

2. Environmental Compliance

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Abstract

It is the policy of the U.S. Department of Energy Oak Ridge Operations Office to conduct its operations in compliance with federal, state, and local environmental protection laws, regulations, compliance agreements and decrees, settlement agreements, executive orders, DOE orders (as incorporated into the operating contracts), work smart standards, and best management practices. DOE and its contractors make every effort to conduct operations in compliance with the letter and intent of applicable environmental statutes. The protection of the public, personnel, and the environment is of paramount importance.

2.1 INTRODUCTION

DOE's operations on the reservation are required to be in conformance with environmental standards established by a number of federal and state statutes and regulations, executive orders, DOE orders, work smart standards (WSS), and compliance and settlement agreements.

Principal among the regulating agencies are the U.S. Environmental Protection Agency (EPA) and the Tennessee Department of Environment and Conservation (TDEC). These agencies issue permits, review compliance reports, participate in joint monitoring programs, inspect facilities and operations, and oversee compliance with applicable regulations.

During routine operations or when ongoing self-assessments of compliance status identify environmental issues, the issues are discussed with the regulatory agencies in an effort to ensure that compliance with all environmental regulations will be sustained. In the following sections, compliance status for the ORR sites with regard to major environmental statutes and DOE orders is summarized by topic.

2.2 COMPLIANCE ACTIVITIES

2.2.1 Resource Conservation and Recovery Act

The Resource Conservation and Recovery Act (RCRA) was passed in 1976 to address management of the country's huge volume of solid waste.

The law requires that EPA regulate the management of hazardous waste, which includes waste solvents, batteries, and many other substances deemed potentially harmful to human health and to the environment. RCRA also regulates underground storage tanks (USTs) used for the storage of petroleum and hazardous substances; recyclable used oil; and batteries, mercury thermostats, and selected pesticides or universal wastes.

Subtitle C of RCRA controls all aspects of the management of hazardous waste, from the point of generation to treatment, storage, and disposal (TSD). Hazardous waste generators must follow specific requirements for handling these wastes.

The Y-12 Plant, ORNL, and the ETTP are large-quantity generators. Each generates both RCRA hazardous waste and RCRA hazardous waste containing or contaminated with radionuclides (mixed waste). The hazardous and/or mixed wastes are accumulated by individual generators at locations referred to as satellite accumulation areas or 90-day accumulation areas, as appropriate, where they are picked up by waste management personnel and transported to a TSD facility or shipped directly off-site for treatment, storage, or disposal. At the end of 1997, the Y-12 Plant had about 169 generator accumulation areas for hazardous or mixed waste. ORNL had about 350 generator accumulation areas, and the ETTP maintained about 89.

The Union Valley Sample Preparation Facility managed by the Analytical Services Organization is also considered a large-quantity generator. At the end of 1997, this facility had ten satellite accumulation areas and two 90-day accumulation areas.

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ORISE is classified under RCRA as a conditionally exempt small-quantity generator. Its site accumulation area is located in the Chemical Safety Building on the Scarboro Operations Site.

The Central Training Facility on Bear Creek Road, the Transportation Safeguards Division Garage and ORNL's Walker Branch Watershed Laboratory are also classified as conditionally exempt small-quantity generators.

The Y-12 Plant is registered as a large-quantity generator and a TSD facility under EPA Identification (ID) Number TN3890090001. RCRA requires that owners and operators of hazardous waste management facilities have operating and/or postclosure care permits. Most of the units at the Y-12 Plant are being operated under operating permits; however, several units still operate under interim status in accordance with a Part A permit application. Amended Part A permit applications were submitted to TDEC in December 1991, August 1993, July 1994, and September 1995 but have not yet been acted on. Six RCRA Part B permit applications have been submitted for 20 active storage and treatment units listed on the Part A permit application. Four of these Part B applications have been approved and issued as RCRA operating permits (Table 2.1).

The first Y-12 Plant permit (TNHW-032) was issued by the TDEC on September 30, 1994, for tank and container storage units. Four Class 1 permit modifications were submitted to the TDEC in 1997 for Permit TNHW-032. These modifications included updating the contingency plan, updating inspection requirements for the tanks, updating security requirements, and minor modifications to the language in the permit.

