level of funding only final assessment and installation of the biorem diation system for the K-1414 site remedial action will be initiated in FY 1991.

Activities expected for FY 1992, but currently unfunded, include continued remediation for the K-1414 site initiate field activities for K1407-B and initiation of field activities for the K1407-C Closure.

If funds are not available for these additional requirements, noncompliance with Federal and State regulations will occur for the underground petroleum storage tank remediations, and the closure activities for K-1407C Closure and K-1407-B Pond.

5.3.3.2.2 Resources - Standard industrial equipment and supplies are generally expected to be sufficient. However, the need for special equipment or uniquely trained personnel may be identified as activity progresses.

5.3.3.2.3 Schedule - Milestones

- Complete design and remediation of USTs: DOE/HQ 9/91
- Initiate remediation of SWMUs: DOE/OR 9/92
- Initiate final assessment for K-1414 site remediation: DOE/OR 5/91
- Initiate remedial field activities for K-1414 site remediation 8/91
- Initiate field closure activities for K-1407-B Pond 6/92
- Initiate field closure activities for K-1407-C Closure 6/92

5.3.3.2.4 Funding

Table 5.3-4. ER Remediation (Site) Fiscal Year Funding Summary, K-25 ($000)

ADS No	1991	1992
OR-0412-EW	2039	275
OR-0412-CD	0	2746
OR-0492-EW	0	0
OR-0492-CD	0	0
OR-0493-EW	0	0
OR-0493-CD	0	0
Total	2039	3021

5.3.4 Central Environmental Restoration Division (CERD)

5.3.4.1 Description - The CERD ADSs provide for management of projects and activities that are comprehensive of the EM Program and support activities relating the ORR FFA (OR-0441); Central administrative support for UMTRAP, FUSRAP, and SFMP (OR-0447), Off-Site activities for characterization and Remediation (OR-0444, OR-0445, OR-0830, OR-0831, OR-0931), as well as other management, administrative, and strategic planning areas (OR-0448).

5.3.4.2 Schedule - Milestones - All CERD milestones are ADS level activities.

5.3.4.3 Funding

Table 5.3-5. Central ER, All Sites Fiscal Year Funding Summary, K-25 ($000)

ADS No	1991	1992
OR-0441	0	0
OR-0444	0	0
OR-0445	0	0
OR-0447	280	310
OR-0448	13841	20712
OR-0830	0	96
OR-0831	0	404
OR-0931	400	1520
Total	14521	23042

5.4 Decontamination and Decommissioning

5.4.1 Description

5.4.1.1 Y-12

D&D efforts at Y-12 will be long-term; as facilities become identified for reuse as part of the plant's modernization studies, new requirements will be imposed. Through a consistent program of characterization, design, and cleanup, the employees' workplace will be restored to safe conditions.

Building 9201-4 ("Alpha-4") is heavily contaminated with mercury. It houses a former mercury solvent extraction process used for lithium isotope separation. The process operated during the late 1950s and early 1960s. The system consists of liquid-liquid separation columns and associated pumps, piping, trays, and tanks that still retain a large quantity of mercury. The building structure is also contaminated with mercury resulting

from process losses during operation. Ongoing characterization studies estimate that about 150 tons of mercury remain in the system. The D&D of Alpha-4 is an integral part of the integrated plan to remediate mercury contamination at Y-12. No specific deadline is mandated for initiation and/or completion of this activity, and RCRA/CERCLA requirements do not currently apply to this facility. This activity is in ADS OR-222 G1 for D&D and OR-254 G1 for S&M.

The old calutron of Building 9731 has been inactive since 1977 and is contaminated with uranium and PCBs. Calutrons are experimental electromagnetic uranium enrichment equipment. This building requires S&M, the required activity is included in ADS OR-252 G1.

The basement of Building 9201-2 is contaminated primarily with mercury and requires S&M while awaiting D&D planning. The Fused Salt Laboratory in Building 9202 also requires S&M; as does Building 9731. The S&M for these facilities is provided by ADS OR-255.

5.4.1.2 ORNL

Many ORNL facilities have been declared surplus because the programs for which they were built have been completed. Because the potential for release of radioactivity to the environment exists, these facilities will be decontaminated and decommissioned. Until decommissioning is complete, those facilities which contain substantial amounts of residual radioactive material must be kept under surveillance so that any necessary maintenance may be scheduled and containment assured. The inventory of surplus contaminated facilities includes experimental reactors, technology support facilities, hot cells, isotope processing facilities, research laboratories, and decontamination facilities.

To meet the objective of adequate containment and site control, a structured S&M program has been established to provide for collective management of activities in three principal areas: (1) S&M planning, (2) routine S&M, and (3) special maintenance projects. The planning function involves establishing surveillance requirements, evaluating inspection reports and surveillance data, and supervising all routine and special maintenance activities. Routine S&M consists of scheduled site inspections, radiological surveillance, and periodic maintenance as a result of inspections and monitoring. Special maintenance projects are planned and implemented to correct serious site deficiencies that are beyond the scope of routine maintenance. These activities are presently classified as Priority 1, required to ensure the health and safety of on-site and off-site population and the protection of the environment. Through these activities, the functionality of engineered barriers inherent in nuclear facilities will be assured, thus permitting safe protective storage for the near term. As decommissioning projects are initiated for high-priority facilities, the scope of the S&M task will decrease accordingly.

S&M activities for ORNL are included in ADSs OR-314, OR-313AA, OR-313AC, and OR-315. Surplus contaminated facilities at ORNL now under S&M will ultimately require

D&D. These facilities are prioritized for D&D on the basis of potential risks to health and safety, environmental concerns, cost of continuing S&M, and regulatory compliance. In addition, schedules for facility D&D may be integrated with results of the ORNL RIs and FS to determine the most cost-effective remediation of a given site or WAG.

As a facility enters the decommissioning stage, a project is planned and implemented according to a structured project management approach prescribed by DOE. This approach includes site characterization, development of preliminary designs/D&D alternatives, selection of a preferred alternative, final design, and D&D implementation. The project sequence also includes environmental review and documentation to comply with the NEPA and significant participation by DOE through startup and readiness reviews. Periods of duration for various projects could range from one year or less for simple facilities to multi-year efforts for complex hot-cell or experimental reactor facilities. Initiation and continuation of ORNL D&D projects are subject to national priorities for D&D of facilities at other installations; hence, precise schedules for starting and completing projects are not always possible. However, the S&M of facilities awaiting decommissioning are adequately addressed through a structured program to ensure adequate containment and site control (see Section 5.2.4.1). D&D activities are presently classified as Priority 4, having no present imperatives. A S&M program exists (Section 5.2.4.1) to ensure that contamination is properly controlled and contained pending final D&D.

The following ORNL facilities are planned for decommissioning: the Molten Salt Reactor (ADS OR-338AB), Metal Recovery Facility (ADS OR-339AA), Fission Product Development Laboratory (ADS OR-339AB), Homogenous Reactor Experiment (ADS OR-339AC), Fission Product Pilot Plant (ADS OR-339AD), Waste Evaporator Facility (ADS OR-339AE), Old Hydrofracture Facility (ADS OR-339AF), Low-Intensity Test Reactor (ADS OR-339AG), Shielded Transfer Tanks (ADS OR-338AC), and Oak Ridge Research Reactor Experimental Facilities (ADS OR-338AD).

5.4.1.3 K-25

The K-25 gaseous diffusion facilities, which were the first production facilities of the uranium enrichment complex, were built in the 1940s and 1950s to produce weapons-grade material for national defense. The K-25 and K-27 buildings were dedicated to defense production needs for highly enriched uranium (HEU). The K-29, K-31, and K-33 buildings were built to increase the production capacity of the HEU facilities by increasing the assay of the feed material into K-27 building. After military production of HEU was concluded in 1964, the HEU facilities were shut down and the K-29, K-31, and K-33 buildings were used to produce low enriched uranium (LEU) for the civilian nuclear power program initiated in the 1960s. The entire complex (HEU plus LEU) comprises more than 50 buildings with a total floor area of about 300 acres. Since these facilities were constructed in the 1940s and 1950s, much of the materials of construction, internal fluids, and process auxiliary materials are considered hazardous and are now regulated under today's standards. Extensive amounts of asbestos insulation, RCRA (oils and chemicals) and TSCA (PCBs)

substances, special nuclear materials, residual radionuclides, and classified hardware must be responsibly managed for decades while appropriate disposition methods are developed.

Until these facilities are decontaminated and decommissioned, S&M will be required to ensure that the facilities are maintained in an acceptable state. The magnitude of S&M needed to maintain a safe, environmentally sound storage condition is substantial because of the size of the facilities, the largest in the Defense Facilities D&D Program. S&M funding is mandated by Federal regulations and DOE orders.

S&M activities at K-25 include:

- Environmental monitoring of surface water, storm drains, biological water assessments, and NPDES compliance at discharge points from the shutdown facilities.

- Environmental management and technical support.

- Surveillance inspections to detect environmental, health, and safety hazards associated with these facilities (including but not limited to 21 miles of asbestos insulation, 10,000 PCB-contaminated electrical components, 77 lubricating systems containing 279,000 gallons of oil, 200 process coolant systems containing 200,000 gallons of coolants (largely chlorofloura carbons), 20,000 ventilation gaskets contaminated with PCBs and potential leak sources of PCBs, and general facility condition).

- Facility maintenance to fix environmental, health, and safety concerns identified in the buildings such as interim corrective actions to contain or repair hazardous material systems, patching 100 acres of flat roofs for maintaining building integrity, providing housekeeping of facilities, general building repairs for electrical lighting and utility services, and maintenance materials for facility care.

- Safeguard and security protection of facilities to protect classified and special nuclear material (including security patrols, nuclear material control and accountability, safeguard systems and support personnel, safeguard-related maintenance).

- Fire protection, minimum-level electrical power for lighting and utility services for water and air for fire suppression systems.

- Radioactively contaminated waste storage and decontamination support.

- Special projects for criticality safety, facility safety, large roofing projects, and radioactive contamination control, plus implement ion of new DOE orders governing these facilities.

These activities (included in ADS OR-405 and AD OR-440) are required to protect site personnel, the public, and the environment in accordance with Federal regulations and DOE orders governing facilities containing radioactive and hazardous materials.

The last of the operating gaseous diffusion facilities at K-25 were shut down and placed in standby in 1985. Since there were long-range forecasts of enrichment needs that required a restart of the diffusion facilities, the facilities were retained in an operational state of readiness with all the hazardous fluids and materials left in place. However, in December 1987 DOE declared that these facilities would no longer be needed for their primary mission of uranium enrichment and should be permanently shut down. Since that decision, plans have been developed for removing surplus hazardous materials still present inside these facilities and implementation has been started in accordance with environmental regulations governing RCRA materials, PCB-contaminated equipment, and friable asbestos. The Hazardous Material Management Program, funded in ADSs OR-406 and OR-414, is responsible for inventorying, characterizing, excessing (if appropriate), removing, and disposing of the hazardous materials associated with the diffusion facilities. Since these gaseous diffusion facilities are among the largest contaminated surplus facilities in the world and were built when asbestos insulation and PCB electrical equipment were the industry standard, the actions to place them in a permanent shutdown condition require many millions of dollars and an extensive program lasting about seven years. This program will remove and dispose of 21 miles of asbestos insulation, 10,000 PCB-contaminated electrical components, 77 lubricating systems containing 300,000 gallons of oil, and 200 process coolant systems containing 200,000 gallons of coolants (largely fluorocarbons). Once this program has been accomplished, the facilities will comply with current environmental regulations and can be retained in a prolonged storage condition until D&D issues are resolved.

The monitoring and removal of more than 20,000 ventilation gaskets and associated ductwork contaminated with PCBs are funded in ADS OR-415.

Since many of the buildings are contaminated with uranium, DOE Order 5480.11 requires control measures to protect employees and prevent the spread of contamination. These control measures are funded in ADS OR-439.

ADSs OR-416 and 418 are associated with planning for the overall decommissioning of K-25.

The formerly contaminated centrifuge facilities at K-25 must be maintained until the buildings can be decontaminated and an alternative use initiated. Buildings included in this project are K-101, K-1004-S, K-1023, K-1052, K-1200, K-1210, K-1210-A, and K-1600. Since Building K-1220 will not be leased, it will be added to this task during the next update of the DOE Environmental Restoration and Waste Management Five-Year Plan (FYP). Fiscal year funding for this task assumes continued funding of the centrifuge facility cleanup task (OR-0417-01). If the centrifuge facility cleanup task is not funded, then the fiscal year cost for the task (FY 1991 through FY 1995) will be the same level as the FY 1990 ($2,950,000).

The primary objective of this task (funded by ADS OR-407) is to prevent the former centrifuge facilities from deteriorating and to provide for plant services associated with these facilities.

Periodic facility inspections will be conducted and repairs made as necessary to prevent deterioration and to comply with standards for fire protection, safety, security, and environmental protection. These inspections will include daily observations to identify emergency problems and weekly observations to verify equipment functions. Heating and ventilation will be necessary at minimum levels for facilities with wet sprinkler systems until dry sprinkler systems can be installed.

The principle activities funded in ADS OR-410 are selling or other disposition of raw materials, processing of program excess equipment in accordance with Federal Acquisition Regulations, and disposing of process waste originating at K-25 or shipped in to expedite centrifuge manufacturer facilities closeout.

About 72 of 308 trailer loads of contaminated equipment and materials brought in from the former centrifuge manufacturers remain to be disposed of. An additional 32 trailer loads of equipment left from the former development program are being maintained in temporary storage until disposal can be achieved. Over 3 million pounds of hazardous resins and other raw materials left over from the former centrifuge program are also being maintained in storage at K-25. S&M will be required until disposal of these materials and equipment is achieved.

The purpose of ADS OR-417 is to remove contamination from former centrifuge facilities at K-25. Another important aspect of this work is to decontaminate the centrifuges and piping removed from the centrifuge facilities constructed during the Centrifuge Development Program.

ADS OR-417 also includes centrifuge termination activities associated with (1) disposition of noncontaminated, nonhazardous equipment and materials; (2) review and volume reduction of program technical documents; (3) management and support of facility utilization; and (4) engineering analysis and other support requested by DOE in completing the closeout of the centrifuge program.

ADS OR-436 funded the health study of former centrifuge workers. The first health study was completed in FY 1989. Results of that study suggest that a followup study is needed. During FY 1990 a second study was funded to collect and analyze data from a larger group of centrifuge workers than that included in the first study. This second study, like the first, will be performed by Oak Ridge Associated Universities. Administrative costs associated with this contract will be included in the estimated cost of $458,000 for this activity.

5.4.2 Resources

Standard resources, equipment, and techniques are expected to be sufficient for all S&M work. Much of the D&D work will require specialized equipment and techniques that are yet to be proven in technology demonstrations.

5.4.3 Schedules and Milestones - Milestones are ADS level activities.

5.4.3.1 General

- Issue work plans for FY 1992 work 9/91

5.4.3.2 Y-12

5.4.3.3 ORNL

- Complete decontamination of Metal Recovery Facility Process Cell G 9/92

5.4.3.4 K-25

- Complete closure of all process openings 9/91
- Begin PCB gasket removals 8/91
- Complete disposal of 125,000 gallons of Askarel (PCB) fluids 8/91
- Complete asbestos removal from K-310-5 pipe gallery (3300 linear feet) 9/91
- Begin D&D planning studies 11/91
- Complete centrifuge workers' health study 12/91

5.4.4 Funding

5.4.4.1 Y-12

Table 5.4-1. Y-12 D&D
Fiscal Year Funding Summary
($000)

ADS No.	1991	1992
OR-222 G1	0	0
OR-252 G1	0	0
OR-253 G1	0	0
OR-254 G1	446	446
OR-255	0	0
Total	446	446

5.4.4.2 ORNL

Table 5.4-2. ORNL D&D
Fiscal Year Funding Summary
($000)

ADS No.	1991	1992
OR-314	582	1195
OR-338-AB	0	0
OR-339-AA	504	0
OR-339-AB	0	0
OR-339-AC	0	0
OR-339-AD	0	0
OR-339-AE	0	0
OR-339-AF	0	0
OR-339-AG	0	0
OR-313-AA	195	432
OR-313-AB	0	0
OR-313-AC	0	0
OR-315	175	340
OR-338-AC	0	0
OR-338-AD	0	0
OR-387	6500	0
OR-387-AA	0	9600
Total	7956	11567

5.4.4.3 K-25

Table 5.4-3. K-25 D&D
Fiscal Year Funding Summary
($000)

ADS No.	1991	1992
OR-405	28465	28355
OR-406	4444	7617
OR-407	1230	1631
OR-410	1289	717
OR-414	4219	19674
OR-415	4815	6380
OR-416	0	2617
OR-417	0	0
OR-418	0	0
OR-436	147	0
OR-439	835	3120
OR-440	3148	4199
OR-449	1153	1787
Total	49745	76097

6.0 WASTE MANAGEMENT OPERATIONS

WM operations conducted on the ORR include treatment, disposal, storage, and minimization of radioactive, hazardous, mixed, and sanitary waste and continuity of operations. Requirements for each waste category are established by environmental laws, under the authority of EPA and the State of Tennessee, and by DOE Orders.

Radioactive wastes on the Reservation contain radioactive materials resulting from research and defense program activities. Management of these wastes is strictly regulated. Highly radioactive, or high-level (HLW), and TRU wastes are long-lived and typically require special shielding and eventual disposal in a geologic repository. LLW is short-lived and usually requires little shielding, making simpler disposal methods possible. Hazardous waste is defined by RCRA and must be managed according to strict Federal and State environmental regulations. Mixed waste contains both radioactive and hazardous wastes and must be managed to meet the requirements for both. Management of sanitary waste includes landfill disposal of solid waste and treatment of wastewater, sewage, and stormwater runoff.

The interim WM priority system used to help determine the order in which projects will be funded has four categories, each having three subcategories. The priority system is defined as follows.

Priority 1 includes activities that are necessary to prevent near-term adverse impacts to workers, the public, or the environment, and ongoing activities required to maintain safe conditions or prevent significant program and/or resource impacts.

Subcategory 1A:	Provides safe operation
Subcategory 1B:	Prevents potential releases to the environment
Subcategory 1C:	Maintains ongoing activities

Priority 2 includes those activities required to meet the terms of formal agreements (in place or in negotiation) between DOE and local, State, and Federal agencies. (This category does not include permits.)

Subcategory 2A:	Complies with agreement provisions that have criminal or civil liability penalties
Subcategory 2B:	Complies with agreement provisions that have administrative penalties
Subcategory 2C:	Complies with other agreement provisions

Priority 3 includes activities required for compliance with external environmental regulations not captured by Categories 1 or 2, activities addressing DOE orders that implement external regulations or that set specific DOE regulatory standards,

activities that would reduce risks or costs, and activities that prevent disruption of DOE mission.

Subcategory 3A:	Complies with external regulations and DOE regulatory standards
Subcategory 3B:	Maintains supporting activities
Subcategory 3C:	Provides for long-term mission continuation and cost benefits

Priority 4 includes activities that are not required by regulation but would be desirable. Examples include complying with DOE orders that are more stringent than external regulations, implementing improved management practices, reducing personal exposures below levels required by regulations or standards, and accelerating actions to satisfy an agreement or milestone ahead of schedule.

Subcategory 4A:	Provides supplementary environmental, safety, and health improvements
Subcategory 4B:	Improves other practices
Subcategory 4C:	Accelerates schedules

WM activities and major milestones for the ORR are detailed in section 6.1, 6.2, and 6.3.

WM projects are divided into five specific groups according to the type of activity addressed. Table 6.0-1 notes the number of projects by site for the individual activity. Fiscal year funding summary tables for WM are provided in Tables 6.0-2 and 6.0-3. The funding levels were provided by DOE/HQ broken out by funding case by year by site. FY 1991 WM funding represents currently known funding levels. FY 1992 WM funding represents the OMB target levels.

FY 1993 funding levels are bracketed by the Preliminary Unvalidated Case (PUC) and the Validated Target Level (VTL) Case. The PUC represents a preliminary estimate of funding to ensure protection of the public and worker health and safety, to carry out the agreements entered into by DOE, to ensure compliance with applicable environmental requirements, and to implement other desired improvements.

The VTL case provides a 10 percent annual increase for the defense-related EM Program. This growth rate far exceeds that of any other defense-funded program within DOE. The program grows at 10 percent per year even in the context of declining statutory caps for the overall defense category which were insisted upon by Congress. Under this case, consistent with the EM prioritization philosophy, priority 1 activities would be funded at the largest percentage of the PUC. Priority 4 activities would receive the lowest percentage of the field-office requested funding. Neither the PUC nor the VTL necessarily reflects the actual amount of money that will be allocated to the EM Program between FY 1993 and FY 1997.

Actual funding will depend upon further priority setting in the context of the annual budget and appropriations process.

The FY 1991 and FY 1992 activities discussed in this plan are those that can be accomplished with available funds. The WM FY 1993 budget-constrained VTL funding will support routine daily site WM operations. Many projects to further develop and improve WM operations are planned and discussed in this document and will be accomplished as additional funds become available. Milestone schedules provided in this plan, especially for FY 1993-1997, are subject to change as FY budgets are established and as project needs are better defined and prioritized.

Table 6.0-1. WM Projects

Category	Projects by Category	Projects by Site		
		Y-12	ORNL	K-25
Minimization	4	2	1	1
Treatment	14	4	5	5
Storage	6	1	3	2
Disposal	4	2	1	1
Continuity of Operations	9	3	4	2
Total	37	12	14	11

Table 6.0-2. WM Fiscal Year Funding Summary, ORR
PUC ($000)

Site	1991	1992	1993	1994	1995	1996	1997
Y-12	42710	71932	70775	80845	130345	169415	179715
ORNL	28264	54035	89296	122835	185550	209550	172200
K-25	20336	53536	99370	159359	223809	221631	148136
Total WM	91310	179503	259441	363039	539704	600596	500051

Table 6.0-3. WM Fiscal Year Funding Summary, ORR
VTL ($000)

Site	1991	1992	1993	1994	1995	1996	1997
Y-12	42710	71932	64920	74116	76933	81973	90171
ORNL	28264	54035	58747	62118	67282	81573	90171
K-25	20336	53536	72371	73533	76932	81975	90171
Total WM	91310	179503	196038	209767	221147	245921	270513

6.1 Y-12

6.1.1 Overview

6.1.1.1 Description - The requirements for meeting WM regulatory objectives at Y-12 are varied and complex, reflecting the wide variety of waste streams generated by plant activities. The overall goal of WM at Y-12 is full compliance with all current regulations, anticipation and participation in the development of future regulations, and planning for actions to comply with those future regulations. Over the last several years, many facilities have been constructed or upgraded to meet RCRA, TSCA, CERCLA, and other regulatory requirements. DOE/OR has developed the following policies for the management of radioactive, hazardous, and mixed wastes to supplement these regulatory requirements:

- Reduce the quantity of solid waste generated
- Characterize and certify the waste before storage, processing, treatment, or disposal
- Use onsite storage where it can be shown to be safe and cost-effective until final disposition option is selected
- Use demonstrations to determine the effectiveness of promising technologies in solving local problems
- Maximize the involvement of private sector contractors in conducting technology demonstrations and implementing successful technologies
- To the extent possible, detoxify mixed waste so it can be delisted and disposed of as LLW

WM activities involve wastes generated by active production operations and ER activities at the Y-12 Plant and other DOE/OR and DOE sites.

During FY 1992, basic operations for managing routinely generated waste will continue (OR-223-AA, OR-224, OR-225, OR-226). Facility projects delayed last year because of funding shortfalls will be performed (OR-223-AA, OR-224, OR-225). Planning for all general plant projects (GPP) and line-item projects will continue (OR-223-AA, OR-224, OR-225, OR-226). Capital equipment needed at the TSD facilities will be procured (OR-223-AA, OR-224, OR-225, OR-226). Work to develop privatization contracts will be very limited with no contracts bid or awarded because of funding limitations (OR-223-AB). The ongoing production waste storage facility (PWSF) line item project will continue (OR-228). Funding will be provided for coordination of Y-12's waste minimization program (OR-229).

Work on CDR and design criteria for the Production Waste Treatment Facility (PWTF)(OR-232) and the PWTF Phase II (OR-234) line item projects will continue.

The driving force behind all Y-12 WM activities is the protection of human health and the environment from hazardous and radioactive wastes. All waste operations are monitored and maintained in accordance with the requirements of CWA, RCRA, TSCA, and DOE Order 5820.2A.

6.1.1.2 Resources - Typical resources for WM activities include personnel for feasibility studies, project design and construction; development and laboratory facilities for daily operations and feasibility studies; contracts to involve the private sector in waste technologies and operations; and standard industrial grade materials for construction and operations.

6.1.1.3 Schedule - Milestones - WM treatment, storage, disposal and continuity of operations are ongoing. Specific project milestones are:

• Cease disposal operations at BCBG: DOE/HQ (W224-01H & W225-01H)	6/91
• Require compliant treatment of 1.6M gal.: DOE/HQ (W223AA-01H)	9/91
• Operate storage facilities in safe, compliant, efficient manner: DOE/HQ (W224-02H)	9/91
DOE/HQ (W224-03H)	9/92
• Require compliant disposal of 320,000 lbs solid waste: DOE/HQ (W225-02H)	9/91
• Operate continuity of operations process in safe, compliant, efficient manner: DOE/HQ (W226-01H)	9/91
DOE/HQ (W226-02H)	9/92
• Operate treatment facilities in safe, compliant, efficient manner: DOE/HQ (W223AA-02H)	9/92
• Operate disposal facilities in safe, compliant, efficient manner: DOE/HQ (W225-03H)	9/92

6.1.1.4 Funding

Table 6.1-1. WM Fiscal Year Funding Summary, Y-12 Plant
PUC ($000)

Category	1991	1992	1993	1994	1995	1996	1997
Minimization	200	405	525	555	585	615	645
Treatment	13961	20066	26270	38000	79330	106340	132020
Storage	10705	23286	13860	10300	10750	11210	11690
Disposal	5530	10130	11740	11310	11750	12200	12670
Continuity of Operations	12314	18045	13900	14820	15430	16050	16690
(Transfer from CA)	CA	CA	4480	5860	12500	23000	6000
Total WM	42710	71932	70775	80845	130345	169415	179715

Table 6.1-2. WM Fiscal Year Funding Summary, Y-12
VTL ($000)

Category	1991	1992	1993	1994	1995	1996	1997
Minimization	200	405	525	555	585	615	645
Treatment	13961	20066	22665	37131	38418	41898	48476
Storage	10705	23286	13860	10300	10750	11210	11690
Disposal	5530	10130	11740	11310	11750	12200	12670
Continuity of Operations	12314	18045	13900	14820	15430	16050	16690
(Transfer from CA)	CA	CA	2300	0	0	0	0
Total WM	42710	71932	64920	74116	76933	81973	90171

6.1.1.5 Accomplishments

The storage facilities have been operated for maximum regulatory compliance. Storage space is being consumed, and additional space is being planned. A GPP project to upgrade the Oil Dike (OD) OD7 and OD8 facilities has been initiated. Above grade storage pads, for LLW, have been designed. Design for upgrade to the east end of Building 9720-9 is complete and the construction package will be bid.

Treatment facilities have been operated for maximum regulatory compliance. Upgrades to the central pollution control facility (CPCF) for ventilation, heavy metal removal, oil/water separation, and dike repairs have been completed. Improvements at the uranium chip oxidatic facility to decrease airborne uranium concentrations are being worked. GPP projects are in process to upgrade the tank area at the waste coolant processing facility (WCPF) and provide a reactive waste treatment facility.

Treatability studies on oil and solvents were initiated in FY 1990 and will be completed in FY 1991 using FY 1990 carryover funds. Treatability studies have been performed on mixed waste soils, sludges, and organic liquids. Low-level radioactive waste has been supercompacted or incinerated by a commercial vendor.

Sampling, analysis/characterization, and movement of waste is accomplished on a continuing basis. The Trash Monitoring Station (TMS) continues to monitor uranium-contamination of solids to prevent disposal of LLW in the industrial landfill and the Crated Waste Assay Monitor for verification measurements of non-special nuclear materials (SNM). Planning for FY 1990 GPP and capital equipment projects were completed with all GPP and capital equipment funds committed. The new waste tracking system completed a functional system design, and will have most programming completed by the end of FY 1991. Biomonitoring of Bear Creek and EFPC was performed throughout FY 1990 but was transferred to landlord in FY 1991.

Landfills are operated for the disposal of LLW and classified waste. Land disposal of LLW in BCBG ceased in FY 1991. Commercial disposal facilities were used to the maximum extent for hazardous and PCB contaminated wastes. Salvage yards are operated for accumulating and sorting scrap metal.

Efforts continued to identify and implement waste minimization initiatives, including chlorinated solvent reduction, ultrasonic cleaning experiments, oil recycle, process changes to reduce the use of nitric acid, waste segregation efforts, and paper and aluminum can recycling.

The Y-12 Waste Minimization Plan was submitted as required by RCRA and by DOE Order 5400.1. The Waste Minimization Plan sets goals, calls for yearly program audit, yearly review, and update of the plan every three years. A plan was prepared for implementing process waste assessments at Y-12.

6.1.2 Waste Minimization

6.1.2.1 Description - Waste minimization activities (ADS OR-229) involve coordination of Y-12 Waste Minimization program. The four primary elements of the program are 1) promotion of awareness of waste minimization activities carried out by the plant, 2) exchange of information about waste minimization activities with other sites, 3) participation in design and use of the new Y-12 waste tracking system, and 4) coordination of process assessments aimed at minimizing the production of waste.

Over the past 5 years, waste minimization activities have been carried out as funding and resources have permitted. Y-12 has significantly reduced the use of hazardous chlorinated solvents including tetrachloroethylene, trichloroethylene, methylene chloride, and 1,1,1-trichloromethane. Complete elimination of these compounds as degreasing solvents is

planned. Major reductions in the generation of nitric acid wastewaters have been accomplished using distillation to recover acid. Conceptual design for a $12 million line item to reduce the generation of mixed waste sludge has been completed. The new process effectively segregates materials chemically into materials with differing degrees of hazard. Additionally, pilot paper and aluminum can collections have been piloted and implemented on limited basis.

The waste minimization program coordinator efforts in the near-term will be concentrated on implementing detailed analyses of key production processes with an eye toward opportunities for waste minimization.

The EW source is for waste minimization program coordination and support. Such activities include reporting, responding to special requests, maintaining contacts in production organizations, and seeing that the Plant Waste Minimization Plan is carried out. Updating and maintaining the plan are the key elements in the RCRA and HSWA regulations.

Funding requested for FY 1992 will also be used to add one engineer to the staff of the Waste Minimization Coordinator. The focus of the Waste Minimization Coordinator program will be completing and reporting on Process Waste Assessments (PWAs), continuing employee education, information exchange, and waste tracking aspects of the program.

Drivers for the waste minimization program include:

- The HSWA of 1984 (Amendments to RCRA-1976), Section 224, calls for generators of hazardous waste to implement a program for reducing the generation of hazardous waste and to report on such reductions.
- DOE Order 5400.1, Section 4.b - General Waste Reduction Program Plan and Goals
- DOE Order 5400.3, Section 7.d.5 - Waste Reduction for Mixed Wastes
- DOE Order 5820.2A, Section 3.c.2.4 - Waste Reduction Program for Generators of LLW
- Tennessee Hazardous Waste Reduction Act of 1990 calls for reductions of 25% in the generation of production-related hazardous waste by 1995.

6.1.2.2 Resources - Typical resources for waste minimization activities include personnel for feasibility studies, project design and construction; development and laboratory facilities for feasibility work; and standard industrial grade materials for construction and operations.

6.1.2.3 Schedule & Milestones

- Update of waste minimization plan: DOE/OR (W229-02R) 6/91
- Resume quarterly informational meeting with DOE: DOE/OR (W229-03R) 3/91
- PWAs initiate group production process: DOE/OR (W229-04R) 7/91
- PWAs second group production process: DOE/OR (W229-05R) 1/92
- PWAs third group production process: DOE/OR (W229-06R) 7/92
- Implementation of PWAs results: DOE/OR (W229-07R) 9/92
- Submit DOE Annual Waste Reduction Activities Report to DOE/OR WMD: (W229-XXX) 3/91
- Submit DOE Annual Waste Reduction Activities Report to DOE/OR WMD: (W229-XXX) 3/92

6.1.2.4 Funding

Table 6.1-3. WM (Minimization) Fiscal Year Funding Summary, Y-12 Plant ($000)

ADS No.	1991	1992
OR-0229	200	405

6.1.3 Waste Treatment

6.1.3.1 Description - Waste treatment activities involve controlled conversion of waste streams generated from active ongoing operations at the Y-12 plant to a safer, environmentally acceptable and/or more easily managed form. Treatment includes continuing operation and maintenance of facilities that treat wastewater generated as a result of production and production support activities at the plant. Four of these facilities treat hazardous/radioactive wastewaters: the CPCF and the Plating Rinsewater Treatment Facility (PRTF) treat non-nitrate aqueous waste streams and plating rinsewaters and discharge an effluent into EFPC, in accordance with the requirements of the TDEC and EPA; the West End Treatment Facility (WETF) treats nitrate-bearing aqueous waste streams and discharges to the East Fork Poplar Creek, also in accordance with regulatory requirements. The WCPF receives, stores, and treats biodegradable waste machine coolant from machining operations. The liquid effluent is transferred to the WETF or CPCF for further treatment.

The Uranium Chip Oxidation Facility (UCOF) is a continuing treatment process designed to thermally oxidize depleted and natural uranium machine turnings (chips) under controlled

conditions to a stable uranium oxide. This permits safe storage of the oxide and eliminates this uranium waste stream from disposal in the BCBG.

In the area of treatment of solid waste materials generated by Y-12, the Waste Feed Material Preparation Facility (WFMPF) currently compacts solid low-level waste material for storage until treatment and/or disposal methods are developed. The compaction reduces storage requirements per unit volume of waste. Treatment to minimize storage requirements is required because no disposal method is currently available for LLW.

Volume reduction of solid, combustible LLW involves incineration or supercompaction using a private contractor. This capability is being demonstrated with a contract in FY 1991.

FY 1992 includes continuing operation of facilities described above.

GPPs initiated in FY 1992 will be for upgrades to the Tanker Unloading Station at CPCF.

Previously initiated GPP's will be continued. Capital equipment for FY 1992 includes a replacement clarifier, waste processing instrumentation, and waste processing equipment. Some major projects and maintenance items not funded in previous years will be accomplished. These include freeze protection at the WETF and painting of West Tank Farms 1, 2, and 3. A contract for full-scale volume reduction of solid, combustible LLW will continue as the long-term treatment for this waste. The volume reduction will be limited to current LLW production.

Privatization (OR-223AB, Priority 3-A) involves the use of private sector vendors to provide WM services that would otherwise require Federal capital funding. These activities can include typical service contracts using existing vendor facilities. Alternatively, privatization might take the form of private capital investment in facilities located at a DOE site. In this case, the vendor would charge for services rendered through facility operation. In FY 1992, mixed waste treatability studies completed at the end of FY 1991 will be evaluated. The information will be used to support preparation of detailed Statements of Work. The Statements of Work will be incorporated in request for proposals (RFP's), with vendor proposals expected in early FY 1993. The RFP for the Domestic Wastewater Treatment Facility will also be issued. The RFP for the sanitary landfill operation will be issued, and bid evaluation will take place in FY 1992. The conceptual design cost estimates for the Industrial Waste Compaction Facility (included in OR-232) will be used for comparison with vendor-proposed costs.

The Production Waste Treatment Facility (PWTF) line-item Project (OR-232, Priority 2-A) includes four subprojects: (a) an industrial waste compaction facility; (b) an oil/solvents treatment facility to remove uranium and beryllium from organic liquid waste; (c) a materials treatment facility to process contaminated classified waste before disposal, and (d) a packaging, certification, and staging facility to verify that mixed and LLW shipped for disposal meet waste acceptance criteria. ADS 223-AB describes a privatization effort which would use

private investment to provide the same WM capabilities as those included in this project. Since it is uncertain that privatization contracts will be initiated, work on this project is being performed in parallel with privatization activities. It is anticipated that decisions regarding the method of accomplishment will be made in FY 1992. During FY 1992 detailed design criteria will be prepared for Title I and Title II design.

The PWTF Phase II line-item Project (OR-234, Priority 2-A) includes two subprojects; (a) a mixed waste sludge and soils processing facility to remove chemical and/or radioactive contaminants, and (b) a Class L-III LLW treatment facility intended to extract uranium, so that the wastes can be disposed as nonradioactive or Class L-1. Treatment of LLW is needed because no disposal of Class L-III waste is anticipated on the ORR. Treatment residues will be class L-IV, intended for disposal at another DOE site. Storage for Class IV waste will be provided using Above Grade Storage Pads. The treatment facilities are intended to remove contamination from bulk waste. The processes used will differ from traditional surface decontamination methods. Volatile chemical contaminants will be thermally desorbed (evaporated) and condensed. Uranium contamination will be extracted using methods adapted from the ore processing industry (e.g., oxidation and extraction with a sodium carbonate solution). Residues from the treatment of mixed waste will be stored and, eventually, delisted. Current plans are to store the residue in permitted facilities at K-25. The driving force behind this project is compliance with RCRA regulations, DOE orders, and assurance of weapons production capability. Failure to provide timely treatment of mixed waste and LLW prior to disposal will put Y-12 in violation of environmental regulations. A FFCA between DOE and EPA to cover LDR wastes is being developed. During FY 1992 a conceptual design will be initiated. A project description memorandum will be prepared to initiate the NEPA process.

The DUOF line-item project (OR-248, Priority 3-A) will provide a treatment facility for the depleted uranium sawfines waste stream. The sawfines waste stream is produced from various activities at Y-12, such as abrasive sawing, milling, and machining operations. The facility covers all areas during the treatment cycle, including feed preparation and storage, thermal oxidation of the waste stream, and interim storage of the waste product (uranium oxide). This project is required for management of Y-12's LLW in compliance with DOE Orders 5820.2A and 5400.5. Without this, no long-term treatment to render uranium sawfines nonprophoric would exist. Site selection for the DUOF will occur during the FY 1992 funding year. Engineering personnel will prepare a conceptual design and cost estimate for the DUOF.

Compliance orders have mandated proper management of Y-12's hazardous and radioactive waste. The CPCF, PRTF, WETF, and WCPF are point source discharges under the 500 series outfalls of Y-12 NPDES permit required by Chapter 3, Section 69-3-108 of the TWQCA. DOE Order 5820.2A, Chapter III, Sections 2.a, 3.a(4), and 3.i(5) (f) requires management of uranium turnings for the protection of the environment, the elimination of remedial actions, protection of groundwater resources, and the treatment of pyrophoric materials to render them nonflammable. In addition, section 3.f(2) requires implementation

of waste treatment techniques, such as compaction, to reduce waste volume and increase the life of the disposal facility.

Tennessee proposed Rule 1200-1-7-04(4) is under review by the Tennessee Solid Waste Disposal Control Board (established by TCA 68-31-111). It will require leachate collection for all solid waste disposal units, and this leachate will have to be treated to prevent violation of TWQCA section 69-3-114. The Landfill V Leachate Treatment Facility will be a point source discharge in Y-12's NPDES Permit.

The HSWA of 1984 to the RCRA of 1976 dictated the closure of Kerr Hollow Quarry. Treatment of reactive wastes to render it nonreactive is regulated by Tennessee Rule Chapter 1200-1-11.05(17).

6.1.3.2 Resources - Typical resources for waste treatment activities include people for operations, new facility projects and support areas, laboratory facilities and standard industrial grade materials for operations and construction.

6.1.3.3 Schedule - Milestones

• Investigate corrosion WETF: DOE/OR (W223AA-01R)	6/91
• Construction of upgrades at CPCF: DOE/OR (W223AA-02R)	1/91
• Complete conceptual design PWTF: DOE/OR (W232-01R)	3/91
• DARA groundwater treatment facility (GWTF) air permit approved: DOE/OR (W223AA-03R)	3/91
• Land burial of SLLW will end (BCBG): DOE/OR (W248-01R)	6/91
• Select DUOF Site location: DOE/OR (W248-02R)	8/91
• Interim treatment at DARA GWTF: DOE/OR (W223AA-04R)	9/91
• Modifications for full treatment at DARA GWTF: DOE/OR (W223AA-05R)	9/91
• Initiate full contract of LLW volume reduction: DOE/OR (W223AA-06R)	9/91
• Regulatory compliant treatment of 1.6M gal.: DOE/HQ W223AA-01H)	9/91
• Prepare evaluation reports (2) on treatment studies: DOE/OR (W223AB-01R)	3/92
• Complete detailed description criteria PWTF: DOE/OR (W232-02R)	7/92
• Issue RFP and evaluate bids for sanitary landfill operations: DOE/OR (W223AB-02R)	7/92
• Prepare pre-design and cost estimate DUOF: DOE/OR (W248-03R)	9/92

- Repairs and corrosion protection WETF: DOE/OR (W223AA-07R) 9/92
- Operate treatment facility in safe, compliant, efficient manner: DOE/HQ (W223AA-02H) 9/92
- Complete conceptual design PWTF II: DOE/OR (W234-01R) 12/92
- Issue RFP and evaluate bids for domestic waste treatment: DOE/OR (W223AB-03R) 12/92
- Prepare CDR: DOE/OR (W248-04R) 12/92

6.1.3.4 Funding

Table 6.1-4. WM (Treatment) Fiscal Year Funding Summary, Y-12 Plant ($000)

ADS No.	1991	1992
OR-0223-AA	13261	15946
OR-0223-AB	0	290
OR-0232	700	1470
OR-0234	0	1960
OR-0248	0	400
Total	13961	20066

6.1.4 Waste Storage

6.1.4.1 Description - Waste storage provides for storage, associated monitoring, and management of wastewater, waste sludge, solvents, oils, and solids generated by ongoing Y-12 operations. The storage activity covers all phases of storage requirements, including short-term (except for 90-day accumulation areas), intermediate, and long-term storage; implementation and conduct of storage operations at new and existing facilities; and identification and development of new storage methods. Storage facilities include tanks for collection of wastewaters prior to on-site treatment and buildings for containerized storage of RCRA and TSCA wastes prior to off-site commercial treatment/disposal. Long-term storage facilities include 500,000-gallon tanks for mixed waste sludges generated as a result of wastewater treatment, containerized and bulk storage of solid and liquid RCRA and TSCA wastes contaminated with radioactivity, and solid LLW.

Y-12 operates five facilities for the storage of waste in containers. Packaging ranges from laboratory bottles and vials to drums and Department of Transportation (DOT) approved boxes. Facilities operated under the storage activity include but are not limited to: RCRA Staging and Storage Facility, designed for interim storage of drums and smaller containers in preparation of off-site disposal; Building 9720-9 (western half of RCRA storage), designated as the receiving point for waste oil and solvent drums. The capacity of the building is 1,000 55-gallon drums; Building 9404-7 is used for PCB waste storage and

currently contains uranium-contaminated waste which will be sent to the TSCA incinerator at K-25. The Containerized Waste Storage Area (CWSA), will be brought on-line in FY 1991 allowing cessation of use of the Interim Drum Yard, which is scheduled for closure activities.

Operation of the storage facilities includes all activities required to ensure that wastes are properly stored, including periodic inspections, facility maintenance and upkeep, and facility improvement and modification projects.

FY 1992 includes continuing operation of facilities described above. In addition to these facilities, Above Grade Storage Pads will be constructed for storage of LLW, and Classified Waste Storage Area 9720-32 will start up and operate. The GPP work initiated in FY 1992 will include Fire Suppression OD-10, Fire Suppression/Upgrade OD-9, Fire Suppression 9720-9 and 9720-25, Fire Suppression/Upgrade 9720-58, Oxide Vault III, Ignitable Waste Warehouse Facility, Fire Suppression Liquid Storage Facility, Fire Suppression CWSA East and Central East and Central Pads, and Building for CWSA West Pad.

Ongoing GPPs will continue. Capital equipment for FY 1992 includes forklifts and waste handling equipment. Some major facility projects and maintenance items, not funded in the previous years, will be begun including construction of upgrades to RCRA and TSCA storage areas.

The Production Waste Storage Facility (PWSF, OR-0228) line-item project will provide a complex of waste storage facilities. These facilities, to be sited at Y-12 and K-25, will provide the means for Y-12 to store the wastes generated as by-products of its weapon production operations. Wastes include "clean" (office paper, trash, etc.), hazardous waste, LLW, and mixed wastes. Unclassified "clean" waste is currently disposed of in on-site landfill, and that practice is expected to continue. There are, however, no environmentally acceptable or approved methods for disposing of most of the classified hazardous, LLW, or mixed waste generated by production activities. As a result, those wastes must be stored until suitable treatment or disposal methods have been developed. By 1992 the first of the plant's existing or budgeted storage facilities will be filled to capacity, and by 1996 all storage facilities will be filled. PWSF provides a five-year waste storage capability, allowing the time needed to place appropriate disposal techniques in operation. These disposal techniques include, but are not limited to, the reservation-wide LLW disposal capability being developed and the Material Treatment Facility (OR-232, Priority 2-A) to handle classified hazardous wastes. PWSF, in meeting Y-12's production waste storage requirements, will encompass a total of approximately 16 acres, providing storage capacity in (1) above-ground buildings for an estimated 150,000 cubic feet of production-related classified solid waste; (2) storage facilities for incinerator ash; (3) tanks for approximately 2.0 million gallons of sludges generated during the treatment of production-related waste; and (4) a process modification to reduce the overall quantity of generated sludge.

In FY 1992, the following PWSF activities will occur:

- Finalize design criteria for WETF Head End Modifications
- Initiate construction activities on the Building 9720-59, CWSF II
- Initiate construction activities on K-25 Sludge Storage Facility
- Initiate construction activities on the TSCA Ash Storage Facility

6.1.4.2 Resources - Typical resources for waste treatment activities include personnel for operations, new facility projects and support areas, laboratory facilities and standard industrial grade materials for operations and construction.

6.1.4.3 Schedule - Milestones

- Document to TDEC, above grade pads construction plan: DOE/OR (W224-01R) 5/91
- Cease disposal operations at BCBG: DOE/HQ (W224-01H) 6/91
- Complete beneficial occupance CWSA: DOE/OR (W224-02R) 9/91
- Operate storage facility in safe, compliant, efficient manner: DOE/HQ (W224-02H) 9/91; DOE/HQ (W224-03H) 9/92
- Complete modification to existing facilities for CWS (9720-32): DOE/OR (W228-01R) 12/91
- Initiate operations classified waste storage: DOE/OR (W224-03R) 1/92
- Construct uranium oxide drum storage enclosure: DOE/OR (W224-04R) 6/92
- Tank farm (K-25): DOE/OR (W228-02R) 7/92
- Upgrade OD7 and OD8 facility: DOE/OR (W224-05R) 9/92
- Complete design of PWSF: DOE/OR (W228-03R) 12/92

6.1.4.4 Funding

Table 6.1-5. WM (Storage)
Fiscal Year Funding Summary, Y-12 Plant
($000)

ADS No.	1991	1992
OR-0224	5205	14048
OR-0228	5500	9238
Total	10705	23286

6.1.5 Waste Disposal

6.1.5.1Description - Waste disposal includes activities for handling wastewater, solvents, oils, sludge and other solids for disposal on and off-site; identifying new disposal methods, including commercial disposal; operating and maintaining active disposal sites; and performing waste disposal feasibility studies.

Disposal activities conducted at Y-12 include operation of the BCBG for the disposal of solid LLW, Salvage Yard, and Classified Landfill. Operation of the BCBG will be phased out in FY 1991. LLW, which would have gone to BCBG for disposal, will be containerized and stored. Also funded under this activity is commercial disposal of hazardous and PCB-contaminated wastes and the preparation of these wastes for disposal. When possible, nonuranium contaminated waste oils, solvents, sludges, and solids are disposed of through commercial WM firms.

FY 1992 includes continuing operation of facilities mentioned above. Operation of the existing industrial landfill will begin to be funded by the EW programs. The scrap metal contract developed in FY 1991 will be bid and awarded. GPP work initiated in FY 1992 will be the Landfill V Access Road.

The ongoing GPP for construction of Landfill VI will continue. Capital equipment for FY 1992 includes metal shears, truck scales, and forklifts for the salvage yard, and roller compactor, pan scraper, and front end loader for use at the landfills.

The driving force behind the disposal activity is providing appropriate disposal of solid waste in accordance with Federal and State regulations to ensure protection of human health and the environment. The 1983 MOU between DOE, EPA, TDEC, a 1985 FFCA, two 1983 TDEC Compliant and Orders, and subsequent TDEC Orders for Correction and Compliance have mandated proper management of Y-12 hazardous, PCB-contaminated, and radioactive wastes. The disposal of low-level waste is subject to DOE Order 5820.2A, Chapter III, section 3.i. The solid waste landfills are subject to the Tennessee Solid Waste Disposal Act (Rule Chapter 1200-1-7) and TWQCA section 69-3-114. Landfill rainwater runoff and leachate are contained and discharged according to NPDES provisions of the CWA. PCB contaminated waste and RCRA waste are transported off-site for disposal at commercial, licensed facilities.

6.1.5.2 Resources - Typical resources for waste disposal activities include personnel for operations, new facility projects and support areas, laboratory facilities, commercial disposal contracts and standard industrial grade materials for operations and construction.

6.1.5.3 Schedule - Milestones

- Cease disposal operations at BCBG: DOE/HQ (W225-01) 6/91
- Regulate compliant disposal of 320K lbs SW: DOE/HQ (W225-02H) 9/91
- Construct landfill VI: DOE/HQ (W225-01H) 12/91
- Operate disposal facility in safe, compliant, efficient manner: DOE/HQ (W225-03H) 9/92

6.1.5.4 Funding

Table 6.1-6. WM (Disposal)
Fiscal Year Funding Summary, Y-12
($000)

ADS No.	1991	1992
OR-0225	5530	10130

6.1.6 Continuity of Operations

6.1.6.1 Description - Continuity of operations includes waste collection (by WM personnel), characterization and transportation of wastewater, solvents, oils, sludges, and other solids generated by active, ongoing Y-12 operations. Waste managed includes RCRA, TSCA, LLW, mixed, sanitary and industrial. The Continuity of Operations program includes waste characterization, transport vessel maintenance, inspection for transportation of containerized waste, and the waste generator-waste management interface, including communications with waste generators to reduce, eliminate, and segregate wastes. All waste must be characterized by careful sampling before a determination of the physically safe, environmentally correct and legally appropriate treatment, storage, or disposal facility can be made; after characterization, waste streams are collected from various points inside Y-12. Filled waste containers are moved from the waste generation point to an interim storage area or to a designated facility for treatment or disposal. The Continuity of Operations also includes activities for waste tracking, development support, and the expense planning portion of GPP and capital equipment projects.

Continuity of Operations also provides operation and maintenance of the TMS and the Crated Waste Assay Monitor (CWAM). The TMS is used to monitor uranium contamination of solid waste generated from Y-12, providing a means of segregating contaminated waste from sanitary/industrial waste. The CWAM provides reliable surveillance and waste characterization activities of waste streams containing fissile materials.

Also included in the Continuity of Operations is the implementation of conduct of operations principles, quality assurance standards, development of new training programs and other support areas required for the safe, compliant and efficient management of waste operations.

Activities planned for FY 1992 include continuing operation of facilities and functions described above. In addition to these facilities, the Environmental Support Facility will be started and operated, and some major projects and maintenance items not funded in previous years will be worked. These projects include sludge delisting efforts, DUOF engineering study and some capital project planning. The GPP initiated in FY 1992 will be TMS II and TMS I Upgrades.

If full funding of the waste tracking project continues, this system will come on-line in FY 1992. Capital equipment for FY 1992 includes waste characterization equipment and tanker cleaning equipment.

The existing beryllium stack monitors are outdated and are considered to be insufficient to use in demonstrating compliance with the National Emission Standards for Hazardous Air Pollutants (NESHAP) requirements. The Environmental Surveillance Upgrades (OR-208, priority 3-A) project will satisfy the Finding 3.5.1.3.7in the Compliance Assessment of Y-12 conducted by a DOE/HQ Tiger Team. A total of eight exhaust stacks will be upgraded and fitted with new beryllium monitors. Each stack requires varying degrees of modification and will be treated independently with respect to design and construction. Capital equipment funds will be utilized to specify and procure monitors and associated equipment. Operating funds will be used to modify/upgrade stacks and install platforms and ladders as necessary.

FY 1992 activities for OR-208 include the following:

- Design for upgrades will be completed.
- Construction of stack upgrades will be started and completed.
- Monitoring equipment will be installed and made operational.
- Operation of monitors will be turned over to the process area.

The continuity of operations processes must comply with TDEC and EPA regulations, such as RCRA hazardous waste provisions, TSCA PCB requirements, and DOE orders for wastes, including LLW. Waste characterization to facilitate proper treatment, storage and disposal is required under both Tennessee Rule 1200-1-11-.06(2)(d) and DOE Order 5820.2A, Chapter III, Section 3.d. DOE Order 5820.2A, Chapter III, Section 3.c(3), requires waste segregation to reduce volume and facilitate cost-effective treatment and disposal.

6.1.6.2 Resources - Standard industrial-grade operating and construction materials will be used.

6.1.6.3 Milestones

- Incorporate comments into SRD: DOE/OR (W208-01R) 4/91
- Provide safety assessment: DOE/OR (W208-02R) 5/91
- Provide planning for capital projects: DOE/OR (W226-03R) 9/91
- Perform continuity of operations process in safe, compliant, efficient manner: DOE/HQ (W226-01H) 9/91
  DOE/HQ (W226-02H) 9/92
- Design TMS II: DOE/OR (W226-05R) 11/91
- Provide project design: DOE/OR (W208-03R) 12/91
- Waste track phase I on-line: DOE/OR (W226-06R) 12/91
- Procurement of equipment: DOE/OR (W208-04R) 7/92
- Construction of upgrades: DOE/OR (W208-05R) 9/92

6.1.6.4 Funding

Table 6.1-7. WM (Continuity)
Fiscal Year Funding Summary, Y-12
($000)

ADS No.	1991	1992
OR-0208	800	505
OR-0226	11514	17540
Total	12314	18045

6.2 ORNL

6.2.1 Overview

6.2.1.1 Description - WM encompasses ongoing operation and upgrade of ORNL WM facilities needed to support programmatic missions of DOE. Additionally, it provides for management of wastes produced as a result of pioneering radiochemical operations and research that supported the early mission of defense programs and DOE predecessors. The mission of the WM program is to provide quality WM capability, protective of human health and the environment and in compliance with applicable regulatory requirements and improved operating procedures. This mission is carried out through strategic planning, development of new or upgraded facilities, and routine waste collection, treatment, storage, and disposal. Radioactive (LLW as well as TRU), hazardous, mixed radioactive and hazardous, medical/infectious, and solid sanitary/industrial wastes are managed. Waste forms include gases, liquids, sludges, and solids. WM operates 34 facilities and has a staff of about 100 people. In addition, a number of other ORNL and Energy Systems staff provide important support to WM activities.

ORNL provides continuous collection, treatment, and discharge of gaseous wastes, treats 150 million gallons per year of liquid radioactive wastes (not including sewage), and manages

about 750,000 cubic feet per year of solid radioactive, hazardous, mixed and sanitary/industrial wastes. The pending FFA for active LLLW tank systems will be implemented. Waste minimization activities will support a comprehensive program by providing leadership, guidance, technical support, coordination, tracking, and reporting for reduction of all categories of wastes. Capital equipment and GPPs for TSD facility upgrade or maintenance are provided. Line-item projects include two for implementation of the active LLLW tank systems requirements of the pending FFA, and one each for construction of the TRU Waste Handling and Processing Plant (WHPP), Waste Characterization and Certification Facility (WCCF), and Process Waste Treatment Plant (PWTP) replacement project, respectively.

The ORNL WM program is committed to bring facilities and operations into compliance with applicable regulations, guides, orders, and procedures in a timely manner and to maintain them in a state that is consistent with prevailing ES&H/QA goals and expectations. During the past several years, there have been many important accomplishments. In 1985, the ORNL WM operations program was established to provide needed centralized focus for ORNL waste operations.

The first annual ORNL Long-Range Environmental and Waste Management Plan was issued in December 1985. Operation of a dedicated WEAF also began in 1985 to characterize solid waste prior to disposal, enabling in-package classification as LLW or TRU as well as physical form. A new NPDES permit from the EPA was received in 1986, which covers compliance monitoring for 13 point-source outfalls, 30 miscellaneous discharges, and 130 area discharges. A stack and vent survey was completed in 1987 that evaluated over 2,000 potential air emission sources at ORNL preparatory to application for 110 air permits.

In 1988 a hazardous and mixed WM area was brought on-line to manage chemically hazardous wastes, characteristically hazardous wastes, and long-term storage of radioactive mixed waste. A centralized Waste Operations Control Center (WOCC) was constructed for computer-controlled, round-the-clock waste systems data analysis and operator control of the liquid and gaseous system operations, and was the first of a series of RCRA permitted solid waste storage facilities. These new storage facilities will replace the nonpermitted facilities plus allow storage of newly generated solid waste. Construction of an $18 million Nonradiological Wastewater Treatment Plant (NRWTP) was completed in 1989 and began operation in 1990. The NRWTP treats nonradioactive process wastes for removal of organics and heavy metals including chromium, cadmium, zinc, and mercury.

An Emergency Avoidance Solidification Campaign was completed in 1989, which solidified about 47,500 gallons of LLLW and made available critically needed liquid waste volume. An aggressive LLLW minimization campaign was maintained resulting in a reduction of the LLLW generation rate by about 60% from 1985 through 1990. The tumulus approach was successfully adapted as a means for greater confinement disposal of solid LLW. This technology was demonstrated in 1989. Operational scale use of this disposal technology was implemented in 1990. Waste acceptance criteria have been issued for liquid waste as well

as the next generation of tumulus disposal units. ORNL waste reduction accomplishments included routine preparation of annual reports, continuation of the aluminum recycling program, initiation of office paper and cardboard recycling program, monthly publishing of an ORNL recycling newsletter, and initiation of a study of copier performance using recycled paper.

In FY 1992, minimal funds will be available for waste minimization activities. Overall leadership of ORNL divisions will be provided by the WM Program and an update of the ORNL Waste Reduction Plan will be issued.

In FY 1992, funding for waste treatment activities will continue the routine operations of ORNL's Liquid and Gaseous Waste Operations Department (LGWOD); continue evaluation and enhancement of in-tank evaporation (ITE) process; continue support and conduct for LLLW solidification campaign; continue development of the long-term treatment for LLLW; and replacement of one of the evaporator vessels used for the concentration of LLLW.

There are two major waste treatment projects planned: a line item to construct a TRU Waste Handling and Packaging Plant (WHPP) (ADS OR-352) and a line item to upgrade the PWTP (ADS OR-355).

In FY 1992, some work will be accomplished on the WHPP CDR for validation. The WHPP line item schedule for FY 1994 will probably be delayed due to the need for better project definition and technology development.

In FY 1992, under ADS OR-344, surveillance operations will continue on the CH and RH-TRU and low-level wastes stored in SWSA 5N. The CH-TRU storage facilities in SWSA 5N will be closed, and CH-TRU waste will be moved to a new CH-TRU storage facility in SWSA 7. Surveillance operations will continue on the mixed waste facilities. A new mixed waste facility (Building 7668) will become operational. Construction will be completed for the TRU Storage Facilities (CH-TRU, WBS 4.39, RH-TRU Bunker, WBS 4.12 and 4.52).

In FY 1992, ADSs OR-347 and OR-348 will continue to provide for the routine disposal of solid wastes. Radioactively contaminated lead will be processed for reuse. Corrective action on the remaining 68 greater confinement disposal silos will be initiated.

The ORNL Continuity Activity includes five ADSs--OR-349, OR-350, OR-353, OR-378, OR-378AA, and OR-378AB. ADSs OR-349 and OR-350 provide for overall WM planning, GPP funding and project engineering support. ADS OR-353 is a FY 1994 line item project for a waste characterization and certification facility to assay wastes, as required, prior to disposal. ADS OR-378 implements requirements of the pending FFA as they pertain to the ORNL active LLLW tanks and tank systems. ADSs OR-378AA and OR-378AB are FY 1994 and FY 1995 line item projects to design and construct LLLW tank systems to implement the pending FFA.

In FY 1992 under ADSs OR-349 and OR-350, basic planning, engineering support, and GPP funding will be provided. The operating expense provided for these two ADSs is about two-thirds of the requested funding; therefore, many activities will have to be postponed.

Facility safety documentation for radioactive and hazardous waste treatment and disposal facilities will be revised in FY 1992. A number of upgrades for the LGWOD will be conducted including cathodic protection upgrades, transportation upgrades, and the upgrading of personnel training. Ongoing activities of the ORNL TRU Waste Program will also continue in FY 1992, and 13 new FY 1993 GPPs will be developed.

Under FY 1992 funding for ADS OR-378, upgrade and replacement project planning and implementation will continue. Secondary containment demonstrations, structural integrity assessments, and leak tests will be initiated. Contingency planning will also be continued. Management of the FFA capital projects, GPPs during systems definition, feasibility studies, and detailed design criteria will occur. Eight specific projects related to pending FFA will be pursued. Demonstration of source treatment to eliminate need for ORNL facilities access to LLLW system is not funded in FY 1992. Also, support for pending FFA contingency plans for facility decontamination is not funded.

6.2.1.2 Resources - Most resources are available as industrial equipment and supplies. However, some special-order equipment and uniquely trained personnel are necessary for remote handling of some waste.

6.2.1.3 Schedule & Milestones - Major milestones for ORNL WM activities include:

- Initiate operations in the SLLW/CH-TRU staging facility (Building 7879): DOE/HQ (W347-01H) 3/91
- Complete construction of interim WM facility (IWMF) (WBS 4.33): DOE/HQ (W349-09H) 9/91
- Issue annual ORNL waste reduction report: DOE/HQ (W356-04H) 3/92
- Issue report on characterization of stored mixed waste: DOE/HQ (W350-11H) 6/92

6.2.1.4 Funding

Table 6.2-1. WM Fiscal Year Funding Summary, ORNL
PUC ($000)

Category	1991	1992	1993	1994	1995	1996	1997
Minimization	300	925	3300	2500	2700	2600	2800
Treatment	6747	14146	20787	43850	82850	114900	106600
Storage	3350	2600	4620	2650	3100	3150	2700
Disposal	3740	6165	12465	13635	15600	17250	19400
Continuity of Operations	14127	30199	48124	60200	81300	71650	40700
Total WM	28264	54035	89296	122835	185550	209550	172200

Table 6.2-2. WM Fiscal Year Funding Summary, ORNL
VTL ($000)

Category	1991	1992	1993	1994	1995	1996	1997
Minimization	300	925	1600	500	800	800	800
Treatment	6747	14146	16621	17750	20550	28250	35700
Storage	3350	2600	420	1550	2000	2050	1600
Disposal	3740	6165	8055	13135	15100	16750	18900
Continuity of Operations	14127	30199	32051	29183	28832	34123	33171
Total WM	28264	54035	58747	62118	67282	81973	90171

6.2.1.5 Accomplishments - Waste minimization accomplishments through FY 1991 include: (1) completion of initial liquid waste systems analysis; (2) completion of interactive LLLW data base; (3) initial modeling of liquid systems using expert system to identify needed upgrades and predict impacts of source changes on final waste form; (4) identification of areas where treatability studies or upgrades are needed; (5) provision of liquid waste system data as needed to generators, WM, and Environmental Projects; (6) definition of requirements for several capital projects to reduce liquid waste generation; (7) reduction of LLLW generation by over 60% over 1985 rates; (8) preparation and updating of ORNL Waste Reduction Program Plan; (9) appointment of a Waste Reduction Representative network in 1985; (10) preparation and submittal of regulatory required annual Waste Minimization Report; (11) performance of study evaluating feasibility of substituting nonhazardous materials for hazardous ones in specific research applications; (12) performance of alternatives evaluation for replacement of ethylene glycol in chilled water system; (13) initiation of recycling program for aluminum cans, paper and cardboard recycling. The annual DOE/RCRA waste minimization report for 1990 was also prepared in FY 1991.

Waste treatment accomplishments through FY 1991 under ADSs OR-342 and OR-343 include start-up of the NRWTP on schedule in FY 1990, consistent operation within the NPDES permit; installation of primary ITE equipment, start-up of the process; and evaluation of its effectiveness in FY 1991; and LLLW solidification project planning, including award of contract in FY 1991 to conduct a second LLLW solidification project.

Accomplishments through FY 1991 on ADSs OR-352 and OR-366 include issuance of the WHPP CDR for approval. The accomplishments for the PWTP Upgrade (ADS OR-366) through FY 1991 for the GPP Title II design will be completed and construction will begin for the PWTP Process Improvements, WBS 3.38. No funding is provided for WHPP in FY 1991.

Accomplishments through FY 1991 under ADS OR-344 include the continued surveillance on the 2200 drums of CH-TRU and 300 casks of RH-TRU wastes stored in facilities in SWSA 5N and the 200 cubic feet of LLW contained in Buildings 7828 and 7829. Reviews to determine a suitable overpack for RH-TRU casks will be completed. Surveillance operations on the mixed waste stored in Building 7654 (less than/equal to 19,250 gal) and

7507W (less than/equal to 22,000 gal) will continue. The current amount of mixed waste placed in storage annually is approximately 38,000 lb based on mixed waste received from generators for FY 1988, FY 1989, and FY 1990. The construction of the TRU/SLLW Storage Facility (Building 7879) (WBS 4.26) was completed and operations began in March 1991. Construction start and continued project support will occur in FY 1991 for the RH-TRU Storage Bunker (WBS 4.12). Design will start and project support continue for the CH-TRU Storage Facility (WBS 4.39), the CWMD Class L-III/IV Storage Facility (WBS 4.37), and the RH-TRU Storage Facility (WBS 4.52). The design was completed on GPP, Expand Mixed Waste (WBS 4.21). The preliminary proposal for Bulk Radioactive Soil Disposal (WBS 4.24) will be complete.

Accomplishments in FY 1991 on ADS OR-389 involved all the management, planning, documentation, modification, construction, and coordination necessary to ensure the capability to receive Nuclear Fuel Services (NFS) waste and plutonium scrap material at ORNL in FY 1991. Program management activities of the NFS waste storage involved planning, scheduling, preparation of NEPA documentation, certification documents, QA planning, obtaining permits, and conducting the necessary readiness reviews. Operations activities of the NFS waste storage will involve preparation and modification of operational procedures, training operators, providing on-site inspector at NFS during operations, providing sampling and analysis, storage facility inspections, and the handling examination and movement of the packages of TRU waste and plutonium scrap. Storage facility costs include safety documentation, planning, design, and analysis necessary to support facility construction and modification.

Waste disposal accomplishments through FY 1991 include annual management of about 50,000 cu ft of SLLW; 300,000 lbs of hazardous waste; 40,000 lbs of mixed waste, and 700,000 cu ft of sanitary/industrial waste. The Active Sites Environmental Monitoring Program was put in place to ensure compliance with DOE Order 5820.2A. Demonstration of greater confinement disposal (GCD) techniques was begun in SWSA 6 in 1986. The GCD silos have been in use since 1986, and the Tumulus Disposal Demonstration unit was brought on line in FY 1988. The Tumulus II disposal facility for CH SLLW was completed in July 1990.

Major accomplishments through FY 1991 for ADSs OR-349, OR-350, include: issuance of ORNL WM plans to meet DOE Order 5820.2A requirements; development of certification plans for TRU and SLLW; development of generator training programs; development and updating of strategic plans for SLLW, process waste, gaseous waste, hazardous and mixed waste, and conventional waste; finalization and issue of controlled liquid waste acceptance criteria (WAC); development of draft certification plan for sanitary/industrial waste; progress toward establishment of drive-through radiation monitor for sanitary trash and recycled or surplus materials; limited engineering studies and development for capital projects to upgrade and replace the process waste treatment system; development of WAC for the IWMF; work toward identification and categorization of SLLW waste streams and development and refinement of applicable WAC; work toward identification and testing of

SLLW characterization techniques; preparation of sampling plan for mixed waste drums; initiation of sampling and analysis of stored mixed waste; support of on-going and prior year GPP capital projects; and provided engineering support for FY 1991 and FY 1992 GPPs.

Accomplishments through FY 1990 for the WCCF (ADS OR-353) included completion of Revision 1 of the SRD. The FS was finished in February 1990. No funding is being provided for support of ADS OR-353 in FY 1991 or FY 1992.

Accomplishments through FY 1991 for FFA activities (ADSs OR-378, OR-378AA, and OR-378AB) include determination and initial implementation of contingencies and upgrades required to keep needed portions of the active LLLW system in service; identification of portions of systems to be inactivated and initiation of activities to that end; initiation of leak test plans; and identification and preparation of required pending FFA 60- and 90-day deliverables. Planning activities were conducted in FY 1990 under ADS OR-349.

6.2.2 Waste Minimization

6.2.2.1 Description - This activity (ADSs OR-355 and OR-356) supports the development of a formal comprehensive waste reduction program at ORNL and also supports efforts aimed at specific waste categories. The comprehensive program provides leadership, guidance, technical support, coordination, tracking, and reporting for ORNL efforts for reduction of all categories of waste. The structure of the program provides an overall Waste Reduction Coordinator and divisional waste reduction representatives, who serve as focal points for waste reduction activities for their divisions. The approach of the program is to charge and empower line (division) managers with the responsibility for implementing waste reduction in their areas, including the establishment and tracking of progress toward goals.

The comprehensive ORNL program has a two-fold strategy: 1) identify major generators of major/problem waste streams and target them for reduction projects; and 2) educate and indoctrinate all employees on the benefits of and methodology for waste reduction. The first element should be able to achieve large reductions with a limited number of discrete projects. The second element should enable and encourage all employees to plan waste reduction into their activities and will affect the large number of small-scale activities ongoing and planned at ORNL. The comprehensive program also provides auditing/technical review.

Specific categories of waste are also targeted. These include systems evaluations for gaseous and liquid wastes. Waste segregation, process changes, improved housekeeping, substitution, recycling, and source treatment or pretreatment techniques are applied, as appropriate from the overall waste system perspective. Waste sources have been identified, some characterization work has been done, and a data base has been established for generation and systems configuration information. Process analyses are being conducted for major generators, and systems improvements are being recommended and implemented. WAC have been identified for each waste system.

In FY 1992, the LLLW data base will be updated with data obtained from generators and systems configuration updates, and WM staff and generators will be taught to use the data base to obtain information for planning and reporting purposes. FY 1992 activities also include updating the ORNL Waste Reduction Plan and preparation of the RCRA-required annual report. Multi-divisional projects, including potential additional recycling opportunities, will be identified and coordinated.

Drivers for the ORNL Waste Minimization Program include several laws, rules, and policies. The impending Agreement in Principle, Tennessee Hazardous Waste Management Rule 1200-1-11-.03, RCRA Section 3002, and DOE Order 5400.3 require waste minimization plans and/or programs for hazardous and radioactive mixed waste generating facilities. DOE Order 5820.2A requires DOE facilities to establish an auditable waste reduction program for LLW. DOE Order 5400.1 requires preparation of a waste reduction program plan, which must be reviewed annually and updated every three years. In addition, waste reduction is a best management practice to reduce risks and long-term costs and liabilities. Tiger Team findings cited the ORNL Waste Reduction Program as "inadequate," and the resulting corrective action plan will be supported partially by this activity.

6.2.2.2 Resources - Standard resources are generally expected to be sufficient. However, the need for innovative or semi-exotic materials or methods may be identified by material substitution or process change investigations.

6.2.2.3 Schedule & Milestones

• Issue letter report on updated LLLW WM strategy: DOE/OR (W356-01R)	4/91
• Issue draft technical memorandum (TM) report on long-term LLLW treatment development: DOE/OR (W355-01R)	9/91
• Issue draft (TM) report on long-term LLLW treatment development: DOE/OR (W356-02R)	9/91
• Issue draft ORNL standard practice procedure for waste reduction: DOE/OR (W356-03R)	2/92
• Issue annual ORNL waste reduction report: DOE/HQ (W356-04H)	3/92
• Conduct Energy Systems audit of ORNL waste reduction program: DOE/OR (W356-05R)	4/92
• Update ORNL waste reduction plan: DOE/OR (W356-06R)	5/92
• Update LLLW data base: DOE/OR (W355-02R)	6/92

6.2.2.4 Funding

Table 6.2-3 WM (Minimization)
Fiscal Year Funding, ORNL
($000)

ADS No.	1991	1992
OR-0355	105	250
OR-0356	195	675
Total	300	925

6.2.3 Waste Treatment

6.2.3.1 Description - The ORNL treatment activity encompasses routine treatment of liquid and gaseous wastes, not including sanitary sewage or coal yard runoff (ADSs OR-342, OR-343); and two major projects--a line-item to construct a TRU WHPP, ADS OR-352, and a line-item, along with GPP to upgrade the PWTP (ADS OR-366).

ADSs OR-342 and OR-343 provide programmatic appropriations from ER and WM (EM) and Energy Research for routine treatment of liquid and gaseous waste. Additional funding is also obtained through a direct user charge on waste generators other than these two DOE programs.

Waste treatment provides for round-the-clock operations of a number of collection, transfer, treatment, and storage systems for both liquid and gaseous wastes, with each of these systems involving several facilities. The LLLW system which collects, treats, and stores LLLW generated throughout the ORNL complex, (approximately 400,000 gallons/year) involves the operation of a network of numerous underground collection and storage tanks (both single and doubly contained), miles of piping, and an evaporator facility used to concentrate the wastes. These concentrated wastes are stored at the Melton Valley Waste Storage Facility, which has a storage capacity of about 380,000 gallons. A solidification facility is periodically used to solidify 50,000 gallon batches of LLLW in order to free storage space.

The Process Waste System collects, transfers, and treats approximately 75 million gallons of slightly contaminated process waste generated throughout the ORNL reservation. After collection, the waste is treated through the PWTP, a 200 gal per minute treatment facility utilizing cation exchange as its primary treatment process. This waste stream is then combined with several other waste streams and treated at the NRWTP, a 760 gal per minute treatment facility which utilizes clarification for removal of heavy metals, air stripping for the removal of volatile organics, and activated carbon adsorption for the removal of nonvolatile organics and mercury. Approximately 150 million gal of wastewater/year will be treated at this facility. The treated waste stream discharges to White Oak Creek through a NPDES permitted, monitored discharge point.

The 3039 stack area consists of a series of electric and steam turbine-driven fans that maintain a negative pressure environment in numerous radioactively contaminated facilities. There are two separate systems at this treatment facility; the cell ventilation system and the off-gas system, which treat approximately 159 cubic feet per minute and 4,000 cubic feet per minute, respectively.

The waste operations control center (WOCC) is a facility that provides for computerized monitoring and is the operating brain center of the liquid and gaseous waste operations.

In FY 1991, the design of GPP WEAF Upgrade (ADS OR-342) will be complete. Construction will start in FY 1992 and the project will be complete in FY 1993.

In FY 1992, ADSs OR-342 and OR-343 will continue (1) the routine operations of ORNL's LGWOD, (2) evaluation and enhancement of ITE process, (3) support and implementation for the LLLW solidification campaign, (4) development of the long-term treatment strategy for LLLW, and replacement of one of the LLLW evaporators.

Two major waste treatment projects are planned: a line item to construct a TRU WHPP (ADS OR-352) and a line item and supporting GPPs to upgrade the PWTP (ADS OR-366). WHPP will provide processing and treatment for liquid/sludge RH-TRU contents in LLLW storage tanks at ORNL as well as RH-TRU solid waste stored at ORNL. WHPP is designated in the DOE Master Plan for defense TRU waste as the facility to process, package, certify and ship DOE's RH-TRU waste to the Waste Isolation Pilot Plant (WIPP) in Carlsbad, New Mexico. ADS OR-366 provides for new treatment facilities for radioactive process wastewater. The existing PWTP, which treats process wastewater for removal of cesium and strontium has limited capability for removal of these radionuclides and is nearing the end of its useful life. The GPP proposed for this activity will permit continued operation of the existing facility to meet the requirements of ORNL's NPDES permit and the ALARA principles of DOE Order 5400.5. A line-item project is proposed for completion by the late 1990s that will replace the aging PWTP and will have capability to meet more stringent state and EPA NPDES requirements and to remove nitrates and Co-60 (as well as Cs-137 and Sr-90) from waste streams generated by facilities expected to be in operation after the year 2000. Removal of Co-60 is necessary to prevent contamination of the PWTP and NRWTP as well as prevent release of this radionuclide to surface streams.

In FY 1992, some work will be accomplished on the WHPP CDR for validation. Studies are under way to determine how to phase development of the project to coincide with technology development and establishment of WIPP waste acceptance criteria. Funding in FY 1992 is about one-sixth of the requirements level. For ADS OR-366, PWTP improvement activities in FY 1992 funds will be used to support preparation of the feasibility study and system requirements document, and initiate the conceptual design report for the FY 1995 PWTP line-item project. Construction will be completed on the GPP PWTP process improvements (WBS 3.38). Title II design will be completed, and construction will begin for the GPP PWTP wastewater feed capacity increase (WBS 3.93).

The design criteria will be completed, and Title II design will begin for the GPP increase PWTP Cs-137 removal capacity (WBS 3.26).

Waste treatment activity drivers ensure that the treatment facilities are operated in a manner that precludes releases which are detrimental to the environment, safety or health. The regulatory drivers are the CWA, CAA, RCRA, numerous DOE Orders, NPDES and Occupational Safety and Health Act (OSHA) Standards. The driver for the OSHA Sludge Volume Reduction GPP is DOE Policy "Minimization of Waste Production."

6.2.3.2 Resources - Routine treatment operations use standard industrial equipment, and operators are trained on-site. Technology development activities will likely use innovative equipment or require innovative use of standard equipment; however, no constraints are foreseen. Project development activities are routine and have no special resource considerations.

6.2.3.3 Schedule & Milestones -

- Complete detailed design of PWTP process improvements, WBS 3.38: DOE/OR (W366-01R) 2/91
- Distribute liquid and gaseous waste operations operating summary report for Calendar Year 1990. This report will summarize waste volumes, facility maintenance, and upgrades: DOE/HQ (W342-01H) 3/91
- Prepare optimization report covering the first year of operation of the NRWTP per NPDES requirements: DOE/OR (W342-02R) 6/91
- Prepare optimization report covering the first year of operation of the NRWTP per NPDES requirements: DOE/OR (W343-01R) 6/91
- Issue letter report summarizing ITE performance and documenting recommendation for ITE strategy: DOE/OR (W342-03R) 7/91
- Complete external and internal inspection of the 3039 stack: DOE/OR (W342-04R) 9/91
- Complete the design of WEAF upgrade GPP (WBS 4.23): DOE/OR (W342-05R) 6/92
- Provide regulatory compliant operation of the treatment system with an operational goal of 75 million gallons of wastewater treated at the PWTP; 150 million gallons of wastewater treated at the NRWTP: DOE/HQ (W342-06H) 9/91
- Provide regulatory compliant operation of the LLLW collection, transfer, evaporator, and storage system with an operational goal of 250,000 gallons of LLLW evaporator throughput: DOE/HQ (W342-07H) 9/91

- Provide regulatory compliant operation of the 3039 central stack area with an operational goal of continuous ventilation service to ORNL facilities except during periods of scheduled routine maintenance: DOE/HQ (W342-08H) 9/91
- Complete external inspection of the 3039 stack: DOE/OR (W343-02R) 9/91
- Provide regulatory compliant operation of the process waste collection, transfer, and treatment system with an operational goal of 75 million gallons of wastewater treated at the PWTP; 150 million gallons of wastewater treated at the NRWTP: DOE/HQ (W343-03H) 9/91
- Provide regulatory compliant operation of the LLLW collection, transfer, evaporator, and storage system with an operational goal of 250,000 gallons of LLLW evaporator throughput: DOE/HQ (W343-04H) 9/91
- Provide regulatory compliant operation of the 3039 central stack area with an operational goal of continuous ventilation service to ORNL facilities except during periods of scheduled routine maintenance: DOE/HQ (W343-05H) 9/91
- Complete construction of PWTP process improvements (WBS 3.38): DOE/OR (W366-02R) 12/91
- Distribute liquid and gaseous waste operations operating summary report for CY 1991. This report will summarize waste volumes, facility maintenance, and upgrades: DOE/HQ (W342-09H) 3/92
- Distribute liquid and gaseous waste operations operating summary report for CY 1991. This report will summarize waste volumes, facility maintenance, and upgrades, etc.: DOE/HQ (W343-06H) 3/92
- Provide regulatory compliant operation of the process waste collection, transfer, and treatment system with an operational goal of 75 million gallons of wastewater treated at the PWTP; 150 million gallons of wastewater treated at the NRWTP: DOE/HQ (W342-10H) 9/92
- Provide regulatory compliant operation of the LLLW collection, transfer, evaporator, and storage system with an operational goal of 250,000 gallons of LLLW evaporator throughput: DOE/HQ (W342-11H) 9/92
- Provide regulatory compliant operation of the 3039 central stack area with an operational goal of continuous ventilation service to ORNL facilities except during periods of scheduled routine maintenance: DOE/HQ (W342-12H) 9/92

- Provide regulatory compliant operation of the process waste collection, transfer, and treatment system with an operational goal of 75 million gallons of wastewater treated at the PWTP; 150 million gallons of wastewater treated at the NRWTP: DOE/HQ (W343-07H) 9/92
- Provide regulatory compliant operation of the LLLW collection, transfer, evaporator, and storage system with an operational goal of 250,000 gallons of LLLW evaporator throughput: DOE/HQ (W343-08H) 9/92
- Provide regulatory compliant operation of the 3039 central stack area with an operational goal of continuous ventilation service to ORNL facilities except during periods of scheduled routine maintenance: DOE/HQ (W343-09H) 9/92

6.2.3.4 Funding

Table 6.2-4 WM (Treatment) Fiscal Year Funding, ORNL ($000)

ADS No.	1991	1992
OR-0342	3439	6575
OR-0343	3308	4221
OR-0352	0	1000
OR-0366	0	2350
Total	6747	14146

6.2.4 Waste Storage

6.2.4.1 Description - ADS OR-344 provides for the routine storage and associated management of CH-TRU waste, RH-TRU waste, SLLW that will be classified as either CWMD Class L-III or L-IV and stored at ORNL, and SLLW with surface dose rates less than 50 mrem/h that will be stored at K-25. Activities include routine inspections of storage facilities; repair and overpack of damaged or failed waste containers; repackaging of wastes to meet regulatory requirements for transport and disposal; completion of inventory work-off and update of waste certification data package necessary for transport of waste to final disposal; and packaging of wastes to meet regulatory requirements and transport to K-25 for storage. Management of wastes generated as a result of ER activities is not included in the existing scope of this ADS. This activity is expected to be added when waste generation estimates and commensurate budget allocation are made available.

Present disposal plans for the CH-TRU and RH-TRU wastes are to repackage the materials at ORNL in proposed facilities and ship these materials to the WIPP. The ultimate plan for the CWMD Class L-III/IV waste is to ship the waste to a DOE disposal facility.

However, in the interim, Class L-III/IV facilities will be constructed in SWSA 7 for long-term storage of these materials. The disposal of the wastes identified is not expected to occur until after FY 2000. Mixed waste is being stored until a suitable disposal process/facility is identified. SLLW presently stored at K-25 will be disposed of in CWMD tumulus facilities beginning FY 1997.

GPPs essential to the waste storage operations are the RH-TRU Storage Bunker (WBS 4.12), CH-TRU Waste Storage Facility (WBS 4.39), RH-TRU Waste Storage Facility II (WBS 4.52), CWMD Class L-III/IV Storage Facility (WBS 4.37), and CWMD Class L-III/IV Above-Ground Storage Facility (WBS 4.47). This task also provides comprehensive facility upgrade planning, design, and construction to ensure continued safe storage of radioactive, mixed, and hazardous wastes in accordance with EPA regulations and DOE orders. Support for design and construction of these projects and completion of FY 1989 and FY 1990 Waste Storage GPPs is included in ADS OR-349, Continuity of Operations (WM Operations). The TRU waste storage facilities require EAs for NEPA compliance.

Under ADS OR-389, coordination, preparation, receipt, characterization, certification to transportation and waste acceptance criteria, and storage of the Nuclear Fuel Services (NFS) TRU mixed waste stream and plutonium scrap material, including all supporting documentation and related activities, will be a part of this activity.

In FY 1992, surveillance operations will continue on the CH-TRU, RH-TRU, and LLW stored in SWSA 5N (ADS OR-344). The CH-TRU storage facilities in SWSA 5N will be closed, and CH-TRU waste will be moved to a new CH-TRU storage facility in SWSA 7. Surveillance operations will continue on the mixed waste facilities. A new mixed waste facility (Building 7668), WBS 4.21, will be completed and become operational. K-25 storage facilities will continue to be used for the storage of SLLW with surface dose rates less than 50 mrem/h. Additional GPPs to be supported in 1992 include (1) the Bulk Contaminated Soil Facility (WBS 4.24), which will store contaminated soil that will be generated during construction from various projects, such as the FFA Capital Projects, and (2) the CWMD Class L-III/IV Above-Ground Storage Facility (WBS 4.47), which will store ORNL's CH Class L-III/IV solid waste until some time in the future when it can be shipped to a DOE repository. Construction of the TRU Storage Facilities (CH-TRU, WBS 4.39, RH-TRU Bunker, WBS 4.12 and 4.52) will be completed.

In FY 1993, under ADS OR-389, suggested storage activities will continue, including completing the new NFS waste storage facility, transfer of waste into the new facility, and receipt of the remainder of the NFS waste and plutonium scrap material. The NFS waste storage activities will include inspections, sampling and analysis, examination, operations, completion of facility construction and modifications, readiness reviews, handling and transfer of the packages of waste and plutonium scrap from NFS. Administration and management of ADS OR-389 has been transferred to DOE/HQ effective in FY 1992. DOE has a contractual commitment with NFS.

Drivers for ORNL waste storage activities (ADS OR-344) include RCRA and DOE Order 5820.2A. For storage of NFS waste (ADS OR-389), DOE/HQ guidance and regulations apply because part of the waste is mixed. The consequences of improper storage of these materials could potentially be near-term impact to the environment and could result in fines and/or lawsuits as a result of RCRA or DOE Order violations. There are no alternatives to ADS OR-344. If funding is not provided, ORNL will not be able to provide compliant, protective storage for hazardous and radioactive wastes.

6.2.4.2 Resources - Routine storage operations use standard industrial equipment, and operators are trained on-site. Project development and implementation activities are routine and have no special resource considerations.

6.2.4.3 Schedule & Milestones

- Complete storage of graphite reactor storage pool sources in SWSA 5N: DOE/OR (W344-01R) 11/90
- Complete review for determining suitable overpack for RH-TRU casks: DOE/HQ (W344-02H) 9/91
- Maintain Compliant Surveillance Operations on CH-TRU, RH-TRU, and Mixed Waste Facilities: DOE/HQ (W344-04H) 9/91
- Start construction of RH-TRU waste storage facility (WBS 4.12): DOE/OR (W344-05R) 1/92
- Start design on the RH-TRU waste storage facility II (WBS 4.52): DOE/OR (W344-06R) 1/92
- Start design of Class III/IV storage facility (WBS 4.37): DOE/OR (W344-07R) 1/92
- Maintain Compliant Surveillance Operations on CH-TRU, RH-TRU, and Mixed Waste Facilities: DOE/HQ (W344-08H) 9/92

6.2.4.4 Funding

Table 6.2-5 WM (Storage) Fiscal Year Funding, ORNL ($000)

ADS No.	1991	1992
OR-0344	350	2600
OR-0386	0	0
OR-0389	3000	0
OR-0390	0	0
Total	3350	2600

6.2.5 Waste Disposal

6.2.5.1 Description - The ORNL Waste Disposal activities are included in two ADSs, OR-347 and OR-348) funded by ER/WM and Energy Research, respectively. They provide for disposal of radioactive solid waste, hazardous and mixed wastes, solid, and semi-solid sanitary/industrial wastes. Additional funding is also obtained through a direct user charge on waste generators other than these two DOE programs. Funding for management of wastes generated as a result of ER activities is not included.

This activity provides support for the implementation of improved SLLW disposal technologies through full-scale demonstrations in SWSA 6 at ORNL as well as support for capital upgrades for disposal facilities. In addition, this activity provides basic support for the management of solid wastes generated as a result of surveillance and maintenance functions. Management of wastes generated as a result of ER activities is not included in the existing scope of this ADS. This activity is expected to be added when waste generation estimates and commensurate budget allocation are made.

The basic WM support activities involve ensuring waste acceptance criteria are met plus collection, staging, inspection, and disposal of the solid wastes in regulatory approved facilities. Solid waste disposal occurs in SWSA 6, hazardous waste disposal is provided through off-site commercial vendors, and sanitary wastes are disposed of at Y-12.

The radioactive solid waste (RSW) covered by this activity includes CH and RH-TRU, CH and RH-LLW, U-235 (fissile), biological, asbestos, and suspect waste. The RSW materials are packaged, collected, nondestructively examined, and either stored retrievably or disposed of as detailed above. Funding for storage operations is covered in ADS OR-344.

The hazardous and mixed wastes are classified in accordance with applicable Federal and State regulations, packaged, collected, and then stored in RCRA-permitted storage facilities until they are either shipped to an off-site permitted commercial disposal facility, disposed on-site by detonation (explosive and shock-sensitive wastes), or, as in the case of mixed waste, held in long-term storage pending determination of acceptable treatment/disposal processes. Funding for storage operations is covered in ADS OR-344.

The sanitary/industrial wastes, which contain no radioactive or hazardous materials or free liquids, include filter cake from the coal yard runoff treatment system, fly ash from the ORNL Steam Plant, general refuse collected in trash cans and dumpsters, sewage sludge, and construction debris. These materials are collected and disposed in the Y-12 Plant Centralized Sanitary Landfill II.

Construction will begin for SWSA 6 staging area upgrade (WBS 4.40) and SWSA 6 improvements (WBS 4.29) during FY 1991. Also, construction will be completed for the first IWMF Tumulus pad (WBS 4.33). Project support for design and construction of these projects is included in ADS OR-349, Continuity of Operations (WM Operations).

In FY 1992, ADSs OR-347 and OR-348 will continue to provide for the routine disposal of solid wastes. Radioactively contaminated lead will be processed for reuse. The IWMF, located in SWSA 6, will be utilized for the disposal of CWMD Class II waste. The materials previously placed in fissile and high-range wells may require interim storage in appropriate generator facilities prior to the CWMD Class III/IV waste facility becoming operational in late FY 1992 or FY 1993. Options for the disposal of sanitary/industrial waste that will be reviewed in FY 1991 as a result of Y-12's Centralized Sanitary Landfill II being filled to capacity could result in the disposal of these materials in a commercial landfill. Corrective action on the remaining 68 silos will be initiated.

Drivers for ADSs OR-347 and OR-348 activities are the provisions of RCRA and DOE Order 5820.2A relating to the disposal of solid wastes.

6.2.5.2 Resources - Resources needed for disposal operations and project development activities are standard.

6.2.5.3 Schedule & Milestones

• Initiate operations in the SLLW/CH-TRU staging facility (Building 7879): DOE/HQ (W347-01H)	3/91
• Initiate operations in the SLLW/CH-TRU staging facility (Building 7879): DOE/OR (W348-01R)	3/91
• Provide regulatory compliant operation of solid waste operations facilities with the following operational goals for the disposal and/or storage of solid wastes based on FY 1990 generation rates: DOE/HQ (W347-02H)	9/91
a. SLLW (cu ft) 38,000	
b. Hazardous (lb) 20,000	
c. Sanit./Indus. (cu ft) 630,000	
• Provide regulatory compliant operation of solid waste operations facilities with the following operational goals for the disposal and/or storage of solid wastes based on FY 1990 generation rates: DOE/HQ (W348-02H)	9/91
a. SLLW (cu ft) 38,000	
b. Hazardous (lb) 250,000	
c. Sanit/Indus. (cu ft) 630,000	
• Start construction of SWSA 6 improvements: DOE/OR (W347-03R)	6/92
• Start construction of SWSA 6 staging area upgrade (WBS 4.40): DOE/OR (W347-04R)	6/92

- Provide regulatory compliant operation of solid waste operations facilities with the following operational goals for the disposal and/or storage of solid wastes based on FY 1991 generation rates: DOE/HQ (W347-05H) 9/92
  a. SLLW (cu ft) 38,000
  b. Hazardous (lb) 250,000
  c. Sanit./Indus. (cu ft) 630,000
- Provide regulatory compliant operation of solid waste operation facilities with the following operational goals for the disposal and/or storage of solid wastes based on FY 1990 generation rates: DOE/HQ (W348-03H) 9/92
  a. SLLW (cu ft) 38,000
  b. Hazardous (lb) 250,000
  c. Sanit/Indus. (cu ft) 630,000

6.2.5.4 Funding

Table 6.2-6 WM (Disposal) Fiscal Year Funding, ORNL ($000)

ADS No.	1991	1992
OR-0347	1173	3265
OR-0348	2567	2900
Total	3740	6165

6.2.6 Continuity of Operations

6.2.6.1 Description - The ORNL Continuity Activity includes five ADSs—OR-349, OR-350, OR-353, OR-378, OR-378AA, and OR-378AB. ADSs OR-349 and OR-350 provide for overall WM coordination including planning, waste certification, waste characterization, capital equipment, GPP funding and project support. ADS OR-353 is a FY 1994 line item project for a waste characterization and certification facility to assay wastes, as required, prior to disposal. ADS OR-378 implements requirements of the pending FFA as they pertain to the ORNL active LLLW tanks and tank systems. ADSs OR-378AA and OR-378AB are FY 1994 and FY 1995 line-item projects to design and construct LLLW tank systems to implement the pending FFA.

Activities in ADSs OR-349 and OR-350 include strategic planning; coordination/integration of planning, projects, and operational activities; waste certification; waste characterization and treatment development; upgrades to existing waste operations to meet existing or expected environmental, safety, and health requirements; capital project support of environmental projects, and the ORNL TRU waste program.

Strategic planning efforts involve developing and refining long-range WM goals based on needs and requirements; assessing existing capabilities and constraints; and identifying and coordinating projects and activities to implement strategic plans and meet goals. Continuity activities provide for communication and coordination of WM activities among involved organizational elements to ensure consistent implementation of strategic planning as it evolves. These activities are jointly funded by ADSs OR-349 and OR-350. These activities also support ORNL Certification Programs for TRU, hazardous, mixed, liquid, and sanitary wastes. The overall goals of the Program are to develop and document waste acceptance criteria that include all regulatory considerations for each waste category and to ensure that wastes are segregated and packaged to meet these criteria.

A fourth activity supported by these ADSs is waste characterization and treatment development. The fifth item supports solid waste operations which includes revision of facility safety documentation, cleanup of storage facilities, equipment modifications, and operational improvements. The sixth item supports upgrade activities in waste operations, including safety documentation upgrades, cathodic protection upgrades, transportation upgrades, the upgrading of personnel training, NRWTP safety upgrades, remediating the problem of sludge buildup in the evaporator service tanks, and the upgrade of the WC-10 pump pit. The seventh item includes project support activities that provide environmental projects and engineering support to manage capital, GPPs during systems definition, feasibility studies, detailed design criteria, detailed design, procurement, and construction. The principal elements of this activity include determination of the method of accomplishment for design, procurement, and construction; environmental projects staff support, including monitoring of capital projects progress, quality assurance, and safety documentation, and interfaces; coordination with facility operators including preoperational testing and procedure development; and coordination of supporting documentation. The eighth activity provides the management of the ORNL TRU Waste Program, and the coordination of these activities with other sites as required. This includes coordination with WIPP, participation in national working groups and task forces, and preparation of certification plans.

ADS OR-353 will provide a replacement structure for the WEAF. Characterization and certification are essential steps in the preparation of SLLW for disposal. DOE Order No. 5820.2A requires that an assay be performed on waste prior to disposal to verify that it meets the established WAC. Currently, ORNL-generated radioactive waste, including CWMD Class II waste, is being assayed in the WEAF, and housed in an inadequate facility. Transfer of containers of waste from one assay station to another are performed manually, which increases significantly the radiation dose commitment and is not consistent with ALARA principles and requirements. There is no room for installation of materials-handling equipment or adding equipment as certification requirements change. A new facility, the WCCF, is necessary to fulfill worker ALARA requirements and provide proper waste handling assay and examination equipment for wastes to be disposed of in the central waste disposal facility, as well as for other solid radioactive wastes generated at ORNL.

ADSs OR-378, OR-378AA, and OR-378AB will implement requirements of the FFA as they pertain to the ORNL active LLLW tanks and tank systems. Included also are preliminary estimates of operating and capital resources needed for contingency actions if portions of the tank systems must be removed from service before replacement capability is available.

The ORR was placed on the NPL on December 21, 1989, and an FFA between OR, EPA, and TDEC is pending. The pending FFA includes requirements related to the upgrade of LLLW Tank System(s) at ORNL. These new requirements include secondary containment, leak detection, cathodic protection, and materials compatibility. The LLLW system at ORNL comprises extensive underground piping and collection storage tanks. Four categories of tank systems were established by the pending FFA: new or replacement tank systems, existing tank systems with secondary containment, existing tank systems without secondary containment, and inactive tank systems. The pending FFA states that all newly constructed underground tanks and associated piping must be doubly contained and must meet leak detection requirements. Existing singly contained systems must pass regular leak tests and have planned replacements to stay in interim operation. Existing doubly contained systems that do not meet the new standards must pass regular leak tests and have planned replacement or upgrade systems to stay in interim operation. If any of these systems fail the leak detection tests, they must be repaired immediately or taken out of service. All singly contained systems that are known to leak must be removed from service when the pending FFA is signed. Some of the waste stored in inactive tanks must be removed; removal will almost certainly be by the use of the active LLLW system. This ADS responds to the pending FFA requirements for the active ORNL LLLW system. Primary activities include LLLW system definition; waste characterization; development of the pending FFA required documents; structural integrity assessments, leak testing and documentation for tank systems; risk and alternative assessments; contingency and upgrade planning for the active tank systems; tank system repair; monitoring and maintenance; and removal from service (of all systems not meeting requirements). ADSs OR-378AA and OR-378AB are FY 1994 and FY 1995 line-item projects which will design and construct new LLLW tank systems that will implement the pending FFA requirements as they pertain to ORNL. The expense portion of this project is described in ADS 378 which includes the requirements definition, CDR, and design criteria.

In FY 1992, basic planning, engineering support, and GPP funding will be provided (ADSs OR-349 and OR-350) including accomplishment of the following activities: (1) continued adjustment of strategic planning; (2) assessment of special case waste in storage at ORNL; (3) update TRU and SLLW WM strategy documents; (4) develop strategy for managing large volumes of contaminated soil; (5) update of certification documents for CH and RH-TRU waste; (6) annual independent technical reviews of ORNL TRU waste certification program; (7) certification of stored mixed waste to meet WAC for radioactive mixed waste treatment, storage, and disposal facilities; (8) documentation of a liquid waste certification program plan; (9) Identification of and grouping by treatability of stored mixed waste that cannot meet TSCA Incinerator WAC; (10) partial update of LLLW data base with waste generation rates and characterization data and system configuration changes; (11) issuance

of WAC for the Gaseous Waste Certification Program; (12) implementation of comprehensive plan for certification of sanitary/industrial waste; (13) elimination of suspect waste category of SLLW; (14) identification of strategic plan for coming into compliance with new CAA; (15) update of certification documents for CH and RH-TRU waste; and (16) support for WIPP WAC Certification Committee audit of the ORNL TRU Program.

Facility safety documentation for radioactive and hazardous waste treatment and disposal facilities will be revised in FY 1992. A number of upgrades for the LGWOD, will be conducted including cathodic protection upgrades, transportation upgrades, the upgrading of personnel training.

Ongoing activities of the ORNL TRU Waste Program will continue in FY 1992, including interfaces with WIPP on the waste acceptance criteria, certification planning, and other activities as necessary; continued engineering studies and development work in support of capital projects to upgrade and replace process waste treatment systems. The Environmental Projects Section will continue to identify and develop environmental projects in this subtask. This activity will be performed in cooperation with long-range strategies for WM within ORNL. The specific projects related to environmental projects will vary as additional strategy and needs are developed. This information will be reported monthly. GPPs that start in FY 1993 have systems requirements, preliminary engineering, safety analysis, environmental documentation (NEPA compliance activity), and an initial QA evaluation performed in FY 1992. Projects which are proposed for FY 1993 include the following: WBS 4.32 - CH-TRU Repackaging Facility (FY 1993 EW GPP)(Preliminary Proposal Preparation); WBS 4.53 - IWMF Upgrade (FY 1993 EW GPP)(Preliminary Proposal Preparation); WBS 2.05 - Vent System 3510/4500 (FY 1993 EW GPP)(Preliminary Proposal Preparation); and WBS 3.92 - Manhole Monitors - PW (FY 1993); Pretreatment REDC LLW (WBS 4.54); Pretreatment FPDL (3517) (WBS 3.98); LLLW Treatment Alternatives (WBS 3.35); Contaminated Sump Pumping mod. (WBS 3.83); Zeolite Dewatering Station (WBS 4.58); Filter Pits Upgrade (WBS 2.29); Certification/Segregation of Newly Generated Solid Waste (WBS 4.38); NRWTP Access Controls (WBS 3.95); and 3108 Filter Pit Enclosure (WBS 2.30).

Mixed waste work under ADSs OR-349 and OR-350 is driven by compliance with TSCA mandates and RCRA requirements for waste characterization and LDR waste storage and treatment. A Tiger Team finding regarding LDR waste storage is an additional driver for the mixed waste activities. Radioactive WM activities are driven by requirements of DOE orders, primarily DOE Order 5820.2A, which governs radioactive waste generation, characterization/certification, storage, treatment and disposal. Liquid waste activities are driven by compliance with ORNL's NPDES permit under the CWA and with DOE orders. Compliance with new CAA provisions has potential impacts on all categories of waste. Operation according to Best Management Practices is also a goal of all activities supported by these two ADSs.

No funding is being provided to support the WCCF (ADS OR-353) in FY 1991 and FY 1992.

Required deliverables for the pending FFA (ADSs OR-378, OR-378AA, and OR-378AB) will include schedules for written secondary containment design demonstrations, plans and schedules for removing all tank systems which do not meet secondary containment standards from service, schedule for leak detection tests, and schedule for periodic review and revision of structural integrity assessments.

Methods for performing leak tests and structural integrity assessments are being developed. Projects will be implemented to upgrade and/or replace singly contained tank systems. Emphasis will be placed on the tank systems which will be taken out of service when the pending FFA is signed. Contingency plans will be developed for systems which may be taken out of service before replacements can occur. Options being implemented include local collection and transport of waste, i.e., bottling or trucking to central LLLW system, source treatment, waste reduction at source and process relocation.

The pending FFA requirements pertaining to active LLLW systems will facilitate upgrades and improvements in a number of existing ORNL facilities. This compliance program (OR-0378, priority 2) will consist of a FY 1994 line item, a FY 1995 line item, and a number of GPPs along with expense funding. Principal activities scheduled to occur in FY 1991 for the FY 1994 line item Bethel Valley FFA Upgrade, WBS 3.31, are completion of a system requirements document, a feasibility study, and initiation of a CDR. Funding for the line item will cover the design, procurement, and construction of the project (ADS OR-378AA). Activities for the GPPs for FY 1991 (FFA Compliance Work I, WBS 3.28, 4500 LLW Area Upgrade, WBS 3.96, 3000 LLW Area Upgrade, WBS 3.02, ORR/BSR LLW Upgrade, WBS 3.79, High Flux Isotope Reactor (HFIR) LLW System Upgrade, WBS 3.01, and Building 3047 Trucking Station, WBS 3.03) are functional requirements documents, preliminary proposals, and preparation of the support documentation (QA, Safety, NEPA compliance, and risk analysis).

Under FY 1992 funding for ADS OR-378, upgrade and replacement project planning and implementation will continue. Secondary containment demonstrations, structural integrity assessments, and leak tests will be initiated. Contingency planning will also be continued.

Management of the pending FFA capital projects, GPPs during systems definition, feasibility studies, and detailed design criteria will occur. Activities include writing, review, and approval of functional/systems requirements documents; preliminary proposals based on studies and cost estimates for DOE approval, including the determination of the method of accomplishment for design, procurement and construction; environmental program staff support, including monitoring of capital projects progress, quality assurance, and safety documentation and interfaces; coordination with facility operators including pre-operational testing and procedure development; and coordination of supporting documentation.

The specific environmental projects related to the pending FFA are:

WBS	Title	Phase
3.28	FFA Compliance Work I	Design
3.96	4500 Area LLW Upgrade	Design
3.02	3000 Area LLW Upgrade	Design
3.79	ORR/BSR LLW Upgrade	Design
3.01	HFIR LLW Upgrade	Design
3.03	Building 3047 Trucking Station	Design
3.85	FFA Compliance Work II	Requirements
3.35	LLLW Treatment Alternative	Requirements

The CDR, QA, safety documentation, and the NEPA compliance requirements for the FY 1994 line item, Bethel Valley FFA Upgrade, WBS 3.31, will be completed. The line item project will then be validated in the summer of 1992. The system requirements document, feasibility study for the FY 1995 line item, FFA LLW System Upgrade, will be completed, and the CDR, safety, QA, and environmental documentation are to be initiated. The line item funding for these two projects is in ADS OR-378AA and OR-378AB. All projects except one GPP (WBS 3.03) are new requests. This increased the amount of GPP funding requested from $500K to $3,000K.

Drivers for ORNL continuity activities are many. Mixed waste work is driven by compliance with TSCA mandates and RCRA requirements for waste characterization and LDR waste storage and treatment. A draft Tiger Team finding regarding LDR waste storage is an additional driver for the mixed waste activities of this ADS. Radioactive WM activities are driven by requirements of DOE Orders, primarily DOE Order 5820.2A, which governs radioactive waste generation, characterization/certification, storage, treatment and disposal. Liquid waste activities are driven by compliance with ORNL's NPDES permit under the CWA and with DOE Orders. Compliance with new CAA provisions has potential impacts on all categories of waste. Operation according to Best Management Practices is also a goal of all activities.

Under the pending FFA, drivers are tri-party agreements, and DOE Tiger Team findings.

6.2.6.2 Resources - Routine activities use standard industrial equipment, and operators are trained on-site. Project development and implementation activities have no special resource considerations.

6.2.6.3 Schedule & Milestones

- Complete design of manhole for process waste, WBS 3.50: DOE/OR (W349-01R) 11/90

- Prepare planning base letter for FY 1992 EW GPPs: DOE/OR (W349-02R) 12/90
- Prepare planning base letter for FY 1992 EX GPPs: DOE/OR (W350-01R) 12/90
- Issue draft WAC for IWMF: DOE/OR (W350-02R) 1/91
- Issue letter report documenting closure of findings from previous TRU waste certification program audits: DOE/OR (W349-03R) 2/91
- Issue letter report on updated LLLW WM strategy: DOE/OR (W349-04R) 4/91
- Start design of BSR process drain segregation, WBS 3.89: DOE/OR (W350-03R) 5/91
- Complete design of wastewater piping replacement, WBS 3.30: DOE/OR (W349-05R) 9/92
- Issue letter report on characterization of stored mixed waste: DOE/HQ (W349-06H) 7/91
- Issue letter report on characterization of stored mixed waste: DOE/OR (W350-04R) 7/91
- Issue preliminary proposals for FY 1992 EW GPPs: DOE/OR (W349-07R) 8/91
- Prepare preliminary proposals for FY 1992 GPPs: DOE/OR (W350-05R) 8/91
- Document requirements for use of truck monitor and begin operation: DOE/OR (W350-06R) 8/91
- Issue status report of compliance activities: DOE/HQ (W378-02H) 8/91
- Complete design of WEAF upgrade, WBS 4.23: DOE/OR (W349-08R) 6/92
- Complete construction of IWMF, WBS 4.33: DOE/HQ (W349-9H) 9/91
- Complete plan to eliminate suspect waste: DOE/OR (W350-07R) 9/91
- Complete preliminary proposal for GPP project FFA compliance work I, WBS 3.28: DOE/OR (W378-03R) 9/91
- Complete design of wastewater piping replacement, WBS 3.30: DOE/OR (W350-08R) 2/92
- Complete conceptual design report for the Bethel Valley FFA Upgrade line item: DOE/OR (W378-04R) 1/92
- Start construction of PCB/hazardous waste storage, WBS 4.43: DOE/OR (W350-10R) 2/92
- Issue status report of compliance activities: DOE/OR (W378-05R) 3/92
- Start construction of SWSA 6 improvements, WBS 4.29: DOE/OR (W349-10R) 6/92

- Issue final report on characterization of stored mixed waste: DOE/HQ (W350-11H) 9/92
- Start construction for RH-TRU waste storage bunker, WBS 4.12: DOE/OR (W349-11R) 8/92
- Prepare preliminary proposals for FY 1993 EX GPPs: DOE/OR (W350-12R) 8/92
- Start design of CH-TRU storage facility, WBS 4.39: DOE/OR (W349-12R) 9/92
- Issue report on RMW treatment technology demonstrations: DOE/OR (W350-13R) 9/92

6.2.6.4 Funding

Table 6.2-7 WM (Continuity) Fiscal Year Funding, ORNL ($000)

ADS No.	1991	1992
OR-0349	3929	13365
OR-0350	5657	9559
OR-0353	0	0
OR-0378	4541	7275
OR-0378AA	0	0
OR-0378AB	0	0
Total	14127	30199

6.3 K-25

6.3.1 Overview

6.3.1.1 Description - There are three major WM programs located at K-25: (1) the CWMD activities, (2) K-25 WM programs, and (3) the TSCA Incinerator operations. While these three activities are interrelated, they are managed independently.

At the request of DOE/OR, a new WM organization has been formed to direct the WM and CA portions of the DOE/HQ EM Program. The new division, the CWMD (OR-421), is located at K-25 but serves all five plants managed by Energy Systems (ORNL, K-25, Y-12, Paducah Gaseous Diffusion Plant [PGDP], and Portsmouth Gaseous Diffusion Plant [PORTS]). While the primary mission of the organization is to support the implementation of the EM initiatives through the three Oak Ridge Plants and to provide oversight of the Paducah and Portsmouth programs, the scope of the division also includes the development and operation of future centralized waste treatment, storage, and disposal facilities, the first of these being the LLW Disposal Facilities (LLWDF, OR-424), and the management of the DOE Scrap Metal Program (OR-434). CWMD will also manage the facilities providing long-term storage of ER generated waste (OR-486).

The primary missions of K-25 WM Division (OR-444-EW, OR-444-AA) are to operate the CNF and K-1232 Treatment Facilities (OR-423-EW, OR-423-AA, OR-423-CD), operate the multi-plant waste storage program utilizing K-25 storage facilities (OR-419-EW, OR-419-AA, OR-419-CD, OR-427), and provide other routine WM services for K-25 (OR-420-EW, OR-420-CD, OR-422). In addition to the WMD activities, the following facilities and projects also operate within K-25:

- Oak Ridge Filter Test Facility (OR-425) - provides High Efficiency Particulate Air (HEPA) filter and respirator canister testing capabilities for DOE's eastern facilities.

- Waste Management Instrumentation and Equipment (OR-429) - provides funding to purchase the analytical equipment required to support K-25 WM Programs.

- Sanitary Water Treatment Facility (OR-445) - will be constructed to treat effluent wastewater from the K-1515 Sanitary Water Plant to avoid violation of the NPDES permit. The effluent consists of filter backwash and basin wash water.

The mission for the TSCA Incinerator (OR-426-EW, OR-450, OR-450-AA) is to thermally destroy mixed hazardous wastes from DOE/OR facilities on the ORR and at sites in Kentucky and Ohio. This incinerator is a critical treatment unit for bringing the DOE sites into compliance with the RCRA/TSCA storage and treatment requirements. Funding covers the baseline operating and facility upgrade needs for the incinerator.

K-25 has WM activities in all five functional areas: waste minimization, waste treatment, waste storage, waste disposal, and continuity of operations. Fiscal year funding summary information is provided in Table 6.3-1. UE provided funding support for certain K-25 WM activities in FY 1991. UE funded ADSs are identified with a suffix, CD, representing the UE Budget and Reporting Code. In FY 1992, funds provided by UE to EM are available to K-25, and these ADSs are identified with the suffix AA. The EM funded ADSs do not have a suffix or are identified with the suffix EW if other funding sources exist.

6.3.1.2Resources - Resources used will generally be standard industrial-grade equipment and materials.

6.3.1.3 Schedules & Milestones - Major milestones for K-25 WM projects are:

• Submit Consolidated Storage Plan: DOE/HQ (W421-01H)	3/91
• Obtain DOE/HQ Approval for Incinerator Production Operation: DOE/HQ (W426-01H)	3/91
• Commence Production Operations: DOE/HQ (W426-02H)	3/91
• Obtain DOE/HQ Approval for Incinerator Production Operation: DOE/HQ (W 450-01H)	3/91
• Commence Production Operations: DOE/HQ (W450-02H)	3/91

- Develop Implementation Plan at CNF for New NPDES Permit: DOE/HQ (W423-02H) 4/91
- Complete Project Design Criteria: DOE/HQ (W424-02H) 4/91
- Submit Semi-Annual Filter Test Summary Report: DOE/HQ (W425-02H) 4/91
- Complete SWSA 6 Performance Assessment: DOE/HQ (W421-03H) 9/91
- Complete Incineration of 2M lbs of Hazardous Waste: DOE/HQ (W426-03H) 9/91
- Submit Semi-Annual Filter Test Summary Report: DOE/HQ (W425-03H) 10/91
- Complete Incineration of 2M lbs Hazardous Waste: DOE/HQ (W450-03H) 3/92
- Document Minimization Goals for WM Department: DOE/HQ (W422-01H) 4/92
- Submit Semi-Annual Filter Test Summary Report: DOE/HQ (W425-04H) 4/92
- Develop K-25 Waste Certification & Verification Program: DOE/HQ (W444-01H) 6/92
- Develop a K-25 Waste Minimization Program: DOE/HQ (W444-02H) 6/92
- Continue DOE Order 5820.19 Implementation at CNF: DOE/HQ (W423-04H) 9/92
- Establish Waste Certification Program Plan for DOE Order Compliance: DOE/HQ (W427-02H) 9/92
- Complete Incineration of 2.5M lbs Hazardous Waste: DOE/HQ (W450-06H) 9/92
- Submit Semi-Annual Filter Test Summary Report: DOE/HQ (W425-06H) 10/92

6.3.1.4 Funding

Table 6.3-1. WM Fiscal Year Funding, K-25
PUC ($000)

Category	1991	1992	1993	1994	1995	1996	1997
Minimization	0	165	480	1028	1070	1114	1161
Treatment	10496	38027	41998	48870	47500	50641	54312
Storage	5383	4271	22685	43930	94379	109370	54682
Disposal	1920	998	19439	48383	47557	27433	15912
Continuity of Operations	2537	10075	14768	17148	33303	33073	22069
Total	20336	53536	99370	159359	223809	221631	148136

Table 6.3-2. WM Fiscal Year Funding, K-25
VTL ($000)

Category	1991	1992	1993	1994	1995	1996	1997
Minimization	0	165	250	200	250	300	300
Treatment	10496	38027	39710	29400	32456	37419	47196
Storage	5383	4271	7750	5712	8494	9295	9500
Disposal	1920	998	14539	30980	27122	20165	14209
Continuity of Operations	2537	10075	10122	7241	8610	14796	18966
Total	20336	53536	72371	73533	76932	81975	90171

6.3.1.5 Accomplishments - FY 1990 accomplishments and FY 1991 plans for K-25 WM operations managed by the newly established (FY 1991) K-25 WM Division include:

- The waste minimization implementation plan was prepared in FY 1990 as required by DOE Order 5400.1 "General Environmental Protection Program". The waste minimization plan will be reviewed and updated in FY 1991. A PWA will be performed in FY 1991 for five hazardous waste streams. Efforts will also be initiated in FY 1991 to implement a materials recycling center to collect waste materials that can be recycled or reprocessed.

- The CNF treated approximately 40 million gallons of wastewater in FY 1990 with a primary waste stream being the K-1435 TSCA Incinerator blowdown. A treatment optimization/sampling plan was prepared for the CNF unit in FY 1991. Implementation of the plan is also scheduled to be initiated in FY 1991.

- Presently there are approximately 1.47 million cu ft of waste in storage at K-25. This waste includes mixed hazardous, low-level, and PCB wastes. An additional 100,000 cu ft of waste is expected to be received for storage during FY 1991.

- Approximately 3,000 cu ft of sanitary waste was transported to the Y-12 Sanitary Landfill. 120,000 lbs of hazardous waste are expected to be transported to an off-site commercial facility in FY 1991. Two off-site inspections of commercial disposal facilities were performed in FY 1990, and two will be performed in FY 1991.

In FY 1990 the CWMD was established to direct the WM and CA portions of the DOE/HQ EM Program at Energy Systems. FY 1990 accomplishments and FY 1991 plans include:

- Provided support to DOE on the preparation of the EIS for WM activities on the ORR, including development of the EIS strategy and technical review of the DOE EIS Implementation Plan submitted to DOE/HQ.

- Established a formal Radiological Performance Assessment team for preparation of DOE Order 5820.2A required performance assessments of all active or planned radioactive waste disposal sites operated by Energy Systems, including the preparation and initial implementation of a formal action plan for conducting these assessments. The Peer Review for the SWSA6 PA was completed in the second quarter of FY 1991.

- The CDR for the LLWDF was completed in FY 1990. The Design Criteria was completed in the third quarter of FY 1991.

- Program planning efforts will be finalized in the areas of waste certification and the DOE Scrap Metal Program.

- The Technical Data Package to support the DOE/OR LDR FFCA negotiations was completed in the second quarter of FY 1991. Participation in the development and presentation of the negotiating strategy continues.

- An updated Consolidated Waste Storage Plan has not been issued to date.

- Development and implementation of the CWMD Program Management Plan for the EM Program are planned for FY 1991. EM programs administration (routine program and budget control and reporting) will continue throughout the year.

FY 1990 accomplishments and FY 1991 plans for the TSCA Incinerator located at K-25 include:

- Completed State air test in the third quarter of FY 1990.

- Completed Energy Systems Readiness Review for production operations in the first quarter of FY 1991.

- Regulatory-compliant availability/operability testing using actual waste has destroyed over 1 million pounds of waste since the first quarter of FY 1991. Operability testing will continue primarily for the solid waste types and feed systems, with recommendations on facility upgrade needs provided by the end of FY 1991.

- DOE/HQ approval for full operation was received in the second quarter of FY 1991.

- Incineration goal for FY 1991 is 2 million pounds of hazardous waste.

6.3.2 Waste Minimization

6.3.2.1 Description - K-25 is implementing a waste minimization program (OR-422, priority 2-C) for wastes generated from WM department operations as required by Federal (RCRA,

40 CFR 264) and State regulations and DOE Order 5400.1, "General Environmental Protection Program", Chapter III. Wastes generated from departmental operations include sludges from K-1407-H CNF, K-1232 Hazardous Waste Treatment Unit, and mixed waste generated from maintaining hazardous waste storage units. Also included in the program is a drum cleansing facility which will provide a method to minimize the inventory of TSCA regulated containers, will minimize the amount of ash/slag generated from incineration of containers, and will provide a potential for the re-use of containers for future wash storage price to treatment. Efforts will also be taken to provide subcontractor support for low-level waste volume reduction and/or incineration.

In FY 1990, a waste minimization implementation plan was prepared and issued as required by DOE Order 5400.1. In FY 1991, minimization activities associated with segregation, substitution, and reduction are being developed and implemented by individual site programs for sanitary, low-level, and hazardous waste. Process waste assessments will be performed on specific waste streams identified as large quantity generators. In FY 1992, a waste minimization engineer will be added to the WM staff to implement the identified waste minimization initiatives and prepare tracking data for measuring the effectiveness of the departmental waste minimization efforts.

Because the requirements funding level was not available for this program in FY 1991 and 1992, the following activities will be gradually initiated during the outyears FY 1993-97 if PUC funding is received:

- Additional staff to support the waste minimization program as well as performing chemical substitution studies

- Operation of a hazardous waste/PCB container cleaning facility

- Commercial subcontract support for volume reduction and/or treatment of low-level contaminated waste

Without the drum cleaning unit, empty containers of PCBs will continue to be managed as TSCA waste. Without the commercial subcontractor support, the volume of low-level contaminated waste will continue to occupy large areas for storage.

6.3.2.2 Resources - Additional personnel are required to effectively implement the Waste Minimization Program per DOE/HQ guidance.

6.3.2.3 Schedules & Milestones - Major milestones for K-25 WM waste minimization project are:

- Document Minimization Goals for WM Department: DOE/HQ (W422-01H) 4/92

- Complete LLW Demonstration by Subcontractor: DOE/OR (W422-02R) 6/92
- Complete Material Chemical Substitution Study: DOE/OR (W422-03R) 6/92
- Complete Volume Reduction Demonstration by Subcontractor: DOE/OR (W422-04R) 9/92

6.3.2.4 Funding

Table 6.3-3. Waste Minimization WM Fiscal Year Funding, K-25 ($000)

ADS No.	1991	1992
OR-422	0	165

6.3.3 Waste Treatment

6.3.3.1 Description - The waste treatment operations (OR-423-EW, OR-423-AA, OR-423-CD, priority 1-A) at K-25 include operation of the K-1407-H CNF and the K-1232 Hazardous Waste Treatment Unit. The CNF provides wastewater treatment prior to discharge. The discharge limits for the facility are regulated under the NPDES Permit No. TN0002850 issued by the TDEC. The facility treats approximately 40 million gallons per year. The waste streams treated at the CNF include the K-1501 Steam Plant water softener acidic backwash wastewater, K-1501 Steam Plant boiler blowdown wastewater, coal pile runoff from the coal pile storage area, K-1435 TSCA Incinerator blowdown wastewater, K-1420 uranium decontamination wastewaters, K-1401 metals cleaning wastewaters, and groundwater from well purging prior to sampling and well development. The CNF is a 24-hr a day operation which requires continuous staffing with operations personnel.

The K-1232 waste treatment unit is used to treat hazardous/mixed wastes that are generated at K-25. The unit provides batch treatment with capabilities of neutralization, precipitation, carbon absorption, and centrifugation. The waste streams that are treated at this unit include the K-1420 spent electroless nickel plating baths, wastewaters with low-level organic contaminants, and corrosive wastes with low-level organic contamination.

The waste treatment program also includes funding for treatability studies for wastes generated at K-25, site-specific activities for treatment units in support of compliance with DOE Order 5820.2A "Radioactive Waste Management" Chapter III, and analytical/operating equipment to support the treatability studies.

A waste acceptance criteria document was prepared for the CNF in FY 1990. The CNF optimization report was prepared and submitted in FY 1991. The activities that will be performed in FY 1992 at the Congressional request funding level include:

- Addition of restroom facilities to meet OSHA standards
- Installation of a new lime slurry delivery system
- Materials and chemicals for waste treatment at K-1407-H
- NEPA documentation for the needed changes to the facility
- Engineering support for process changes
- Maintenance support for routine operations and repairs as needed
- Staff and operating personnel to operate the unit
- Development support for identifying process improvements
- Operational sampling and analysis to insure discharges are in compliance with the permit limits and to support the optimization plan for the unit
- ES&H personnel support to oversee operations and ensure compliance with the State and Federal regulation and DOE orders
- Analytical/sampling support required by the new NPDES permit to be issued

The FY 1992 capital equipment funds will be used to procure a carbon filtration system, critical spare parts (pumps, valves, and gear boxes), analytical equipment for operational samples, and a tanker for waste transfer.

The TSCA Incinerator (OR-426-EW, OR-450, OR-450-AA, Priority 1-B) construction was completed in 1988 and received permit authorization to burn RCRA and TSCA waste in 1989. The facility completed the Tennessee State Air Test in 1990 and received DOE/HQ startup approval in March 1991. Principal objectives of the TSCA Incinerator in FY 1992 will be to continue waste burns to destroy hazardous waste materials from the DOE/OR mixed waste generators. Experience gained in operations in FY 1991 will permit an increase in liquid waste processing by approximately 25% over FY 1991. During FY 1992, the increase required in the operating expense, capital equipment, and GPP funds will be directed toward achieving a higher rate of throughput, particularly for the very large DOE backlog of solid wastes. This can be accomplished by improving, over several fiscal years, the solid waste feed systems and by increasing the qualified production operations staff.

The DOE/OR Scrap Metal Management Program (OR-434, Priority 1-B) provides oversight of the program initiated to remove and process contaminated scrap metal in open yard storage that could potentially cause environmental impact. FY 1991 funding is provided by ER with WM funding beginning in FY 1992. FY 1991 activity will include the selection of the contractor to remove the metal from each of the designated DOE sites, segregate, segment, decontaminate, and otherwise process the metal for beneficial reuse, resale, or appropriate disposal in accordance with the applicable DOE Orders and State and Federal regulations. Program implementation will occur over a 5-7-year period based on available funding.

During the period of FY 1993-97 at the PUC funding level, the waste treatment activities at K-25 will include:

- Base operations of site treatment facilities

- Facility upgrades
- Analytical studies
- DOE Order 5480.19 "Conduct of Operations" implementation
- Closure of K-1407-E and -F settling basins
- Operation of new sludge storage tanks
- Operation of TSCA Incinerator at increased capacity
- Implementation of DOE/ORScrap Metal Management Program

6.3.3.2 Resources - The resources required for the operation of the CNF and the K-1232 hazardous waste treatment unit are spare pumps and valves, a carbon filtration system tankers for transporting wastewater, analytical equipment for operational samples, and additional personnel for planning, operations, and maintenance to develop and implement the requirements of DOE Order 5480.19. The resources required for the TSCA Incinerator are spare and replacement operational parts, additional staff, and additional operational facilities.

6.3.3.3 Schedules & Milestones - Major milestones for K-25 WM waste treatment projects are:

• Submit CNF optimization plan: DOE/OR (W423-01R)	3/91
• Obtain DOE/HQ approval for incinerator production operation: DOE/HQ (W426-01H)	3/91
• Commence production operations: DOE/HQ (W426-02H)	3/91
• Obtain DOE/HQ approval for incinerator production operation: DOE/HQ (W450-01H)	3/91
• Commence production operations: DOE/HQ (W450-02H)	3/91
• Develop implementation plan at CNF for new NPDES permit: DOE/HQ (W423-02H)	4/91
• Treat approximately 40,000 gal of hazardous wastes at K-1232: DOE/OR (W423-03R)	9/91
• Complete incineration of 2M lbs of hazardous waste: DOE/HQ (W426-03H)	9/91
• Complete incineration of 2M lbs hazardous waste: DOE/HQ (W450-03H)	3/92
• Renew TSCA permit for K-25 incinerator: DOE/OR (W450-04R)	3/92
• Complete metals test: DOE/OR (W450-05R)	3/92
• Continue DOE Order 5820.19 implementation at CNF: DOE/HQ (W423-04H)	9/92
• Eliminate coal pile runoff waste stream: DOE/OR (W423-06R)	9/92
• Treat approximately 30,000 gal of hazardous waste at K-1232: DOE/OR (W423-07R)	9/92
• Complete first stage of phase II scrap metal processing: DOE/OR (W434-01R)	9/92

- Complete program planning of phase II: DOE/OR (W434-02R) 9/92
- Complete incineration of 2.5M lbs hazardous waste: DOE/HQ (W450-06H) 9/92

6.3.3.4 Funding

Table 6.3-4. Waste Treatment WM Fiscal Year Funding, K-25 ($000)

ADS No.	1991	1992
OR-423-EW	3674	9612
OR-423-AA	0	0
OR-423-CD	802	0
OR-426-EW	5820	0
OR-434	0	490
OR-450	0	21500
OR-450-AA	0	6425
Total	10496	38027

6.3.4 Waste Storage

6.3.4.1 Description - The waste storage program at K-25 (OR-419-EW, OR-419-AA, OR-419-CD, Priority 1-A) manages the day-to-day operations and activities associated with the compliance of DOE Order 5820.2A "Radioactive Waste Management". Waste types managed include low-level, RCRA hazardous, PCB, mixed (hazardous and radioactive contaminated), and fissile uranium material. This program provides support for the management of waste generated at K-25 as well as mixed and low-level waste from Y-12 and ORNL sites. Storage of hazardous wastes from ORNL, Y-12, PORTS, PGDP, and Fernald is also provided until incineration occurs at the TSCA Incinerator located at K-25.

The storage units include 11 low-level, 6 fissile, 22 RCRA, and 4 PCB units. These units include container and tank storage units. The present waste inventory includes approximately 20,000 containers of mixed RCRA and PCB wastes, 1000 containers of low-level waste, 132,000 gallons of mixed waste in tank storage, and 1800 containers of fissile material. These units must be managed in compliance with RCRA regulations (40 CFR 264 and 265), TDEC regulations (1200-1-11), and TSCA regulations (40 CFR 761). The applicable DOE Orders are 5820.2A "Radioactive Waste Management," 5480.19 "Conduct of Operations" (issued in July 1990), and 5633.3 "Control and Accountability of Nuclear Materials."

Implementation of DOE Order 5820.2A (OR-427, Priority 1-C) includes the following activities:

- WM system performance assessment
- Development and implementation of an effective characterization program

- Preparation of quality assurance documents for storage facilities
- Development of waste acceptance criteria for storage facilities
- Development and implementation of a LLW certification program
- Delisting of various waste streams

The activities performed during FY 1990-91 include daily operation of the 43 storage units, which includes transfer of waste to the units from the site generators, routine inspections required by the RCRA and TSCA regulations, preparation of operating procedures, and corrective actions that are required as identified during routine inspections. During FY 1990, an implementation plan for DOE Order 5820.2A was prepared and issued.

The FY 1992 OMB target funding levels will support the following activities:

- Continued operation of the 43 storage units
- Maintenance support to perform repairs to the storage units
- Utilities for the storage units
- Analytical support for waste characterization
- Implementation of a database for waste tracking

The Central Waste Management Facilities project (OR-486, Priority 1-A) will provide for the centralized management, planning, and funding of interim waste storage facilities while additional storage, treatment, and disposal facilities are planned, sited, designed, and constructed to provide for the ultimate disposition of the waste. The majority of the waste to be stored will be generated by the ER program, which includes facility decontamination and decommissioning. Additional waste generators may be defense, research, and enrichment activities. The construction and operation of these facilities will ensure ongoing WM planning and technical integration of activities associated with the treatment, storage, and disposal of wastes generated on the ORR. Funding in FY 1991-92 will be provided by the ER program, while outyear funding will be provided by WM. The project schedule is based on the assumption that the GPP and line-item projects will follow the same schedule as similar projects. The PUC funding levels are draft estimates based on preliminary waste volume estimates. The volume and cost estimates may be subject to considerable revision after sufficient information and evaluation resources become available.

During the period of FY 1993-97 at the PUC funding level, the waste storage activities at K-25 will include base operations of the site storage units, facility upgrades, and additional personnel to implement and maintain compliance with various DOE Orders and other regulatory agreements.

6.3.4.2 Resources - Required resources for K-25 waste storage program include two standard forklifts, waste transporting vehicles, an explosion-proof forklift and associated battery recharging station, passenger vehicles, nondestructive assay equipment, and additional personnel. Standard construction material and equipment will be required for construction of the Central Waste Management Facilities.

6.3.4.3 Schedules & Milestones - Major milestones for K-25 WM waste storage projects are:

- Complete program procedures in NQA-1 format: DOE/OR (W419-01R) 4/91
- Complete design requirements for K-1423 upgrades: DOE/OR (W419-02R) 9/91
- Complete construction of a storage dike for CNF sludges: DOE/OR (W427-01R) 9/91
- Complete FY 92 capital equipment purchases: DOE/OR (W419-03R) 9/92
- Complete FY 93 capital equipment purchases: DOE/OR (W419-04R) 9/92
- Establish waste certification program plan for DOE order compliance: DOE/HQ (W427-02H) 9/92
- Complete California shuffler purchase: DOE/OR (W427-03R) 9/92
- Initiate delisting petitions for sludges: DOE/OR (W427-04R) 9/92
- Determine the feasibility of delisting TSCA ash: DOE/OR (W427-05R) 9/92
- Begin design GPP: DOE/OR (W486-01R) 9/92

6.3.4.4 Funding

Table 6.3-5. Waste Storage
WM Fiscal Year Funding, K-25
($000)

ADS No.	1991	1992
OR-419-EW	4229	4168
OR-419-AA	0	0
OR-419-CD	965	0
OR-427	189	103
OR-486	0	0
Total	5383	4271

6.3.5 Waste Disposal

6.3.5.1 Description - K-25 disposal program (OR-420-EW, OR-420-CD, Priority 3-A) supports the disposal of hazardous and sanitary wastes, program management, and the associated environmental staff. There are no active disposal facilities located at K-25. Sanitary wastes generated at K-25 (primarily asbestos, construction debris, and normal sanitary garbage) are shipped to the Y-12 sanitary landfill for disposal. Hazardous wastes generated at K-25 that are not radioactively contaminated are disposed of off-site at commercial treatment and disposal facilities. Also included in the program are the annual inspections at the commercial off-site disposal/treatment facilities.

The LLWDF line-item project (OR-424, Priority 2-A) will support the design and construction activities for the new LLW disposal facilities required to provide DOE defense production, research facilities, and ER with an uninterrupted, environmentally acceptable disposal capability. Project activities include development of sites for above-grade and below-grade disposal, support utilities, disposal modules, and support facilities including effluent treatment, monitoring, waste verification, waste stabilization, maintenance, and administrative offices. The constrained case project schedule calls for construction to be complete and operations to be underway at the above-grade disposal site during FY 1998. While selected site preparation activities will continue at the below-grade disposal site beyond FY 1998, waste disposal operations are scheduled to commence during FY 1998. The VTL project schedule calls for construction to be completed and operations to be underway at the above-grade disposal site during FY 2001. While selected site preparation activities will continue at the below-grade disposal site beyond the date of beneficial occupancy, waste disposal operations are scheduled to commence during FY 2001.

Yearly waste disposal activities at K-25 supported by PUC funding levels will include the disposal of approximately 3,000 cu ft/yr of sanitary waste at Y-12's sanitary landfill and the continuation of approximately six off-site shipments per year of hazardous waste. PUC funding levels are needed for the LLWDF project for continued work on supporting documentation including a safety study, configuration management plan, concrete development, and modifications to the design criteria which may be required due to delays in preparation of the project EIS. VTL funding levels in FY 1993-1997 will support only the disposal of sanitary waste, as funds will not be available for commercial disposal of hazardous waste. LDR violations of the RCRA regulations will result due to the requirement for disposal within one year of generation.

6.3.5.2 Resources - Resources will generally be standard industrial grade equipment and materials. No special or unique resource commitments are required. Disposal facilities design activities will use standard engineering resources (personnel, computers, subcontractors).

6.3.5.3 Schedules & Milestones - Major milestones for K-25 WM waste disposal projects are:

• Complete CDR: DOE/OR (W424-01R)	2/90
• Complete project design criteria: DOE/HQ (W424-02H)	4/91
• Ship off-site all K-25 non-mixed, third thirds: DOE/OR (W420-01R)	9/91
• Complete project architect-engineer (A-E) selection: DOE/OR (W424-03R)	9/92

6.3.5.4 Funding

Table 6.3-6. Waste Disposal
WM Fiscal Year Funding, K-25
($000)

ADS No.	1991	1992
OR-420-EW	807	998
OR-420-CD	313	0
OR-424	800	0
OR-445	0	0
Total	1920	998

6.3.6 Continuity of Operations

6.3.6.1 Description - The continuity of operations activities at K-25 include operation of the Oak Ridge Filter Test Facility (OR-425, Priority 1-C), establishment of K-25 WM Division (OR-444-EW, OR-444-AA, priority 1-A), management of the CWMD (OR-421, Priority 2-B), and funding for WM capital equipment needs (OR-429, Priority 1-C) at the site.

The Oak Ridge Filter Test Facility performs QA inspection and testing of each HEPA filter procured for all DOE facilities east of the Mississippi River. Inspection and test services are also provided for commercial companies and other Federal agencies on a cost recovery basis. This activity is a continuous operation with the facility testing approximately 5,000 filters per year. In FY 1992, an improvement upgrade of the facility ventilation system will be made in compliance with DOE ES&H ALARA goals.

The newly established K-25 WM Division will provide overall planning and administration of the Site WM program. Administrative functions include WM program coordination, waste certification, and strategic and long-range planning. Project support for future site WM facilities will also be provided including preparation of feasibility studies, NEPA documentation, safety documentation, and engineering design for construction of new facilities. FY 1992 emphasis will be placed on completing the integration of various program element plans into a comprehensive K-25 WM program and implementation of deliverables in accordance with schedules provided by the individual plans supporting CWMD directives.

The primary focus of the CWMD activities in FY 1991 will be on finalizing program planning efforts in the areas of waste certification, consolidated waste storage programs, the DOE scrap metal program, and the SWSA6 radiological performance assessment. In addition, the LLWDF Design Criteria and Safety Study will be completed as scheduled. Upon completion of DOE and other peer reviews, these reports will be issued to guide the programs' implementation. Other key activities include development and implementation

of the division program management plan for the EM Program, support to DOE on critical regulatory negotiating agreements (Agreement in Principal, LDR FFCA, TSCA FFCA, ORR EIS, ORR FFA) and continued staff hiring to fill out the division needs, particularly in the areas of waste program oversight and improvements programs. EM programs administration (routine program and budget control and reporting) will continue throughout the year.

The initiatives outlined for FY 1991 will continue into FY 1992 with new emphasis on implementation of the Waste Certification and Consolidated Waste Storage Plans. Waste minimization planning and reporting and waste system roadmap development tasks are planned to receive additional emphasis in this year. The key regulatory negotiations are expected to be in process or agreements will be in place for program implementation and tracking/reporting. Significant technology assessments studies and waste characterization efforts are expected to be part of these negotiated agreements and must be supported through the division. Major new initiatives in FY 1992 include:

- completion of a Mixed Waste Disposal Feasibility Study for the ORR to address the need for companion facilities to the LLWDF for ORR-generated low-level and mixed wastes
- initiation of the Radiological Performance Assessment for the Class L-II disposal facilities per DOE Order 5820.2A
- operational startup of the DOE scrap metal program

The WM instrumentation and equipment (OR-429) project provides capital equipment funds for the purchase of analytical instrumentation, modules, and equipment to support WM activities at K-25. WM activities supported include the TSCA Incinerator, LLWDF, and K-25 treatment, storage, and disposal programs. Beginning in FY 1993 and continuing over the next five years, additional analytical equipment purchases will be made to gradually supply instrumentation needed to completely and efficiently provide the analyses required for K-25 WM activities.

PUC funding levels during FY 1993-97 will enable the continuity of operations activities at K-25 to provide cost effective leadership and management of EM program goals and the required facilities necessary to accomplish these goals. Critical regulatory initiatives (e.g., EIS, LDR FFCA) are supported at the PUC level to ensure compliant operations. The VTL level funding in FY 1993-1997 will impact ORR WM operations and result in delays in the implementation of EM Program goals.

6.3.6.2 Resources - No special resources are anticipated for continuity of operations activities.

6.3.6.3 Schedules & Milestones - Major milestones for K-25 WM continuity of operations projects are:

• Submit consolidated storage plan: DOE/HQ (W421-01H)	3/91
• Submit waste certification plan: DOE/OR (W421-02R)	3/91
• Complete ventilation upgrade engineering study: DOE/OR (W425-01R)	4/91
• Submit semi-annual filter test summary report: DOE/HQ (W425-02H)	4/91
• Complete SWSA 6 performance assessment: DOE/HQ (W421-03H)	9/91
• Submit semi-annual filter test summary report: DOE/HQ (W425-03H)	10/91
• Begin procurement activities on long lead items: DOE/OR (W429-01R)	12/91
• Submit semi-annual filter test summary report: DOE/HQ (W425-04H)	4/92
• Complete ventilation upgrade: DOE/OR (W425-05R)	6/92
• Develop K-25 waste certification & verification program: DOE/HQ (W444-01H)	6/92
• Develop a K-25 waste minimization program: DOE/HQ (W444-02H)	6/92
• Complete line-item projects feasibility studies: DOE/OR (W444-03R)	6/92
• Complete design for waste storage tank roof project: DOE/OR (W444-05R)	8/92
• Develop integrated K-25 waste storage/treatment program: DOE/OR (W444-04R)	9/92
• Complete mixed waste disposal feasibility study: DOE/OR (W421-04R)	9/92
• Receive and install FY 1992 equipment: DOE/OR (W429-02R)	9/92
• Submit semi-annual filter test summary report: DOE/HQ (W425-06H)	10/92

6.3.6.4 Funding

Table 6.3-7. Continuity of Operations
WM Fiscal Year Funding,
K-25 ($000)

ADS No.	1991	1992
OR-421	1427	7480
OR-425	260	301
OR-429	0	0
OR-444-EV	850	235
OR-444-AA	0	2059
Total	2537	10075

7.0 TECHNOLOGY DEVELOPMENT

The Office of Technology Development (OTD) is the applied research, development, demonstration, testing, and evaluation arm of ER and WM. As such, it is responsive to the needs of both organizations and works closely with them, at the DOE/HQ, DOE/OR, and Energy Systems levels.

To better respond to Energy Systems ER and WM needs, OTD solicited from ER and WM a list of high priority problems for which no good solution currently exists. Following identification of these needs, brainstorming workshops were held with knowledgeable technical staff members. From these workshops, a prioritized list of possible approaches to solve the problems was developed. Proposals to the OTD, developed as technical task plans (TTPs) will be based on the results of these workshops. Energy Systems is not unique in its problems. Many of the problems at Energy Systems are also problems throughout the DOE complex, therefore solutions found to Energy Systems problems will be applicable throughout the DOE complex.

Typically a project begins with an applied R&D or bench scale phase. Once the technology has reached the point at which a field trial is necessary, it then enters the demonstration, testing, and evaluation (DT&E) phase. A field test is set up, results analyzed, and successful candidates are then turned over to ER or WM for routine administration.

OTD has set up an integrated demonstration program to evaluate and compare the risks and benefits of various technologies in treating the same problem or in handling different aspects of a remediation or WM problem. A single DOE site with a complex-wide problem is chosen as the testbed. Various technologies to solve the problem are then demonstrated at this site and evaluated. Multiple DOE sites participate in the demonstration. Based on the results of the demonstration, various DOE sites with similar problems then take the applicable technologies and use them to remediate their problems. In this manner the entire DOE complex benefits from the collective DOE experience. The R&D equivalent to the integrated demonstration is the integrated program.

Among the integrated demonstrations proposed, only one dealing with volatile organic chemicals in saturated soils is currently in the operational phase. It is located at the Savannah River Site. Energy Systems is participating in both an advisory capacity, through chairmans on the Monitoring Technical Support Group, and in actual demonstration of appropriate technologies. Technologies currently being demonstrated by Energy Systems staff are imaging of the injected air mass and use of a multisorbent/multitrap arrayed sampler for contaminant identification.

Other integrated demonstrations are in the planning phase; Energy Systems is participating on committees for: the uranium-contaminated soil demonstration at Fernald; buried waste demonstration at Idaho National Engineering Laboratory (INEL); underground storage tank

demonstration at Hanford; and a D&D demonstration. Other integrated demonstrations and integrated programs have been proposed; however, formal planning for those has not yet been initiated.

Increasing efforts are being focused on technology transfer activities. The emphasis is on transfer (1) into DOE from commercial vendors; (2) among DOE sites; and (3) out to the private sector. The Technology Transfer Act led to the development of Cooperative Research and Development Agreements (CRADAs) as one method to leverage DOE funds. Memoranda of Understanding are also being signed between DOE and other Federal agencies to provide joint funding for projects benefitting several agencies.

TD Fiscal Year Funding Summary by Site
($000)

Site	1991	1992
Y-12	18620	22589
ORNL	6197	16476
K-25	730	3511
Total	25547	42576

7.1 Y-12

7.1.1 Overview

TD activities at Y-12 have focused on waste minimization and LLW management. Waste minimization efforts emphasize reduction of material and low-level contaminated waste disposal volumes. These efforts are being coordinated and disseminated throughout the DOE weapons complex.

As shallow land burial of uranium-contaminated LLW is no longer acceptable, efforts are underway to determine acceptable methods to deal with this waste stream.

7.1.2 Description

Major depleted uranium waste streams at Y-12 were analyzed as the first step in determining the areas on which to focus waste minimization efforts. One area of focus is solvent substitution. The goal is to reduce or eliminate toxic solvents without affecting production quality. Improved machining techniques are aimed at reducing scrap material and increasing recyclable materials. Robotics methods are also being investigated as part of waste minimization efforts in the chip briquetting area.

Specific segments of the Y-12 LLW stream are being investigated. Information obtained will be used in establishing acceptable waste management options.

7.1.3 Resources

Resource requirements for each subtask are described in the following sections of this document.

7.1.4 Schedule & Milestones

Major milestones for TD at Y-12 are:

- Demonstrate briquette handling: DOE/OR 4/91
- Demonstrate use of arc saw for uranium: DOE/OR 9/91
- Demonstrate chemical purification of impure massive scrap: DOE/OR 9/91
- Demonstrate LLW monitoring equipment: DOE/OR 9/91
- Determine which surface cleaning technologies to demonstrate 12/91
- Complete lysimeter construction and load waste 5/92

7.1.5 Funding

Table 7.1-1. TD Fiscal Year Funding Summary, Y-12 ($000)

TTP	1991	1992
OR-230-AA	1670	2314
OR-230-AB	16250	18875
OR-259	300	1000
OR-271-AA	400	400
Total	18620	22589

7.1.6 Accomplishments - Y-12

Waste minimization efforts have already yielded significant accomplishments. A conventional induction furnace was converted to a non-carbon furnace and successful melting of a uranium alloy was demonstrated. Since carbon contamination of scrap material precludes its ability to be recycled easily, this casting process will permit scrap material to be recycled readily, reducing material cost. Freon has been eliminated in a machining area resulting in the elimination of two RCRA waste streams, four satellite storage areas, and one 90-day RCRA accumulation area. Uranium chips have been successfully broken using a hydraulic chip breaker during a finish machine cut using a propylene glycol/water coolant. The resulting chip is easier to clean and briquette prior to recycle. An innovative gripper for remote handling of chip briquettes has been designed, fabricated and tested. It will minimize the need for briquette location sensors for controlling robot position.

A low-level radioactive waste incineration demonstration was completed. The results of this demonstration led to the initiation of an annual contract for incineration of the waste. The treatability of mixed waste soils demonstration looked at the acid extraction of uranium; soil washing to remove contaminants; and thermal desorption of volatile contaminants.

By the end of FY 91, additional successes are anticipated. One area of waste minimization focus is on near net shape forming to minimize machining. Spinning will be evaluated to see if it can be used with uranium metal. An arc saw will be installed and tested. This saw is anticipated to result in a significant reduction of pyrophoric saw fines. Low-level waste monitors will be installed and used to segregate solid low-level radioactive waste. This will maximize the volume of uncontaminated waste and minimize the volume of contaminated waste produced in a production operation.

Technologies for the extraction of uranium from wastewater sludges will be demonstrated. This is required prior to disposal. The extraction of uranium and beryllium from organic liquid waste will be examined. The current waste does not meet TSCA acceptance criteria for beryllium and successful extraction will allow incineration at either commercial incinerators or the TSCA incinerator.

7.2 ORNL

7.2.1 Overview

The multiprogram nature of ORNL also means that current ER/WM needs are diverse. OTD efforts parallel those needs. Work is being done in biotechnology, characterization, in situ remediation, robotics, waste management, D&D, transportation, and technology integration. Many programs involve staff of other Energy Systems sites.

7.2.2 Description

Site characterization is a time-consuming and expensive process. Inexpensive, real time characterization data are required, and efforts in those areas are to identify solvents in soils and groundwater.

Biotechnology projects are directed toward developing technologies for in situ remediation of soils and groundwaters contaminated with chlorinated solvents and PCBs. Following successful completion of the R&D phases, it is anticipated that some technologies will be demonstrated at the Savannah River Site integrated demonstration.

Other in situ remediation projects involve vitrification, dynamic compaction, and grouting of a solid waste storage area.

Joint funding with Department of Defense (DOD) is currently being received on some characterization work and for development of an environmental quality information analysis center. ORNL and K-25 staff are working together on several D&D projects and analytical laboratory studies. Both ORNL and Y-12 staff are involved in the robotics and waste minimization program.

Transportation activities benefit from experience gained from Office of Civilian Radioactive Waste Management work.

The strong technology transfer organization already in place at Energy Systems is able to provide assistance to OTD in its mission to effect a rapid exchange of technology to appropriate parties.

7.2.3 Resources

Resource requirements for each subtask are described in the following sections of this document. A significant increase in funding is requested for FY 92. This reflects continuation of all currently funded projects, capital equipment needs, initiation of new projects, and the movement of some projects from the R&D to demonstration phase. Sufficient staff has been identified to accommodate the increased growth once notification of project approval has been received.

7.2.4 Schedule & Milestones

Major milestones for TD at ORNL are:

• Perform SRIP demonstration at INEL	6/91
• Conduct in situ vitrification demonstration: DOE/OR	7/91
• Initiate co-metabolic demonstration (metranotroph bioreactor): DOE/OR	9/91
• Finalize CRADA with General Electric: DOE/OR	9/91
• Initial field test of prototype multisorbent sampler	8/91
• Field test ion trap mass spectrometer	4/92
• Complete evaluation report on dynamic compaction, grouting and dewatering technologies	9/92
• Complete mobile assemble of microwave decontamination system	9/92
• Complete well plugging and abandonment demonstration	9/92

7.2.5 Funding

Table 7.2-1. TD Fiscal Year Funding Summary, ORNL
($000)

TTP No.	1991	1992
OR-327	0	3250
OR-367-AH	100	150
OR-367-AJ	233	330
OR-367-AK	210	235
OR-367-AP	0	275
OR-368-AK	0	0
OR-368-AL	0	525
OR-369-AB-D	350	310
OR-369-AB-R	300	310
OR-369-AC	350	430
OR-369-AH	223	625
OR-370-AG	210	430
OR-370-AL	855	1000
OR-370-AM	445	1000
OR-370-AN	200	650
OR-372-AC	0	0
OR-373-AH	50	833
OR-373-AQ	70	250
OR-374-AC	0	511
OR-375-AC	612	1050
OR-375-AE	724	1100
OR-375-AJ	200	0
OR-375-AK	200	800
OR-375-AL	200	1000
OR-375-AM	100	400
OR-375-AN	150	250
OR-375-AP	50	0
OR-375-AQ	100	200
OR-377-AB	0	245
OR-377-AD	50	50
OR-377-AE	50	162
OR-566-AA	165	105
Total	6197	16476

7.2.6 Accomplishments - ORNL

A particulate grout injection on a test trench was successfully demonstrated as a method for the containment of contaminated material. In situ vitrification was also demonstrated; this procedure is also an option for containment of contaminated material.

Robotics developments led to the demonstration of the oscillation-free transfer of waste drums. Application of this technology will result in increased drum transfer efficiency, enhanced safety, and reduced performance time. The DOD Soldier Robot Interface Project vehicle was modified to demonstrate its applicability for conducting automated remote surveys of solid waste storage areas where human exposure is to be avoided.

Direct sampling mass spectrometry of volatile organics in air has indicated the potential for real-time, continuous monitoring applications, which would provide a significant cost savings for monitoring activities.

Microwave energy was used to decontaminate a small section of concrete. This method produces less dust than conventional methods, does not drive the soluble contaminants further into the concrete, and is less hazardous to the operator. By removing the top layer that is contaminated, the remaining concrete can be disposed as sanitary, rather than radioactive, waste thus reducing disposal costs.

A CRADA with General Electric in the area of bioremediation of PCBs is anticipated to be in place by the end of the fiscal year. General Electric is a leader in the field of PCB research and this task will cover research in both aerobic and anaerobic destruction of PCBs.

A methanotroph-based bioreactor will be installed at a trichloroethylene (TCE) - contaminated seep on K-25. This is projected to be a more effective method of TCE removal which uses naturally occurring bacteria and is applicable for demonstrations at both arid and non-arid sites.

7.3 K-25

7.3.1 Overview

TD activities at K-25 primarily focus on decontamination and decommissioning of buildings and equipment, although some analytical laboratory management work is just beginning.

7.3.2 Description

The currently funded activities at K-25 include several projects looking at different methods to decontaminate and decommission the immense facilities of the gaseous diffusion plants. Gas phase decontamination employs a gaseous reagent to fluorinate nonvolatile uranium contaminants to volatile UF_6, which is later recovered. A mobile high-pressure water decontamination system is being developed to be used in removing contaminants and then returning the wastewater for repeated reuse, thus minimizing the generation of a secondary waste stream. Work is just beginning on providing assistance to OTD in the planning for a D&D integrated demonstration. K-25 staff are also involved in laboratory management planning.

7.3.3 Resources

Resource requirements for each subtask are described in the following sections of this document.

7.3.4 Schedule & Milestones

Major milestones for TD at K-25 are:

- Conduct D&D workshop: DOE/HQ 8/91
- Complete laboratory radioactive and non-radioactive draft QA document 11/91
- Complete construction of high pressure water decon system 12/92

7.3.5 Funding

Table 7.3-1. TD Fiscal Year Funding Summary, K-25
($000)

TTP No.	1991	1992
OR-472	150	1382
OR-474	80	700
OR-477	150	620
OR-483	150	500
OR-484-AA	200	309
Total	730	3511

7.3.6 Accomplishments - K-25

Conceptualization of a preliminary thermodynamic model was completed. This is the first step in understanding the behavior of metals during incineration.

A D&D workshop will be held by the end of the fiscal year. This workshop will bring together individuals from across the DOE complex in order to determine the most pressing D&D needs of the DOE.

A high pressure recyclable water decontamination system will be constructed. It will reduce the amount of secondary waste volumes generated during a D&D process.

The development of a QA requirements document for analytical laboratory management is underway. This document will detail the necessary steps and procedures for a laboratory or sampling firm to become approved to perform work for the DOE Office of Environmental Restoration and Waste Management.

8.0 HAZWRAP SUPPORT

The HAZWRAP Environmental Restoration Program supports DOE/HQ in the management of projects in response to the requirements of CERCLA. Technology programs provide technical and management support to the OTD integrated demonstration and other technology research, development, demonstration, testing, and evaluation activities. HAZWRAP evaluates needs throughout the DOE system and provides technical reviews and recommendations to DOE/HQ for project funding. The Information and Data Systems (IDS) Program develops and maintains data bases for DOE, DOD, EPA, and others that serve as a resource for a variety of organizations. The Waste Information System (WIN) has served as a model for other major data systems in the Federal government and provides on-line, reliable, and accurate information concerning technologies, waste stream data, regulatory information, and many other data.

8.1 Office of Resource Management and Program Support (EM-10)

8.1.1 Overview and Description

HAZWRAP provides technical information systems support through EM-10 for activities directly targeted at requirements stated by EM-1, EM-30, and EM-40. National data bases and information transfer applications are being implemented to fulfill data tracking, reporting, and communication requirements to meet EM's objectives as stated in the Five-Year Plan. Support activities include (1) data bases - ADSs/planning, budget, and control (PB&C), ER, and WM; (2) information transfer - data file transfer, bulletin boards, electronic messaging, on-line conferencing, spreadsheet/graphics, and formal concurrence system; and (3) user support - training, documentation, and specialized data report generation/analyses.

8.1.2 Schedules and Milestones

Milestones for HAZWRAP EM-10 support are:

- Provide PB&C data entry/reporting system 1/92
- Enhance WIN system based on FY 91 needs 9/92

8.1.3 Funding

Funding for EM-10 related activities in FY 1992 is included in ER, Waste Operations, and OTD ADSs and Technical Task Plans (TTP). Beginning in FY 93, these activities will be funded by EM-10 directly through DOE/HQ ADSs.

8.2 Office of Waste Operations (EM-30)

8.2.1 Overview and Description

HAZWRAP provides technical support to the DOE waste minimization program. This support includes development of draft guidance for pollution prevention/waste minimization implementation, development and conduct of information transfer workshops, development and implementation of computer-based information and reporting systems, development of goal and success demonstration criteria, and review of R&D proposals. HAZWRAP also provides technical support to other WM activities such as development of a waste-stream-generation data base, development of an integratable facilities technical capabilities data base, preparation of regulatory operational impact analyses, and preparation of a waste management modernization study.

8.2.2 Schedules and Milestones

Milestones for HAZWRAP EM-30 support are:

- Implement updating procedures in the field 9/92

8.2.3 Funding

Table 8.2-1 HAZWRAP Fiscal Year Funding Summary, EM-30
PUC ($000)

ADS/TTP No.	1991	1992
OR-452-GF	0	2156
OR-456-GF	1000	1745
OR-460-GF	0	2133
OR-496-GF*	0	841
OR-498-GF*	0	4686
Total	1000	11561

* Beginning in FY 93, these activities will be funded through a DOE/HQ ADS.

Table 8.2-2 HAZWRAP Fiscal Year Funding Summary, EM-30
VTL ($000)

ADS/TTP No.	1991	1992
OR-452-GF	0	0
OR-456-GF	1000	1745
OR-460-GF	0	0
OR-496-GF*	0	0
OR-498-GF*	0	0
Total	1000	1745

* Beginning in FY 93, these activities will be funded through a DOE/HQ ADS.

8.3 Office of Environmental Restoration (EM-40)

8.3.1 Overview and Description

HAZWRAP provides technical support to ER activities, including (1) document generation planning; (2) field office guidance preparation; (3) planning, budget, and control team participation; (4) EM-1 and EM-40 management document evaluations; (5) regulatory analysis; (6) priority system development and implementation; (7) design and implementation for ER on-site remediation data base and electronic reporting; (8) field office project management; (9) field office project tracking; (10) field office monthly summary status reporting; (11) field office regulatory documentation technical reviews; (12) Five-Year Plan preparation assistance; (13) ADS review; (14) ADS and SSP guidance generation; (15) technology integration and transfer; (16) stakeholder coordination; (17) cost estimating; (18) airborne hazardous substance management and control; and (19) risk assessment.

8.3.2 Schedules and Milestones

Milestones for HAZWRAP EM-40 support are:

- Survey of compliance with airborne hazards 3/92
- Regulations at DOE facilities 3/92
- Draft on-site remediation program annual summary status report 4/92
- Incorporate off-site programs in ER Information System 9/92
- Implement ERIS in the field for overall ER program 9/92
- Development of a compliance assurance and airborne hazards control management plan 10/92

8.3.3 Funding

Table 8.3-1 HAZWRAP Fiscal Year Funding Summary, EM-40
PUC ($000)

ADS/TTP No.	1991	1992
OR-451-GF	2025	7644
OR-455-GF	0	1846
OR-459-GF	0	2494
OR-463-GF	0	1324
OR-495-GF*	494	447
Total	2519	13755

* Beginning in FY 93, these activities will be funded through a DOE/HQ ADS.

Table 8.3-2 HAZWRAP Fiscal Year Funding Summary, EM-40
VTL ($000)

ADS/TTP No.	1991	1992
OR-451-GF	2025	4280
OR-455-GF	0	0
OR-459-GF	0	0
OR-463-GF	0	0
OR-495-GF*	494	0
Total	2519	4280

* Beginning in FY 93, these activities will be funded through a DOE/HQ ADS.

8.4 Office of Technology Development (EM-50)

8.4.1 Overview and Description

HAZWRAP provides technical support to the Demonstration, Testing, and Evaluation (DT&E) Division (EM-55) through the DT&E Program Coordination Office in the following areas: (1) technical oversight of DT&E projects at the various DOE complexes and cooperative activities with industry, the EPA, and DOD, including design and project reviews, and demonstration evaluation reports; (2) development and application of the integrated demonstration concept; (3) assist in the coordination and technical direction of the integrated demonstrations; (4) assist in the coordination of interagency agreements; (5) technical review and analysis of proposed new technologies from industry, DOE, and other federal agencies; (6) promotion of technology exchange through workshops and interagency interaction; (7) technical support to the DT&E procurement activities; (8) preparation of the annual candidate technologies report; and (9) preparation of weekly highlights and monthly program reports.

8.4.2 Schedules and Milestones

Milestones for HAZWRAP EM-50 support are:

- Integrated demonstration progress highlights — Weekly
- Program coordination reports — Monthly
- Technical report, plan, and technology evaluations — As Requested

8.4.3 Funding

Table 8.4-1 HAZWRAP Fiscal Year Funding Summary, EM-50
($000)

ADS/TTP No.	1991	1992
OR-454-GF	0	2234
OR-497-GF*	0	68
OR-499-GF*	0	378
Total	0	2680

* Beginning in FY 93, these activities will be funded through a DOE/HQ ADS.

9.0 COMPLIANCE WITH NEPA

The NEPA review process for DOE actions results in a categorical exclusion (CX), the preparation of an EA, or the preparation of an EIS. Only designated personnel at DOE can determine the appropriate level of NEPA documentation and authorize proceeding. Energy Systems personnel must review all proposed actions and provide the necessary technical information (and recommendations for the level of NEPA documentation, if appropriate) to DOE for review and determination.

As new actions are identified, it is important to review and prepare the appropriate requests for NEPA determinations and to track and ensure implementation of every commitment made in NEPA documents. Three basic steps are involved in the NEPA review process. All projects, activities, or facility modifications must be reviewed. If the review indicates that action is appropriate for categorical exclusion as described in Section D of the DOE NEPA Guidelines (or the DOE approved categorical exclusion list for plant maintenance) then a CX recommendation is prepared for approval by DOE. If the proposed action is not categorically excluded, then an EA or an EIS must be prepared. This determination is based either on the EA or EIS classes of action in Section D, or if the proposed action is not listed in Section D, on an ADM that is submitted to DOE ER. If an EA is required, DOE will review the EA, and either issue a Finding of No Significant Impact, or request an EIS. If an EIS is required, the NEPA process is completed with the issuance by DOE of a ROD.

Although many of the other environmental statutes have unique requirements, coordinating their review requirements with NEPA compliance will avoid delays that can be caused by proceeding separately under each statute.

9.1 RCRA And CERCLA Actions under DOE Orders

Y-12
OR-0209
East Fork Poplar Creek Activities

The EFPC floodplain soils and sediments are mercury-contaminated and pose a potential threat to human health and the environment. Follow-on activities to the EIS to begin in FY 1990 include site investigations, conceptual design, and implementation of cleanup measures. Current estimates assume an ROD in late FY 1993.

Y-12
OR-0217
Bear Creek Valley NEPA Documentation

This activity will provide technical support to the DOE contractor preparing the EIS for Bear Creek Valley remedial actions. Issues to be addressed in the EIS include speed of groundwater cleanup and risks of the treatment itself.

Support to the contractor for EIS development in FY 1991 is estimated not to exceed $300,000. Level of effort will depend on extent of investigation required.

The purpose of the NEPA program at Y-12 is to ensure that the potential environmental impact of each proposed activity is evaluated to provide for the preparation of the appropriate NEPA documentation as required by DOE and the Council on Environmental Quality.

ORNL

The ORNL Environmental Review and Documentation Program is charged with performing an ES&H review of each planned and ongoing ORNL activity or project in compliance with the NEPA. Each review is documented, and each document is transmitted to DOE/OR to be used as information for meeting NEPA compliance obligations. The following guidance is followed for NEPA implementation at ORNL:

- SEN-15, U.S. Department of Energy Notice; Subject NEPA, February 5, 1990.
- Department of Energy Memorandum, Interim Procedural Guidance for Implementation of SEN-15-90, dated March 2, 1990.
- Supplemental Interim Guidance for Implementation of SEN-15, Regarding NEPA, DOE Memorandum, dated September 20, 1990.
- DOE Order 5440.10, NEPA Compliance Order, dated February 22, 1991.

The Environmental Review and Documentation Program is also charged with developing and maintaining the ORNL environmental coordinator's computerized repository of NEPA compliance review data as well as ES&H assessment information for each planned and every ongoing activity at ORNL.

K-25
OR-0416
Assessment Activities in Support of D&D of Gaseous Diffusion Facilities

These activities are in preparation for D&D of the gaseous diffusion process buildings in accordance with requirements of CERCLA, RCRA, NEPA and other environmental laws. Activities include feasibility studies and support to the environmental review process, including obtaining necessary permits.

FY 1989-1993:	Project scope assessment; feasibility studies
FY 1992-1993:	Radiological and hazardous materials, characterizations; baseline risk assessment
FY 1994:	Initiation of compliance work plans and QA/QC documentations
FY 1994-1995:	Technology assessments and demonstrations; conceptual design report; environmental impact statement

9.2 Other Actions Relative to NEPA

Y-12

A project description memorandum will be prepared in late 1991 for the D&D of Building 9204-1 to determine the need for an EA or EIS.

K-25

An EIS for K-25 process equipment removal will be initiated in 1993, with a completion date in 1997 and ROD in 1998.

ORNL

A NEPA determination for the D&D of the shield transfer tanks is required in 1995.

ORNL

A NEPA determination for the D&D of the homogeneous reactor experiment and the fusion products laboratory is needed in 1996.

Prior to reaching the demonstration phase, all technology development activities are reviewed by the appropriate site NEPA staff. A determination is made as to the level of documentation required. The documentation is then prepared by the site NEPA staff with input from the technical staff.

10.0 REPORTING AND DATA MANAGEMENT

10.1 Required Reports

The listing of environmental and waste management reports routinely submitted by Martin Marietta Energy Systems, Inc., to DOE/OR and Federal and State regulatory agencies is as follows:

Clean Air Act - General Reports

1. Y-12

   a. Quarterly excess opacity reports for four boilers, submitted within 30 days of the last day of the quarter to TDEC.

   b. Monthly ambient SO_2 reports for two ambient SO_2 monitors to TDEC by the 30th of the following month.

   c. Radionuclide emissions annual report to EPA, due June 1.

   d. Quarterly report to TDEC of the amount of sodium-potassium alloy that is openly burned, due 45 days after the end of the quarter.

2. ORNL

   Radionuclide emissions annual report to EPA, due June 1.

3. K-25

   Radionuclide emissions annual report to EPA, due June 1.

Clean Air Act - Asbestos Related Reports

1. Monthly asbestos removal reports describe the asbestos removed during that month and the removals to occur during the next month, due 15 days after the end of the month to TDEC.

2. Annual asbestos yearly estimates of material to be removed, due in December to TDEC.

Clean Water Act - Effluent Data Reports

1. Quarterly discharge monitoring reports (DMR) must be submitted within 28 days following the three-month period being reported.

Clean Water Act - NPDES Permits Monitoring Programs

1. Quarterly toxicity monitoring reports submitted to the TDEC and EPA as required by NPDES permit.

2. PCB monitoring reports submitted quarterly by ORNL to TDEC and EPA; submitted for Y-12 with the monthly DMR data.

Resource Conservation and Recovery Act (RCRA) and Toxic Substances Control Act (TSCA)

1. RCRA annual hazardous waste report/RCRA annual groundwater monitoring report, K-25, ORNL, and Y-12 submit to EPA Region IV and TDEC, due March 1 of each year for previous year.

2. Annual report of PCB activities, K-25, ORNL, and Y-12 prepared by July 1 for previous year; not required to be submitted to EPA, but must be available on-site during an inspection.

3. Annual report on SWMUs, K-25, ORNL, and Y-12 submit a complete listing of all SWMUs at the facilities to EPA Region VI and TDEC, due January 30 of each year.

4. SARA Title III reports are submitted annually to EPA on approved forms.
   a. Section 311, Material Safety Data Sheets (MSDS)--lists of chemicals are submitted annually to the local emergency planning committee, the State emergency response commission, and the local fire department.

   b. Section 312, Emergency and Hazardous Chemical Inventory Form--submitted annually by March 1 to the local emergency planning committee, the State emergency response commission, and the local fire department.

   c. Section 313, Release Reports--provides information on the categories of chemicals used at the facility, waste treatment and disposal methodologies, and quantities of toxic chemicals released to each environment medium; issued annually to EPA and to State and local emergency management agencies.

Specialized Reports - DOE Orders or Compliance Orders, Spills/Unusual Event

1. Annual environmental monitoring reports, K-25, ORNL, Y-12 issued June 1.

2. FFCA progress reports, ORNL Nonradiological Wastewater Treatment Plant, issued quarterly to TDEC and EPA, 24 days after end of quarter.

3. Spills/unusual events that exceed reportable quantity amounts are verbally reported as soon as possible (but no later than 24 hours after occurrence) through the DOE/OR Operations Center to the National Response Center. Written notification and followup reports are submitted to Federal and State agencies through DOE/OR as required by applicable regulatory requirements.

4. Office of Management and Budget A-106 report issued semi-annually to DOE/HQ, DOE/OR, and is reviewed by the EPA.

5. Annual Waste Reduction Activities R t, issued March 15 each year to DOE/OR.

Technology Development Reports

Monthly progress reports are prepared by principal investigators for each project funded by the OTD. Reports are transmitted electronically to the WRDP by the fifth working day of the month for compilation by program office staff. WRDP staff prepares the executive summary and charts illustrating cost/budget/milestone information. This report is transmitted to DOE/OR by the 20th of the month for incorporation into an DOE/OR monthly report, which is then transmitted to OTD.

An R&D technology status report is prepared at the completion of the R&D phase of the project and is the basis for determining whether a technology should move into the DT&E phase. The principal investigator writes the report, in cooperation with a demonstration customer. The objective of the report is to show the technical and economic reasons for justifying a demonstration project.

Following acceptance of the technology status report by OTD, a DT&E project/test Plan is prepared; this is the initial step of the DT&E phase of the project. Test plans, data collection methods, data analysis, cost, and schedule are described. The objectives are also clearly identified. It must be approved by OTD prior to initiation of the project demonstration.

At the conclusion of the demonstration phase, a DT&E evaluation report is prepared. The purpose of this document is to validate the technical, economic, and legal aspects of the project prior to transferring the technology to ER/WM for full-scale development and implementation. Final approval of the document is obtained from OTD.

Other documents may be prepared, but these are determined on a project-by-project basis.

10.2 Maintenance of Records

Each site shall conduct a records management program in accordance with DOE Order 1324.5, "Records Management Program"[1]. The organizational responsibilities for records life cycle management (creation, distribution, maintenance, storage, retention, and disposition) as well as records management programmatic areas (forms management, reports management, correspondence management, reprographics, vital records, disaster planning, etc) shall be specified by implementing procedures and controlled at each site. The retention and disposition of records shall be conducted in accordance with DOE Order 1324.2A, "Records Disposition"[2], and National Archives and Records Administration (NARA) General Records Schedule.

Development, issue, and change control of documents that specify quality objectives or describe activities affecting quality will also be controlled. Quality requirements for the control and maintenance of records are discussed in Section 11, "Quality Assurance," of this document, and will be described in the quality assurance program plan developed for each site.

Various legislative, regulatory, and programmatic requirements impact upon environmental and waste management records. Requirements affecting cycle records management shall be incorporated into procedures for such record groups and series. In particular, indefinite, lifetime, or permanent retention records shall be identified, categorized, and controlled. Changes to environmental and waste management records will be controlled by conducting a review and approval process to the same extent as the original approved document. This will include control and maintenance of document distribution lists.

The Administrative Record for CERCLA/RCRA cleanups is being developed by Lee Wan and Associates/Radian, Labat Anderson, and Science Applications International Corporation. The AR is housed in the Information Resource Center, 105 Broadway, Oak Ridge, Tenn.

The TTP is the controlling document for all TD activities. The principal investigator prepares the document and transmits it to the WRDP for review and acceptance. The WRDP maintains the official set of TTPs. Changes to the TTPs follow the "Procedure for

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[1]"Records Management Program," DOE Order 1324.5, U.S. Department of Energy, Washington, DC, January 6, 1987.

[2]"Records Management Program", DOE Order 1324.5, U.S. Department of Energy, Washington, DC, January 6, 1987.

Basic Control Document Baselining and Change Control for Office of Technology Development Activities," currently under review at DOE/OR.

10.3 Maintenance of Samples

Energy Systems Environmental Surveillance Procedures[3] define the requirements and instructions for data gathering, sampling, and analysis of environmentally related data collected by Energy Systems.

The preservation methods, holding times, storage conditions, and container materials are described in environmental surveillance procedure, "Sample Preservation and Container Materials."[4] This procedure provides guidance in sample preservation methods, defining special equipment needs, selection of containers, and appropriate holding times.

Field quality control activities, established to maintain field activities to meet the established data quality objectives, are described in environmental surveillance procedure, "Field Quality Control."[5] Quality assurance requirements for this plan are described in Section 9.0 of this document, "Quality Assurance."

Chain of custody is required to ensure the integrity of samples collected through all transfers of custody until final disposition by document possession, including archiving as applicable. The environmental surveillance procedure, "Manual Chain of Custody Procedures,"[6] describes the requirements and instructions for these chain of custody activities.

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[3]"Records Disposition," DOE Order 1324A, U.S. Department of Energy, Washington, DC, September 13, 1983.

[4]"Environmental Surveillance Procedures Quality Control Program," ESH/Sub/87/27106/1, Martin Marietta Energy Systems, Inc., Oak Ridge, Tennessee.

[5]"Sample Preservation and Container Materials," Environmental Surveillance Procedure ESP-701, Martin Marietta Energy Systems, Inc., Oak Ridge, Tennessee, August 26, 1988.

[6]"Field Quality Control," Environmental Surveillance Procedure ESP-400, Martin Marietta Energy Systems, Inc., Oak Ridge, Tennessee, August 18, 1988.

11.0 QUALITY ASSURANCE

The QA program[1] established by Energy Systems provides a mechanism for establishing, controlling, and verifying quality at the DOE ORR. The ORR includes Y-12, K-25, and ORNL facilities, all of which are operated by Energy Systems for the DOE.

The Energy Systems QA program is based on a corporate commitment to quality and the DOE policy described in DOE Order 5700.6B.[2] This order defines the requirements and assigns responsibilities for implementing a QA program based on the industrial standard ANSI/ASME NQA-1-1986, "Quality Assurance Program Requirements for Nuclear Facilities."

Standards and procedures described in the Energy Systems QA Procedures Manual are designed to meet the requirements established in NQA-1 and DOE Order 5700.6B. Y-12, K-25, and ORNL have established QA programs based on the details provided in the Energy Systems QA Procedures Manual. ES-ERD requirements are described in the Environmental Restoration Quality Assurance Program Plan, ES/ER/TM-4.

A draft QA Plan for CWMD coordination was issued for review and approval on April 26, 1990. The plan includes the organizational chain of command, program objectives, and personnel responsibilities for the implementation of the QA program requirements.

The Y-12 QA program requirements are described in Y-12 Plant Procedures (60 series)[3] to provide direction and support implementing the Energy Systems quality requirements. These procedures are maintained and controlled as the Y-12 QA Manual under a controlled distribution by Y-12 Quality Division. The Y-12 Quality Division Manager has overall responsibility for implementing the Y-12 QA program.

It is the policy of the Environmental and Health Protection Division at ORNL to maintain and implement a documented QA program in compliance with ANSI/ASME NQA-1, as mandated by DOE Order 5700.6B. QA requirements flow down to the C.. program from the Energy Systems QA Procedures Manual and the ORNL QA program.

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[1]DOE Order 5700.6B, Quality Assurance, U.S. Department of Energy, Washington, D.C., September 23, 1986.

[2]"Quality Assurance Program," Policy Procedure GP-5, Martin Marietta Energy Systems, Inc., Oak Ridge, August 8, 1986.

[3]"Quality Assurance Program Manual," Y-12 Plant Procedures 60-series, Martin Marietta Energy Systems, Inc., Oak Ridge, March 31, 1989.

The K-25 QA program is defined in K-25 Standard Practice Procedures.[4] The K-25 Quality and Technical Services Division Manager maintains the overall responsibility for the QA program implementation. The QA program procedures are controlled and maintained by the K-25 QA Department.

QA requirements for OTD activities fall under the control of the QA program described in the "Waste Research and Development Programs Quality Assurance Manual." This program is designed to meet the requirements of:

- ANSI/ASME NQA-1 QA Program Requirements for Nuclear Facilities;
- OGR/B-3 QA Plan for High-Level Radioactive Waste Repositories;
- DOE Order 5700.6B Quality Assurance; and
- Energy Systems Quality Procedures Manual.

[4]"Quality Assurance", Oak Ridge K-25 Plant Procedures, Standard Practice Volume I, Martin Marietta Energy Systems, Inc., Oak Ridge, Tennessee.

12.0 FEDERAL, STATE, AND LOCAL INTERACTIONS

Compliance agreements with Federal, State, and local government agencies may be concluded in several forms: FFCAs, FFAs, Settlement Agreements, Consent Orders, Consent Decrees, Unilateral Environmental Orders, and Enforcement Actions against DOE management and operating contractors.

ORR installations have been issued Unilateral Environmental Orders at various times since 1983. These orders are directives issued by a Federal or State agency requiring actions (usually on a specified schedule) to correct violations of environmental permits or regulations. The terms of these orders are not negotiated with the party receiving the order. Unilateral Environmental Orders have been issued by the State of Tennessee for Y-12 noncompliance with the CWA in 1983; CAA and RCRA in 1984; and in 1989 for all three ORR plants for RCRA violations. These 1989 orders also include FFA enforcement actions taken against Energy Systems and against DOE.

In 1983 EPA, DOE, and TDEC negotiated an FFA for ORR environmental restoration activities. This interagency agreement required Y-12 cleanup in compliance with RCRA and CERCLA regulations. The three Oak Ridge facilities are now negotiating other cleanup/compliance agreements with EPA and the State of Tennessee over RCRA/CERCLA statutes.

Two agreements between Y-12 and EPA, one in 1982 and one in 1983, and another agreement between ORNL and EPA in 1986 were negotiated in regard to compliance with the CWA.

Direct communication between ORR, DOE/OR, regulatory agencies, and environmental groups constitutes an important part of ORR's interaction plans for outreach activities. Some organizations that have historically participated in reviewing environmental activities include the Martin Marietta Energy Systems Environmental Advisory Board, Statewide Sierra Club Group, Oak Ridge Environmental Peace Alliance, Save Our Cumberland Mountains, Natural Rights Center, Tennessee Environmental Council, Tennessee Conservation League, Tennessee Lung Association, Oak Ridge Environmental Quality Assurance Board, TDEC, and EPA Region IV.

Interactions with these groups and the public will give citizens the opportunity to comment on ORR environmental activities and allow ORR to gather information from the community.

An FFCA between EPA and DOE has been drafted concerning TSCA compliance; and, when signed, will require the orderly removal of all PCBs at K-25 on a specified schedule.

In order to facilitate the interaction between the public and Environmental Restoration Division, a Community Relations Plan (Document # DOE/OR 928) has been developed and approved by EPA and TDEC. The implementation of this plan involved establishing two-way communication methods that facilitate communication between DOE and its regulatory agencies, DOE and its contractors, and DOE and the community.

Solicitation of public comment on the Site-Specific Plan:

Through the communication channels established in the Community Relations Plan, DOE/OR will solicit the local communities for comments on the FY 1992 Site-Specific Plan for the Oak Ridge Reservation. These methods include public notice of the comment period in the local newspapers, through news releases, and advertising. The releases and advertisements will contain the names of the appropriate individuals who can provide answers to questions and to whom comments should be sent.

A public meeting will be held during the comment period to allow community members to ask questions about the plan and provide them with the opportunity to make comments, either written or oral, regarding the plan. The community members will be notified of the meeting through press releases and advertisements in the local paper and news announcements on radio and television, and in ER and WM program publications.

The periodic "Environmental Update" publication (which is distributed to community members through the local newspapers and mailed directly to more than 400 individuals who have expressed interest in the ER and WM programs at ORR) will contain a summary of the plan and provide readers with information on how they can obtain a copy of the plan and make comments. A "mail in" coupon will be contained in the publication to provide as much convenience as possible for the public to make comments or request information.

All comments obtained through these methods will become part of the Administrative Record and be available at the DOE Information Resource Center, 105 Broadway, Oak Ridge, TN.

13.0 U.S. DOE FIELD OFFICE, OAK RIDGE - DIRECT ACTIVITIES

DOE/OR administers eight facilities or programs based in Tennessee, Kentucky, and Ohio; all have ER activities, five maintain WM operations. DOE/OR also oversees the Weldon Spring Site Remedial Action Project (WSSRAP), Formerly Utilized Sites Remedial Action Program (FUSRAP), selected projects within the Oak Ridge Associated Universities (ORAU), and a Transportation program. The ORR and Paducah and Portsmouth Gaseous Diffusion Plants were originally created to produce fissionable materials for national defense purposes. ORR now has diversified programs including production of medical radioisotopes, development of power reactor fuel, life and physical science research, enrichment of uranium for commercial reactors, and the manufacture of components for other defense agencies. A large portion of work associated with these facilities is focused on treating, storing, and disposing of radioactive, hazardous, and mixed waste resulting from past operations and minimizing wastes from present activities. DOE/OR's WMD provides direction, oversight, and control for these waste operations. DOE/OR, through the ERP Division, ensures management and technical consistency for ER activities at these facilities and serves as an interface with the public and regulatory agencies.

Implementation of the DOE's Environmental Restoration and Waste Management Five-Year Plan (FYP) requires compliance with many Federal requirements, such as RCRA, NEPA, CAA, CWA, CERCLA, TSCA, SDWA, and DOE Orders; plus State and local regulations. An on-going DOE program of formal self assessments of waste management facilities is directed toward ensuring that the facilities are in compliance with these laws and that a best management practice approach is followed in facility operations.

ER and WM tasks undertaken to implement DOE's FYP are the responsibility of the Assistant Manager for Environmental Restoration and Waste Management (AMERWM) at DOE/OR. The AMERWM is responsible for planning, budgeting, and monitoring of regulatory compliance and is the management link with DOE/HQ. ERP, WMD, WSSRAP and FUSRAP organizations report to AMERWM. Some facilities have DOE site representatives who support the appropriate Division Managers at DOE/OR on day-to-day operations. Other DOE/OR Division Managers work with the operating contractor's central management who is responsible for implementing activities and planning future work.

Environmental Restoration Program

The ERP Division is responsible for managing ER activities and providing overview of decontamination and decommissioning activities (OR-0801). DOE/OR sites receive direct support from technical integration teams who evaluate, plan, and design analytical and waste management facilities needed to meet regulatory deliverables. As part of this task, a comprehensive analytical needs assessment study has been completed. ERP coordinates and manages the DOE/OR multisite groundwater program. Also, DOE/OR is directly managing the ORR-wide environmental impact statement project and funding preparation

of decision documents for EFPC remediation in Oak Ridge. Activities to implement the DOE/OR program management plan include tracking milestones and schedules, submitting monthly management reports, and preparing budgets and work packages. ERP also supports the DOE/HQ Remedial Action Information Center. Defense funds in OR-0800-AP will be used to cleanup a facility in Apollo, PA. DOE will monitor progress made at the site with the Nuclear Regulatory Commission retaining regulatory oversight responsibility.

DOE/OR implements and supports the FFA and Agreement In Principle (AIP) for the ORR. Under OR-0825, DOE provides support for the State of Tennessee's independent oversight of ORR environmental activities. Tennessee also receives support (OR-0826) for its review of and response to documents to be required under the pending FFA. The AIP with the State of Kentucky provides support for that State's independent oversight of the Paducah Gaseous Diffusion Plant site (ORO-0827). These two AIPs became effective in May 1991. Another AIP is being negotiated with the State of Ohio concerning Ohio's oversight of the Portsmouth Gaseous Diffusion Plant; this is supported through OR-0828.

Waste Management Program

Support for conduct and oversight of WM activities includes (1) development and review of SSP, ADS, Activity Packages, and Progress Charts; (2) program control development and implementation, cost/budget evaluation, and cost estimate validation; and (3) support in environmental compliance, safety and health, waste minimization and privatization programs (OR-0802). Site representatives support program management in review and evaluation of technical submittals, feasibility studies, cost estimates, WM reports, permit applications, Notices of Deficiency and Violations, inspection reports, technical documents, routinely required reports, technical management reviews, and EIS. DOE/OR-direct staff also manage decontamination and site recovery at the commercial irradiator facility in Decatur, GA.

Federal, State, and Local Interactions

Individual citizens, government officials, and organizations are encouraged by DOE/OR to participate in developing and reviewing DOE/OR site activity plans. Site-Specific Plans and other documents are made available to the public at the sites for this purpose.

Table 13.0-1. DOE/OR Fiscal Year Funding
($000)

Category/ADS	1991	1992
ER:		
800 AP, Apollo	$30,000	$ 0
801 A, ORO Direct Support	$ 8,648	$13,255
825, Agreement in Principle	$ 1,900	$ 3,600
826, Agreement in Principle	$ 200	$ 300
827, Agreement in Principle	$ 1,300	$ 1,300
828, Agreement in Principle	$ 0	$ 500
WM:		
802, ORO Direct Support	$ 9,898	$ 3,215
TOTAL	$51,946	$22,170

14.0 OAK RIDGE ASSOCIATED UNIVERSITIES

Oak Ridge Associated Universities (ORAU), a consortium of universities and colleges, operates several facilities/sites for DOE. Under the ER/WM Employment and Education Assessment program, ORAU assesses the type of occupational employment required in ER/WM work, the fields likely to be of importance for quantitative and qualitative reasons, and the currently available education programs and student pipeline. ORAU also administers several DOE programs which are intended to increase the number of professionals who are appropriately trained in waste management and environmental restoration to meet mission requirements. These programs include the ER/WM Graduate Fellowship Program, the ER/WM Scholarship Program, the ER/WM Young Faculty Program, the ER/WM Minority Scholarship/Fellowship Program, and the Minority Students Hazardous Materials Management Training Program.

ORAU assists the Division of Educational Program Development within the Office of Technology Development to assure that staff in the DOE system responsible for developing and implementing ER/WM programs have the knowledge and skills to perform competitively and safely. ORAU also performs independent verification surveys at DOE sites and reports findings to DOE. This ORAU activity and report provides DOE with the information required to make a decision regarding future site use.

Table 14.0-1. ORAU Fiscal Year Funding
($000)

Category/ADS	1991	1992
CA:		
924	$ 43	$ 48
ER:		
917	$ 745	$ 520
918	$ 210	$ 165
919	$ 53	$ 125
WM:		
920	$ 0	$ 34
TOTAL	$ 1,051	$ 892

15.0 TRANSPORTATION

Support is provided through DOE/OR to the Transportation Management Program (TMP) located within DOE's Office of Environmental Restoration and Waste Management. It coordinates shipping for all DOE-owned materials except weapons and their components. DOE/OR activities support TMP's missions to provide safe, efficient, and economical transportation of DOE-owned materials, including radioactive and hazardous materials. Efforts are made through the various projects to ensure compliance with applicable Federal, State, local, and internal DOE requirements that govern the packaging, handling, transporting, and storing of DOE materials and waste. Program support is provided in the areas of operations and outreach.

TMP support to DOE-wide shipping activities continues to function well in today's changing environment. DOE has been shipping radioactive material safely for more than 40 years. Even though transportation accidents have occurred, no death or significant injury has occurred as a result of the radioactive nature of the cargo. Several interrelated factors contribute to this demonstrated performance. Transport of radioactive materials is subject to more stringent regulations than transport of any other hazardous material. These regulations cover design and manufacture of the packaging; shipment identification, including labeling, marking, placarding, and shipment papers; package and vehicle inspections; and routing and driver training for shipments with radioactive content. Within the regulatory perspective, particular emphasis is placed on the design and subsequent safety of the transportation packaging, which must be federally certified. This certification is attained by passing tests simulating the conditions of transport. Packaging for larger quantities of radioactive materials are subjected to severe accident conditions.

Through DOE/OR, TMP provides training courses in regulatory requirements applicable to safe packaging and transportation of hazardous materials. Courses offered reinforce safe operations and regulatory compliance in all modes of transport and compliance with Department of Transportation regulations, DOE Orders, Occupational Safety and Health Protection Agency (OSHA) standards, and EPA hazardous waste regulation, where applicable to transportation. Other courses facilitate safe and effective site operations associated with transportation activities. During FY 1991, 29 Regulatory Compliance workshops with 1,160 anticipated participants are being conducted. Training courses will be enhanced and expanded in FY 1992. Performance based training will be incorporated into the workshops, and standards developed for instructor certification.

DOE/OR directs the management of computer systems, and databases in support of the day-to-day operations. Data management allows transportation personnel to improve efficiency, reduce costs, track carrier performance, and document DOE shipping activities throughout the United States. This information is also used to answer inquiries from Congress and others about DOE's shipping activities. A computer dedicated to support TMP is being procured and installed in FY 1991.

Participating in national consensus organizations like the American National Standards Institute serves to benefit packaging operations as well as standards development. The transportation program provides support to U.S. and international standards organizations by participating on standards committees, providing comments on proposed regulations and standards, and developing technical data. This technical data assists various organizations in the formation of new standards.

The DOE/OR program supports TMP efforts to gain public acceptance and understanding of DOE's transportation activities. Outreach projects include development of effective, objective information projects such as printed materials, films, exhibits, and models. Outreach projects foster and reinforce confidence by helping the public understand why and how DOE packages and transports its materials. Furthermore, these projects attempt to instill public and institutional confidence in the system's ability to properly respond in the event of a transportation accident through satellite tracking and coordinated Federal, State, Tribal, and local emergency preparedness programs. Other outreach projects include emergency response training to increase first responder's awareness of the Federal systems in place to deal with transportation incidents. Thirteen Emergency Response Orientation workshops with 416 anticipated participants are being conducted in FY 1991.

In November 1990, TMP participated in TRANSAX-90 allowing DOE emergency operations centers, State, and other users to monitor movement of a truck shipment and respond to a simulated accident. The shipment was monitored by the TRANSCOM two-way satellite tracking system located in Oak Ridge. This system will be used to track WIPP shipments when they commence.

The challenge facing TMP is to modify and expand the program to meet shipping requirements of the future. This program will continue to ensure appropriate transportation support to meet future shipping requirements of the comprehensive Environmental Restoration and Waste Management Program.

Table 15.0-1. Transportation Fiscal Year Funding
($000)

Category/ADS	1991	1992
Transportation Operations and Traffic Management	$ 545	$ 635
Training	$ 960	$ 2,187
Packaging	$ 40	$ 58
Information and Communications	$ 170	$ 570
Transportation Emergency Preparedness	$ 1,410	$ 1,475
Program Support	$ 70	$ 45
TOTAL	$ 3,395	$ 4,970

APPENDIX A

ACRONYMS

ACL	alternate concentration limits
ADS	activity data sheet
A-E	architect-engineer
AIP	agreement in principle
ALARA	as low as reasonable achievable
AMERWM	Assistant Manager for Environmental Restoration and Waste Management
AR	administrative record
ARARS	applicable or relevant and appropriate requirements
AVLIS	Atomic Vapor Laser Isotope Separation
BCBG	Bear Creek Burial Ground
BCV	Bear Creek Valley
BMAP	biological monitoring and abatement program
CA	corrective activities
CAA	Clean Air Act
CAPCA	closure activities and post-closure activities
CAT	collection and transfer
CDC	Center for Disease Control
CDR	conceptual design report
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CH	contact-handled
CMS	corrective measures study
CNF	central neutralization facility
COR	contracting office representative
CPCF	central pollution control facility
CRADA	cooperative research and development agreement
CWA	Clean Water Act
CWAM	crated waste assay monitor
CWMD	Central Waste Management Division
CWMO	Central Waste Management Office
CWSA	Containerized waste storage area
CX	categorical exclusion
D&D	decontamination and decommissioning
DARA	disposal area remediation action
DETM	data evaluation technical memorandum
DMR	discharge monitoring report
DNAPL	dense nonaqueous phase liquids
DOD	Department of Defense
DOE	Department of Energy
DOE/HQ	Department of Energy Headquarters
DOE/OR	Department of Energy, Oak Ridge Field Office

ACRONYMS

DP	defense programs
DSMS	direct sampling mass spectrometer
DT&E	demonstration, testing, and evaluation
DUOF	depleted uranium oxidation facility
EA	environmental assessment
EE/CA	engineering estimate/cost analysis
EFPC	East Fork Poplar Creek
EIS	environmental impact statement
EM	Environmental Restoration and Waste Management Program/Organization
Energy Systems	Martin Marietta Energy Systems, Inc.
EPA	Environmental Protection Agency
ER	environmental restoration
ERIS	environmental restoration information system
ERP	environmental restoration program
ESA	environmental and safety activities
ES-ERD	Energy Systems-Environmental Restoration Division
ES&H	environment, safety, and health
EW	Environmental and Waste Management Defense Programs
EX	Environmental and Waste Management Non-Defense Programs
FFA	Federal Facility Agreement
FFCA	Federal Facility Compliance Agreement
FONSI	finding of no significant impact
FS	feasibility study
FUSRAP	Formerly Utilized Sites Remedial Action Program
FY	fiscal year
FYP	U.S. Department of Energy, Environmental Restoration and Waste Management Five-Year Plan, 1991.
GCD	greater confinement disposal
GDP	gaseous diffusion plant
GPP	general plant project
GWTF	groundwater treatment facilities
HAZWDDD	Hazardous Waste Development, Demonstration, and Disposal
HAZWRAP	Hazardous Waste Remedial Actions Program
HEPA	high-efficiency particulate air filter
HEU	high-enriched uranium
HFIR	High Flux Isotope Reactor
HLW	high level radioactive waste
HQ	DOE-Headquarters
HSWA	Hazardous and Solid Waste Amendments
ICM	interim corrective measure
ID	integrated demonstration

ACRONYMS

IDB	integrated data base
IDS	information data systems
INEL	Idaho National Engineering Laboratory
IP	integrated program
ISV	in situ vitrification
ITE	in-tank evaporation
IWCF	industrial waste compaction facility
IWMF	interim waste management facility
K-25	Oak Ridge K-25 Site
LDR	land disposal regulations
LEU	low-enriched uranium
LGWOD	liquid and gaseous waste operations department
LLW	low level waste
LLW-CAT	LLW collection and transfer
LLLW	liquid LLW
LLWDDD	LLW disposal, demonstration, and development
LLWDF	LLW disposal facilities
LWA	Lee Wan and Associates
LWBT	liquid waste bottling and transport
LWCT	liquid waste collection and transfer
MCS	monitoring control station
MED	Manhattan Engineering District
MOU	Memorandum of Understanding
MSDS	material safety data sheets
MTF	materials treatment facility
MVST	Melton Valley storage tank
NCP	national contingency plan
NE	nuclear energy
NEPA	National Environmental Policy Act
NESHAP	National Emission Standards for Hazardous Air Pollutants
NFA	no further action
NFS	Nuclear Fuel Services
NHP	New Hope Pond
NPDES	National Pollutant Discharge Elimination System
NPL	National Priorities List
NQA-1	Nuclear Quality Assurance "Quality Assurance Requirements for Nuclear Facilities" sponsored by the American National Standards Institute/American Society of Mechanical Engineers (ANSI/ASME).
NRWTP	Nonradiological Wastewater Treatment Plant
NSPS	New Source Performance Standards
OD	oil dike
OHF	old hydrofracture facility

ACRONYMS

OLF	oil land farm
OMB	Office of Management and Budget
ORAU	Oak Ridge Associated Universities
ORFTF	Oak Ridge Filter Test Facility
ORGDP	Oak Ridge Gaseous Diffusion Plant
ORNL	Oak Ridge National Laboratory
ORR	Oak Ridge Reservation
OSHA	Occupational Safety & Health Act
OSTF	oils and solvents treatment facility
OTD	Office of Technology Development
OU	operable unit
P&A	plugging and abandonment
PA/SI	preliminary assessment/site investigation
PB&C	planning, budget, and control
PCB	polychlorinated biphenyl
PCSF	packaging, certification, and staging facility
PDTSU	plant drainage and treatment systems upgrade
PGDP	Paducah Gaseous Diffusion Plant
PORTS	Portsmouth Gaseous Diffusion Plant
PRTF	plating rinsewater treatment facility
PSAR	preliminary safety analysis report
PW	process waste
PWA	process waste assessments
PWCT	process waste collection and transfer
PWSF	production waste storage facility
PWTF	production waste treatment facility
PWTP	process waste treatment plant
PVC	polyvinyl chloride
QA	quality assurance
QC	quality control
RAP	Remedial Action Program
RCRA	Resource Conservation and Recovery Act
R&D	research and development
RD&D	research, development, and demonstration
RDDT&E	research, development, demonstration, testing, and evaluation
RFA	RCRA facilities assessment
RFI	RCRA facility investigation
RFP	request for proposal
RH	remote-handled
RI	remedial investigation
RI/FS	remedial investigation/feasibility study
ROD	record of decision

ACRONYMS

RSW	radioactive solid waste
RWMD	Reservation Waste Management Division
S&M	surveillance and maintenance
SAP	sampling and analysis plan
SARA	Superfund Amendments and Reauthorization Act
SCS	site characterization summary
SDWA	Safe Drinking Water Act
SEN	Secretary of Energy Notice
SI	site investigation
SLLW	solid low-level waste
SNM	special nuclear materials
SOW	statement of work
SPAD	Steam Plant Ash Disposal
SRD	systems requirement document
SSF	solid storage facility
SSP	Site Specific Plan
SWMU	solid waste management unit
SWSA	solid waste storage area
SWTF	sanitary wastewater treatment facility
TARA	test area for remedial action
TD	technology development
TDEC	Tennessee Department of Environment and Conservation
TDHE	Tennessee Department of Health and Environment - forerunner of TDEC
TEC	total estimated cost
TM	technical memorandum report
TMI 2	Two Mile Island
TMS	trash monitoring station
TPM	technical program manager
TPO	technical program officer
TRU	transuranium, transuranic
TSCA	Toxic Substance Control Act
TSD	treatment, storage, and disposal
TTP	technical task plan
TWQCA	Tennessee Water Quality Control Act
TWRF	transported waste receiving facility
UCOF	uranium chip oxidation facility
UE	uranium enrichment
UEFPC	Upper East Fork Poplar Creek
UMTRAP	Uranium Mill Tailings Remedial Action Program
UST	underground storage tank
WAC	waste acceptance criteria
WAG	waste area group

ACRONYMS

WBS	work breakdown structure
WCCF	waste characterization and certification facility
WCPF	waste coolant processing facility
WCRF	waste contaminant removal facilities
WDF	waste demonstration facility
WEAF	waste examination and assay facility
WETF	West End Treatment Facility
WFMPF	Waste Feed Material Preparation Facility
WHPP	Waste Handling and Packaging Plant
WIN	Waste Information System
WIPP	Waste Isolation Pilot Plant
WM	waste management
WMC	waste minimization coordinator
WMD	Waste Management Division
WMPF	waste material preparation facility
WOCC	waste operations control center
WOCE	White Oak Creek Embayment
WRDP	waste R&D program
WSSRAP	Weldon Spring Site Remedial Action Program
Y-12	Oak Ridge Y-12 Plant

APPENDIX B

LIST OF AGREEMENTS AND ORDERS

Appendix Table B-1
Federal and State Agreements
Oak Ridge Reservation

Facility	Regulator	Statute(s)	Date
Y-12	EPA	CWA	4/12/82
Y-12	EPA/Tennessee	CWA	5/26/83
Y-12	EPA	SWDA	11/28/84
Y-12	EPA	CWA	3/9/85
ORNL	EPA	CWA	2/12/86
Y-12, ORNL, K-25	Tennessee	RCRA/CERCLA	5/13/91
K-25*	EPA	TSCA	Pending
Y-12, ORNL, K-25	EPA/Tennessee	RCRA/CERCLA	Pending

Source: Department of Energy, Environmental Restoration and Waste Management Five-Year Plan.
*Not in Source document

Appendix Table B-2
Unilateral Environmental Orders*
Oak Ridge Reservation

Facility	Regulator	Statute(s)	Date
Y-12	Tennessee	CWA	09/15/83
Y-12	Tennessee	RCRA	12/06/84
Y-12	Tennessee	RCRA	12/06/84
Y-12	Tennessee	RCRA	03/17/88
Y-12, ORNL, K-25	Tennessee	RCRA	03/14/89

* A unilateral environmental order is a directive issued by a Federal or State agency requiring actions (usually on a specified schedule) to correct violations of environmental permits or regulations. The terms of a unilateral order are not negotiated with the party receiving the order.

Source: Department of Energy, Environmental Restoration and Waste Management Five-Year Plan.

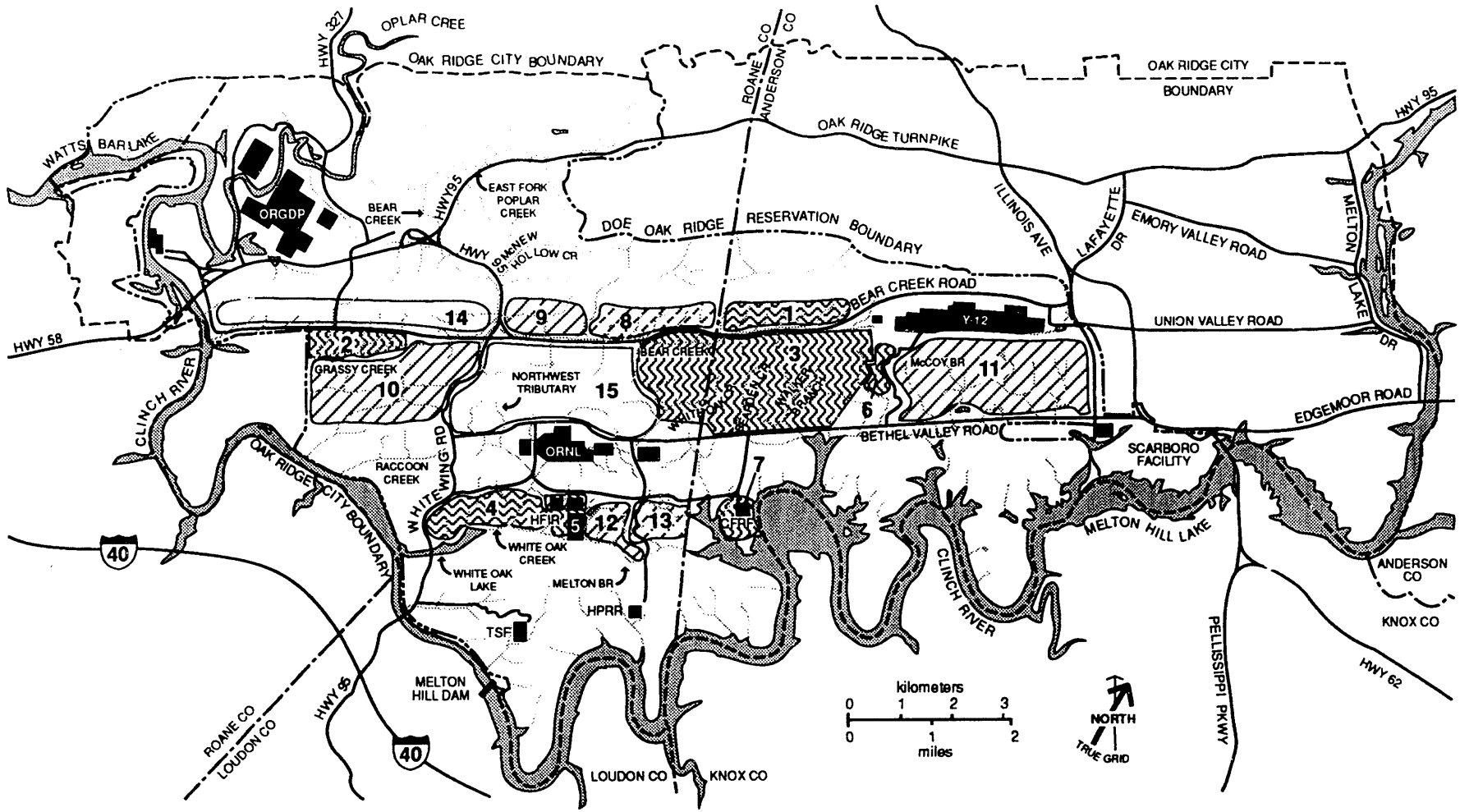
Appendix Table B-3
Enforcement Actions Against DOE
Management and Operating (M&O) Contractors

Facility	M&O	Regulator	Action	Date
Y-12	Martin Marietta Energy Systems	State of Tennessee	Order* (RCRA)	3/14/89
ORNL	Martin Marietta Energy Systems	State of Tennessee	Order* (RCRA)	3/14/89
K-25	Martin Marietta Energy Systems	State of Tennessee	Order* (RCRA)	3/14/89
Oak Ridge	Union Carbide Corporation (past operator)	State of Tennessee	Order (Tennessee CERCLA)	1/8/90

*Action also taken against DOE.
Source: Department of Energy, Environmental Restoration and Waste Management Five-Year Plan, June 1990.

APPENDIX C

MAPS OF OAK RIDGE RESERVATION



KEY

CURRENTLY OR FORMERLY USED

Waste Management

Other

1 Bear Creek Burial Ground
2 Central Training Facility
3 Walker Branch Watershed Research Area
4 West Melton Valley
5 HFIR-TRU Reactor Area
6 Central Sanitary & Industrial Landfill
7 Consolidated Fuel Recycle Facility

PROPOSED FOR USE

Waste Management

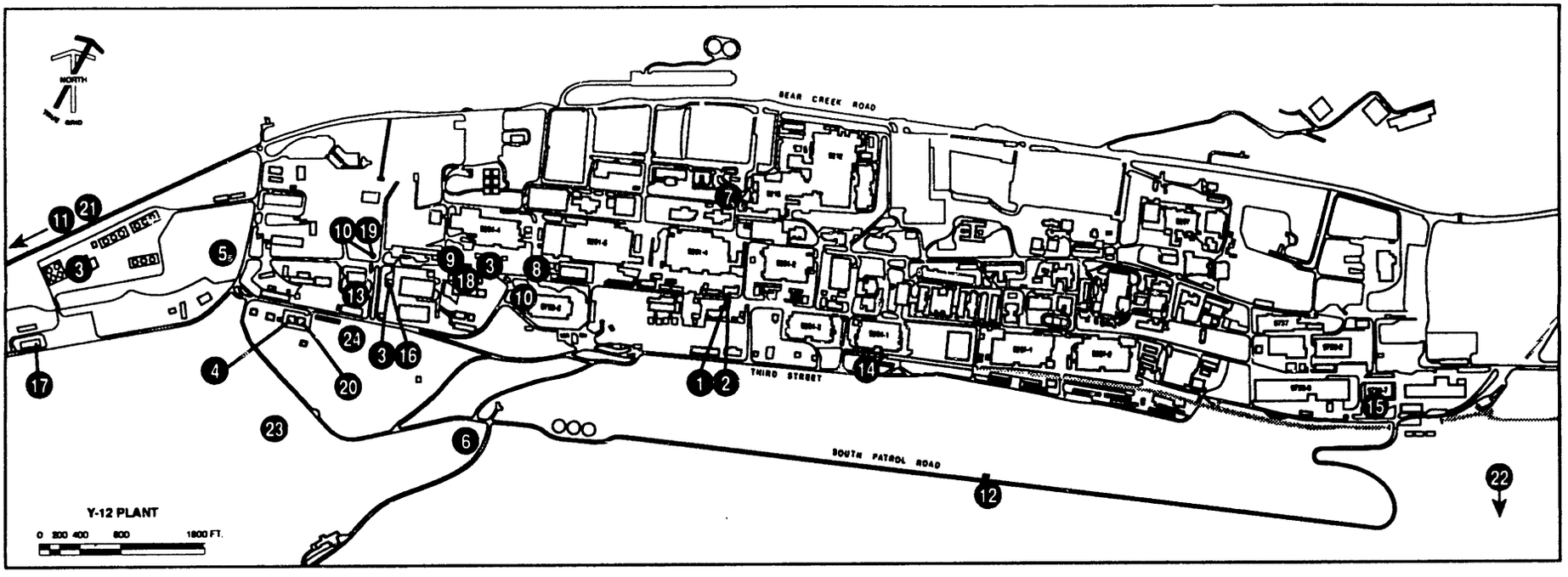
Other

8 Central Bear Creek Valley
9 West Bear Creek Valley
10 West Chesnut Ridge
11 East Chesnut Ridge
12 Solid Waste Storage Area #7
13 Advanced Neutron Source

AVAILABLE FOR NEW PROJECTS

Use Not Specified

14 Exxon Site
15 Central Chesnut Ridge



TREATMENT

1. Central Poll Control Facility - mixed, liquid mopwaters & non-nitrate bearing acidic and caustic waste
2. Plating Rinsewater Treatment Facility - mixed, liquid rinsewaters containing heavy metals
3. West End Treatment Facility - mixed, liquid nitrate-bearing wastes
   Waste Coolant Process Facility - low-level, liquid machine coolant
   Uranium Chip Oxidation Facility - low-level, solid natural uranium machine turnings
4. Waste Material Preparation Facility - low-level, solid diversified uranium-contaminated scrap

STORAGE

5. West Tank Farm - mixed sludge
6. Uranium Oxide Storage Vault - low-level, solid depleted uranium oxide
7. UCRA Staging and Storage Facility - hazardous, PCB interim storage of drums before offsite disposal
8. Organic Liquid Storage (OD7) - mixed, PCB, liquid
9. Waste Oil Solvent Drum Storage - mixed, hazardous, PCB, liquid
10. Organic Liquid Storage Area (OD9) - mixed, hazardous, PCB, liquid
11. Organic Liquid Storage Area (OD10) - waste oil, recyclables, hazardous, liquid

STORAGE (continued)

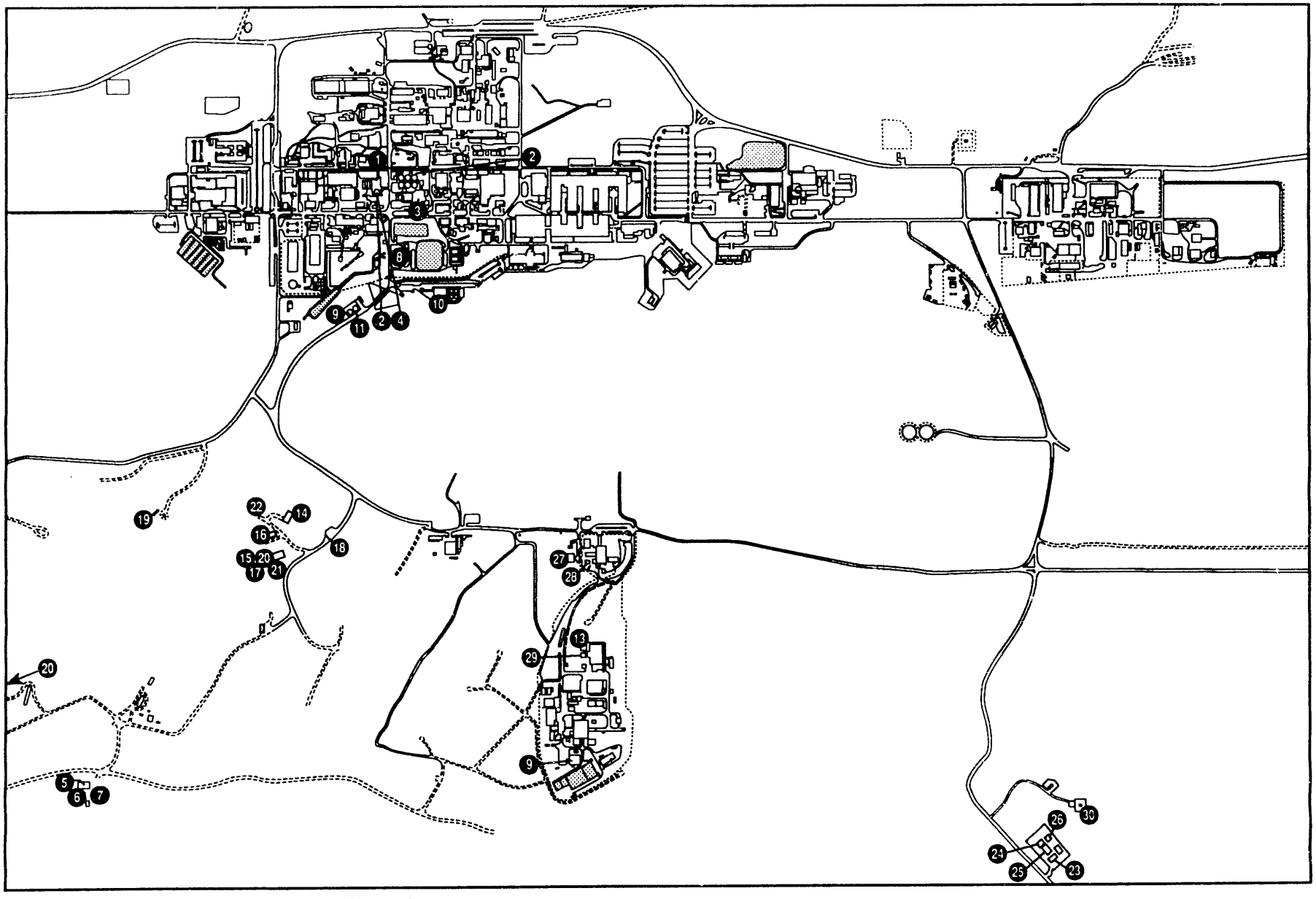
12. Containerized Waste Storage Area - solid mixed
13. Classified Waste Storage Area - low-level, mixed, solid
14. PCB Waste Storage - PCB, mercury, mixed uranium contamination
15. Mixed/PCB Waste Storage - mixed, PCB
16. Interim Drum Yard - hazardous, mixed outdoor gravel pad solvent contaminated debris
17. RCRA/PCB Container Storage Area - PCB, solid
18. Non-SNM Warehouse - low-level
19. Non-Uranium Contaminated Salvage Yard - clean metals, sell not recycle
20. Waste Materials Prep. Facility - low-level, solid deversified uranium-contaminated scrap

DISPOSAL

21. Bear Creek Burial Ground - low-level, solid
22. Sanitary/Industrial Landfill II - solid for ORR
23. Industrial Landfill IV - classified waste

NOTE: Please refer to Table 1.1 for facility numbers.

Y-12 Waste Management Facilities



NOTE: Please refer to Tables 1.2 and 1.3 for facility numbers.

ORNL Waste Management Facilities

ORNL Waste Management Facilities

LIQUID LOW LEVEL WASTE

1. Liquid Waste Collection & Transfer Pipeline - Collection & Monitoring Tanks/Transfer System (..ard-piped) Covers system from source generators to Valve Box No. 1
2. Liquid Waste Bottling & Transfer - Above Ground Transport of LLLW Bottling & Trucking
3. Five 50,000-gal. Tanks at Evaporator (C-1, C-2, W-21, @-22, & W-23
4. Evaporator System Process Equipment
5. Melton Valley Storage Tanks (W-24 through W-31)
6. LLLW Solidification Facility
7. New Hydrofracture Facility

PROCESS WASTE/NON-RAD SYSTEM

8. Process Waste Treatment Plant Process Equipment
9. Six Process Waste Collection Tanks (including New Pumping Station F-4001)
10. Non-Rad Wastewater Treatment Plant (Building 3608)
11. Process Waste, Collection & Transfer - Collection, Monitoring, Transfer System Covers system from source generator to new tanks or pump stations

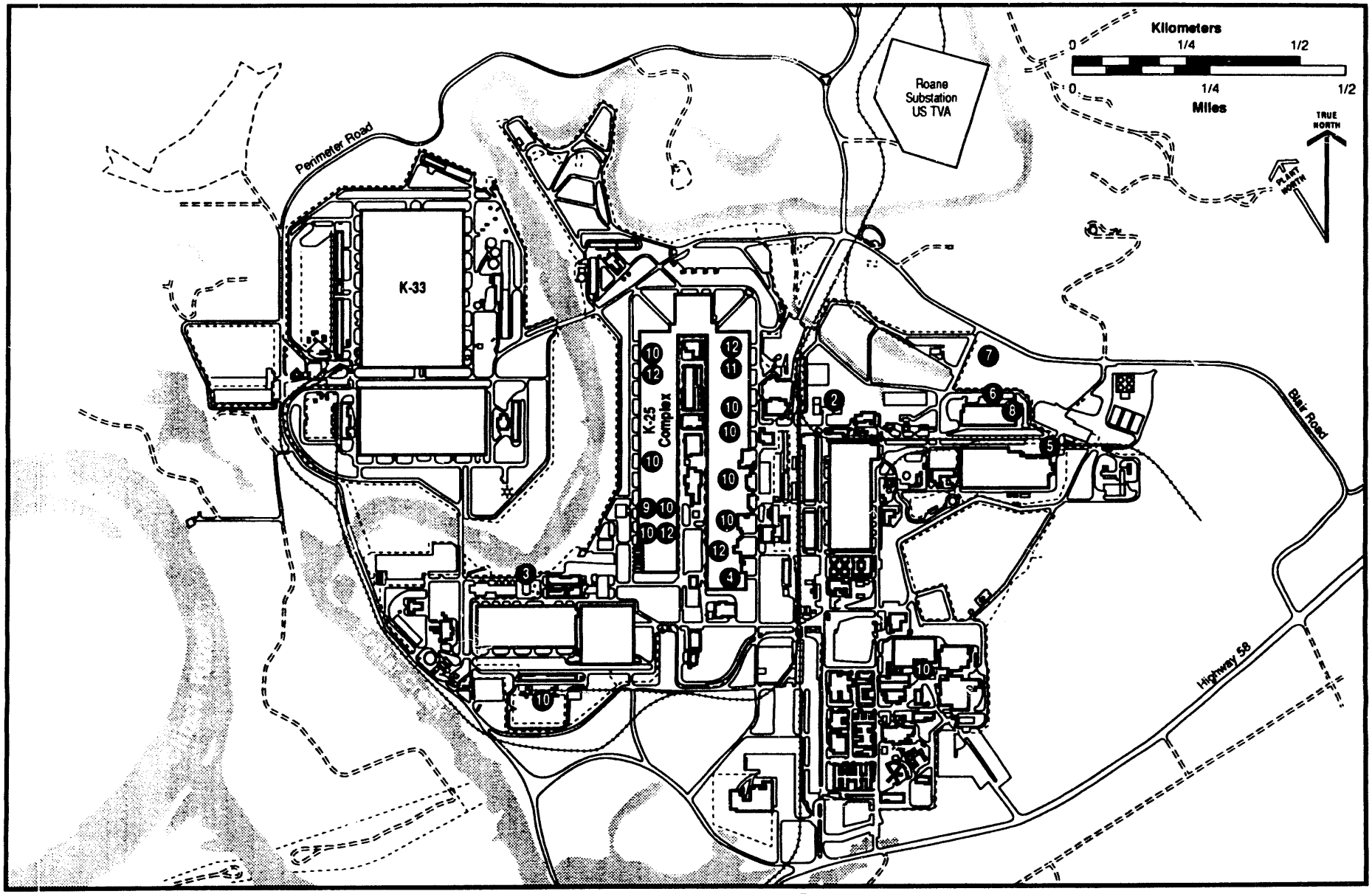
OFF-GAS AND CELL-VENTILATION SYSTEM

12. 3039 Stack Area

MISCELLANEOUS

13. Equipment Cleaning Facility
14. Underground storage building used for storage of solid LLW and TRU waste
15. Waste Examination Assay Facility (WEAF) - used for the nondestructive assay of SLLW and TRU
16. Retrievable Waste Storage Facility for CH-TRU waste
17. Retrievable storage wells provide retrievable storage of RH-TRU waste, LLW exceeding shallow land disposal limits, fuel elements, or reactor components
18. Waste Compactor Facility
19. Contaminated equipment storage area
20. SWSA 6:
    Storage Facility
    Tumulus I & II - SLLW disposal facilities
    Silos, wells, trenches - SLLW (low range and high range), fissile, asbestos, biological, and suspect waste disposal
    SWSA 6 Storage Area
21. RH-TRU Cast Storage Facility
22. TRU/LLW Staging Facility
23. Clean Oil Storage
24. Hazardous bulk liquids and solids
25. Lab Pack chemicals, explosives, and water reactive metals and chemicals
26. Mixed waste
27. Mixed waste
28. PCBs
29. Photographic Waste
30. Leaking gas cylinder storage Detonation Facility

NOTE: Please refer to Tables 1.2 & 1.3 for facility numbers.



1. Hazardous Waste Storage Building
2. Gas Cylinder Storage Unit
3. Hazardous Waste Treatment Unit, Hazardous Waste Storage Unit
4. Radiogenic Lead Storage Vault
5. Waste/Oil Hazardous Waste/PCB Storage Unit
   Waste/Oil Hazardous Waste/PCB Storage Tanks
6. Sludge Fixation Unit, Sludge Fixation Unit Storage Tanks
7. Concrete Block Casting and Storage Area
8. Flammable Liquid Storage Unit
9. PCB/Hazardous Waste Container Storage Unit
10. Hazardous Waste Storage Units
11. PCB Container Storage Units
12. LLW Storage Sites

NOTE: Please refer to Table 1.4 for facility numbers.

K-25 Waste Management Facilities

APPENDIX D

RESPONSE TO PUBLIC COMMENTS ON FY 1990 OAK RIDGE RESERVATION SITE-SPECIFIC PLAN

RESPONSE TO PUBLIC COMMENTS ON
FY 1990 OAK RIDGE RESERVATION SITE-SPECIFIC PLANS

Comment 1: On page 1-6 two major problems are identified. Since it has been a year since this document was created, I would ask what the current situation is on the PCB leaks listed as a major TSCA noncompliance.

Response: Page 1-6 of the Site Specific Plan For the Oak Ridge Reservation states that "The gaskets and oils drips containing PCBs are a major noncompliance with the TSCA regulations and are under discussion with the EPA." The PCB leaks are from old ventilation system (duct) gaskets that are impregnated with PCBs.

A Federal Facility Compliance Agreement (FFCA) is being negotiated with EPA, Region IV and the Tennessee Department of Conservation (TDC) concerning these gaskets. The duct characterization and conceptual designs are being done with a target FFCA date of August 1991 to commence gasket removal. Because of funding limitations and the large number of gaskets (potentially more than 10,000), the removal process for all gaskets is likely to take approximately ten years. During that time, routine surveillance will be used to identify and cleanup leaks, which typically consist of only one to several drops.

This issue is strictly a compliance problem, and does not pose an imminent risk to either environment or health.

Comment 2: This page also notes the potential for asbestos exposure to workers and states that "A potential risk of offsite releases of radioactive and hazardous materials exists." This begs for further explanation, and I insist on it.

Response: Page 1-6 of the Site Specific Plan For The Oak Ridge Reservation states:

> "Personnel exposure to friable, asbestos-bearing materials is a concern in and around the gaseous diffusion facilities. A potential risk of off-site releases of radioactive and hazardous materials exists."

As a safety measure, decontamination and decommissioning (D&D) personnel routinely monitor the shutdown gaseous diffusion facilities for airborne asbestos emissions. Areas with emissions are checked by industrial hygiene personnel and special precautions are designated if warranted. There is a plan for removing all friable asbestos, beginning with those areas of highest airborne concentrations.

Funds have been appropriated to prioritize sites and commence removal based on highest airborne concentration. Since total removal will take several years to complete, some areas may be sealed or encapsulated while awaiting removal to minimize the potential for airborne fibers.

The potential risk for off-site releases of radioactive and hazardous materials is principally from rain entering through leaking roofs, washing over contaminated equipment/areas, and ending-up in a storm drain system. As a result, the Environmental Compliance organization at K-25 monitors the storm drain/sewer systems for contamination. If contaminated water were found in these systems, it would be held and treated prior to discharge.

Comment 3: Throughout the document (1-5, 1-7, 6-18) references are made to waste which keeps piling up for which there are no current acceptable plans. In some instances, reference is made to WIPP and Yucca Mountain, both of which are highly improbable solutions to long-term storage problems. Given this improbability, what discussions are taking place about other options and possibilities?

Response: Waste minimization programs and increased storage capacity are being developed and implemented. The waste minimization programs focus on reducing the volume of waste generated by modifying generating processes, recycling materials, substituting non-hazardous and/or nonradioactive materials where possible, and using physical and chemical volume reduction techniques such as supercompaction and incineration.

In addition, very little of the Department of Energy-Oak Ridge Operations (DOE-ORO) generated waste streams are destined for disposal at the Waste Isolation Pilot Plant (WIPP) or high-level waste (HLW) repository at Yucca Mountain, since no HLW is produced and only Oak Ridge National Laboratory (ORNL) has generated transuranic (TRU) isotopes. The vast majority of the DOE-ORO wastes are low-level wastes (LLW), mixed wastes, or purely hazardous wastes which are to be disposed through treatment processes and near-surface disposal using DOE greater confinement disposal facilities (i.e., tumulus) or commercially available disposal sites.

Comment 4: A larger question - Given the failure to adequately deal with past waste, how can the continued production of waste be explained except by the admission that public health and environmental protection - in both the long and short term - are not priorities of the Department of Energy?

Response: Department of Energy work in weapons production is done in support of the U. S. Department of Defense and is in response to direct legislation by the Congress of the United States.

Comment 5: Throughout the report reference is made to 12/89 milestones - have they been met? For example, on page 4-5: is the ash sluice line extension facility operational?

Response: There were three Waste Management and Corrective Activities 12/89 milestones: (1) complete weir upgrades and Central Neutralization Facility to Poplar Creek Pipeline, (2) issue ORNL Waste Management Plan required by DOE Order 5820.2A, and (3) Ash Sluice Line Extension Facility operational. All three milestones were met by 12/89. To answer the specific question about the ash sluice line extension, it was completed and in service by 12/89. It will continue to be used until the bottom ash dewatering equipment for the steam plant is installed. This equipment capability is projected to be completed by summer 1993 and is being funded by the Steam Plant Ash Disposal (SPAD) line item project.

Comment 6: On 4-8, the plan deals with ORNL water problems and notes that direct discharge to White Oak Creek must be prevented for compliance - this echoes a state report of 1983 which addressed White Oak Lake and raised numerous instances in which ORNL water discharges were unacceptable. While some progress has been made, much is left to be done. Where is the discussion of this in the five-year plan? The SSP notes "progress toward compliance" which is not compliance. The public deserves to hear the specifics.

Response: The National Pollutant Discharge Elimination System (NPDES) permit for ORNL established three categories of discharges collected by the storm sewer system. NPDES permit Category I discharges are composed of rainwater. Category II discharges include the drainage from buildings and areas with no process effluents (i.e., building roof drains, parking lot runoff, cooling water discharges, etc.). Category III discharges include drainage from buildings and areas that indicate the presence of untreated process waste. A preliminary characterization of discharges from the storm sewer system to the ORNL watershed indicated there were Category III wastes entering the storm sewer system that were discharged to the watershed without treatment.

Under the ORNL Federal Facility Compliance Agreement, 32 Category III outfalls were identified in 1986 as outfalls with the potential to contain untreated process and/or laboratory wastewaters. These were identified based on field data and effluent analyses for radiological parameters, metals, anions, and total organic carbon. It was apparent at that time that some storm drain pipes contained contaminated groundwater that had infiltrated through pipe joints and cracks. ORNL initiated engineering projects to in situ line several storm drain and process wastewater pipelines. Additional investigations were conducted to verify that no process effluents were being

discharged. Additional projects were then developed to remediate and/or eliminate process wastewater discharges.

Post-1986 investigations of the individual Category III outfalls included inspections of plant maps and piping system drawings, interviews with building engineers and operational staff, effluent analyses, and field inspections. Several of the outfalls were determined to be more appropriately categorized as Category I (storm drain) or Category II (parking lot, roof, storage area, spill area, cooling water, or condensate drains). Category III outfalls were eliminated by proposing recategorization where appropriate, diverting to treatment facilities to eliminate untreated process discharges, remediation to reduce pollutant concentrations, and/or plugging of outfalls. Outfalls originally classified as Category III that were subsequently determined to be Category I or II were proposed for recategorization.

Comment 7: On page 4-14, the SSP reports what is to be done with scrubber water from the TSCA incinerator -- DOE's latest experiment in waste management. The plans notes that this water is to be discharged into Mitchell Branch, a blue-line stream required to support fish and aquatic life. Despite its past wretched reputation for water contamination, DOE plans to dump effluent which it admits "could thus adversely impact the stream's aquatic population." This is an outrage. Even more outrageous is that Mitchell Branch Toxicity Reduction is not scheduled for five years. This is in a document entitled Environmental Restoration and Waste Management.

Response: The scrubber water from the TSCA incinerator is discharged from the K-25 Site after treatment at the site Central Neutralization Facility. Discharges are in accordance with the Site NPDES Permit and only at approved NPDES discharge points. Adverse effects on Mitchell Branch will be avoided using a new capability, when needed, to discharge in an acceptable manner into Poplar Creek. Therefore, the toxicity reduction in Mitchell Branch, relative to incinerator operations, is achieved now rather than five years into the future.

Comment 8: In addressing the contamination of East Fork Poplar Creek, the most publicized of DOE's mistakes, the SSP notes that work required to remediate the creek areas depend on the completion of SIs. No timeline is given for their completion. When are the Site Investigations on East Fork Poplar Creek to be completed?

Response: New well installation and sampling for Phase 1 began in October of 1990. Therefore, the minimum time to complete field sampling (site investigation) for a full year's data would be October 1991. Depending on the results of these characterization data, the regulatory agencies may either request no

further data be collected or request that Phase 2 be implemented. It should be noted that sampling elements originally proposed for Phase 2 are being conducted in Phase 1.

Comment 9: On page 5-15, discussing waste treatment, Martin Marietta makes a bold statement which can not go unaddressed. In the second paragraph of 5.1.3.9.1, the TSCA incinerator is referred to as "the only acceptable alternative treatment for mixed waste from remedial work." I must categorically reject in the strongest possible terms that characterization of the TSCA incinerator. It is not the only acceptable alternative treatment because it is not acceptable. Not at all. Incineration as a waste management technology has been questioned widely in the public. Even in this area, residents have repeatedly shown their rejection of solid and medical waste incineration, let alone toxic, hazardous and radioactive waste. The Scientific Advisory Board of the EPA raises serious questions about incineration, and the report of ORNL in 1984 indicated there are numerous aspects of hazardous waste incineration that pose significant threats to the public. It may be a convenient political solution, but it is not acceptable to the environmental community and it is highly controversial to the general public, and that must be acknowledged.

Response: The TSCA Incinerator is the best technology currently available to process radioactive, hazardous wastes from DOE/OR operations. The facility is operated in accordance with EPA and state permits which contain operational constraints designed to protect the public and the environment.

Comment 10: On page 5-19, site characterization of the White Oak Creek area is mentioned again -- again off-site contamination is not adequately addressed; DOE must realize this is a matter of great public interest. We have seen the tip of this iceberg, and the recent discoveries about the embayment area indicate things are even worse than we suspected.

Response: Reference to site characterization of the White Oak Creek area on page 5-19 describes comprehensive, long-term, biological monitoring to be conducted on-site at ORNL. The off-site contamination issue is addressed specifically on pages 5-35 and 5-36. The remedial investigation of off-site surface water contamination is considered Priority 1 by DOE. The high degree of public interest in the off-site remedial investigation is well recognized. An intensive effort is ongoing to determine the nature and extent of the off-site contamination, to conduct human health and environmental risk assessment, and to evaluate potential remedial actions designed to reduce risk.

Comment 11: The SSP, on page 5-43, makes an ominous reference to waste from "other active facilities" coming to the TSCA incinerator. What facilities are included in this reference?

Response: The facilities referenced are: Y-12, K-25, ORNL, Portsmouth Gaseous Diffusion Plant, Paducah Gaseous Diffusion Plant, Feed Materials Production Center, and potentially the Weldon Springs Site.

Comment 12: Page 6-3 refers to "other promising technologies." Can Oak Ridge share with the public what the promising technologies may be?

Response: Technologies expected to be evaluated include supercompaction, smelting, incineration, low-temperature treatment, vitrification, biotreatment, chemical isotope separation, polymer solidification, and other stabilization methods.

Comment 13: Page 6-3 also refers to the first draft of a Y-12 waste minimization plan due to be released in July of 1989. What is the status of this plan? Has it been completed? Has there been public comment? Has it been implemented?

Response: The Y-12 Waste Minimization Plan is required by DOE Order 5400.1. The plan was released to the Y-12 DOE Site Office in 7/89. Comments from DOE were incorporated and the plan was issued in 10/89. It has not been updated since that time. It was not a document meant for a public comment cycle. The items in the plan have and are being implemented as funding becomes available.

Comment 14: Page 6-30 indicates that DOE hopes, eventually, to have the incinerator ash delisted as a means of "waste minimization." Surely we are beyond such semantic gameplaying. Incineration does not minimize toxicity or radioactivity of material; it reduces the volume and increases the concentration.

Response: The comment is correct in that the term "waste minimization" is not properly applied to incineration. Incineration is effective in (1) destroying the hazardous organics in waste, including PCBs; (2) reducing the volume of waste; and (3) creating an ash material form which has less storage risk and is more stable for long-term storage than unprocessed waste.

Comment 15A: Stop wasting Environmental Restoration money on a PR newsletter which is not even printed on recycled paper. Or provide an opportunity for true exchange in the newsletter, with a column written by a local community group.

Response: The Environmental Update is a newsletter designed to keep the public informed about activities ongoing in the environmental restoration program

for the Oak Ridge Reservation. The newsletter, though not required, is designed to respond to the need to provide information to the public. The CERCLA law, 40 CFR, Section 300.430(c)(2)(ii)(c) specifies that the community relations activities that an agency expects to undertake during remedial response should include providing appropriate opportunity for the community to learn about the site(s).

As for the comment concerning recycled paper, the Environmental Update as well as all fact sheets are now printed on recycled paper.

Comment 15B: Establish a formal process for discussion and review of DOE/OR activities that goes beyond the legally required public hearings and departmentally required public relations meetings like this one.

Response: Several different formats will be used in the upcoming year in an effort to meet public requests for information. There will be a number of proposed records of decision discussions upcoming with information meetings attempted ranging from one like that discussed in the comment on workshop formats, to meetings with small groups. Some members of the public expressed concern that, in an effort to provide specific information on each project, too many meetings would be held.

Comment 15C: Urge the Martin Marietta Environmental Advisory Board to hold hearings to ascertain the full range of opinion of the public they purport to represent. As one of the best informed and most active organizations addressing environmental issues in Oak Ridge, we have never been contacted by this group.

Response: The Oak Ridge Environmental Advisory Committee (EAC) to Martin Marietta Energy Systems, Inc., was formed as an outgrowth of the hearing held in Oak Ridge, Tennessee, on July 11, 1983, by the Subcommittee on Energy Research and Production and the Subcommittee on Investigations and Oversight of the Committee on Science and Technology of the U.S. House of Representatives. The Subcommittees were chaired by Representative Marilyn Lloyd and then Representative, now Senator, Albert Gore. The EAC is chartered as an independent scientific peer review group with participation from recognized scientific/medical experts and local community citizens. The Committee is chartered to review and provide advice on the waste management and environmental restoration activities at the three DOE facilities in Oak Ridge, operated by Martin Marietta Energy System for the Department of Energy. A major objective of the charter is public interaction and making sure that "timely and accurate data are made available to the public". The EAC held its organizational meeting in October 1984 in Oak Ridge and has held meetings on the average of three times a year since then.

The committee members were granted "Q" Security clearances to facilitate visits to the plant areas and review of information. Dr. Frank Parker, Department of Civil and Environmental Engineering, Vanderbilt University, is chairman of the committee.

Since the initial meeting in 1984 the EAC has attempted as a foremost goal to meet its charter objective of public interaction. The committee as a whole or as individuals has met with members of local governing bodies and public interest groups. These have included local city and county governing bodies, labor organizations, civic groups, and environmental and public interest groups. The committee has held several open meetings and public information and fact gathering meetings in which investigations/notices have been made for formal input and newspaper notices for public participation. Following each of its formal meetings, the EAC holds a press conference. All local press and TV representatives are invited. The Oak Ridge and Knoxville TV stations attend on occasion.

The EAC has met fairly regularly with the Tennessee Department of Conservation, U.S. Environmental Protection Agency, Tennessee Valley Authority, U.S. Corps of Engineers, Oak Ridge Task Force, Department of Energy, and other involved agencies. It has held and/or attended as a group, or as representative members, many public meetings including the DOE public meeting on October 16, 1990. The EAC has also met with public interest groups; America for a Clean Environment (ACE), Save Our Cumberland Mountains (SOCM), and Tennessee Valley Energy Coalition (TVEC). As an outgrowth of one of these meetings DOE further arranged for a tour of the Oak Ridge sites. The above organizations, plus the Tennessee Committee on Occupational Safety and Health (TNCOSH), the Tennessee Chapter of the Sierra Club, and the Sierra Club Radioactive Waste Campaign made up the 15 individuals on this tour.

With regard to formal contact with the Oak Ridge Environmental Peace Alliance (OREPA) the EAC has not extended a formal invitation to date. However, within the past 12 to 18 months that the OREPA has been active in this area, individual members of the EAC have participated in plant meetings and discussions held with OREPA. OREPA members have expressed appreciation to the EAC members for their participation. In addition, literature, including the INTERIM REPORT OF THE OAK RIDGE ENVIRONMENTAL ADVISORY COMMITTEE TO MARTIN MARIETTA ENERGY SYSTEMS, INC., has been provided to the OREPA.

The Oak Ridge EAC wants to maintain contact and interaction with the public opinion. The EAC certainly intends to recognize all such organizations and groups and does not mean to ignore any. We think the record, as briefly

summarized here, substantiates this commitment. The EAC will certainly include OREPA in future formal communications and will plan to have discussion with them at a future meeting.

Comment 15D: Go beyond the legal requirements in your meetings. For instance, in a meeting like this, establishing a record of response voluntarily would demonstrate that DOE takes public concerns seriously and is not only willing to hear but is also willing to consider the comments of the public.

Response: This suggestion is being considered and may be implemented as part of the new design to be tried in the upcoming meetings.

END

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