Permit TNHW-083 was issued by TDEC on September 28, 1995, for container storage units. Five Class 1 permit modifications were submitted to TDEC in 1997 for Permit TNHW-083. These modifications included updating the contingency plan, updating security requirements, updating facility drawings for Buildings 9720-9 and 9811-1 (OD-8), updating inspection requirements; and minor modifications to the language in the permit.

Permit TNHW-084 was also issued by TDEC on September 28, 1995, for production-associated

units. Three Class 1 and one Class 2 permit modifications were submitted to TDEC in 1997 for Permit TNHW-084. These modifications included updating the contingency plan, updating training requirements, updating Building 9212 facility drawings by adding the Organic Handling Unit, and making minor modifications to the language in the permit.

Permit TNHW-092 was issued by TDEC on September 3, 1996, for the production and storage of classified waste. Storage areas include Buildings 9720-32 and 9720-59. Three Class 1 permit modifications were submitted to the TDEC in 1997 for Permit TNHW-092. These modifications included updating the contingency plan, updating inspection requirements, and minor modifications to the language of the permit.

ORNL is registered as a large-quantity generator and a TSD facility under EPA Identification Number TN1890090003. ORNL's most recent Part A revision on August 19, 1997, included 34 units. During 1997, 27 units operated as interim-status or permitted units, another 7 units were proposed (new construction), and ORNL has been issued 4 operating permits (see Table 2.1). State action on another permit application is still pending. Although construction was essentially completed in 1996 on three new storage units (Buildings 7668, 7883, and 7572), they were not actually used for waste storage during 1997. The 1995 Part B Permit, TNHW-010A, was revised by TDEC in May 1997 to add three units (Building 7652 and two portable sampling units) in addition to the original eight units. ORNL had submitted those permit modifications in prior years. Building 7652 had operated under a separate 1986 Part B Permit [TNHW-1890090003 (or TNHW-010) and HSWA TN-001]. Tank 7830A continued to operate under a 1992 Part B Permit (TNHW-027). A Part B Permit (TNHW-097) was issued on September 30, 1997, for 15 mixed waste units. Two Class I permit modifications were submitted to the TDEC in 1997: (1) updating the Waste Analysis Plan, Contingency Plan, Training Plan, and maps, and revising security information (TNHW-027); and (2) revising security information (TNHW-010A).

Table 2.1. RCRA operating permits

Permit Number	Building/description
	<i>Y-12 Plant</i>
TNHW-032	Building 9811-1 Tank Storage Unit (OD-7) Waste Oil/Solvent Storage Unit (OD-9)
TNHW-083	Liquid Organic Solvent Unit (OD-10) Building 9201-4 Container Storage Unit Building 9720-9 Container Storage Unit Building 9720-25 Container Storage Unit Building 9720-31 Container Storage Unit Building 9720-58 Container Storage Unit Building 9811-1 Container Storage Unit
TNHW-084	Containerized Waste Storage Area (CWSA) Building 9206 Building 9212 Building 9720-12 Cyanide Treatment and Storage Unit Organic Handling Unit
TNHW-092	Building 9720-32 Building 9720-59
	<i>ORNL</i>
TNHW-010	HSWA Only
TNHW-010A	Building 7507 Container Storage Unit Building 7507W Container Storage Unit Building 7651 Container Storage Unit Building 7652 Container Storage Unit ^a Building 7653 Container Storage Unit Building 7654 Container Storage Unit Building 7668 Container Storage Unit Building 7669 Container Storage Unit Building 7934 Container Storage Unit Portable Buildings 1 & 2 Container Storage Unit
TNHW-027	Tank 7830A Storage Unit
TNHW-097	Building 7855 Container Storage Unit Building 7883 Container Storage Unit Building 7884 Container Storage Unit Building 7578 Container Storage Unit Building 7579 Container Storage Unit Building 7572 Container Storage Unit Building 7574 Container Storage Unit Building 7576 Container Storage Unit Building 7577 Container Storage Unit Building 7580 Container Storage Unit Building 7823 Container Storage Unit Building 7842 Container Storage Unit Building 7878 Container Storage Unit Building 7879 Container Storage Unit Building 7824 Container Storage Unit
	<i>ETTP</i>
TNHW-015	K-1435 Toxic Substances Control Act Incinerator
TNHW-015A	K-1425 and K-1435 Container and Tank Storage Units
TNHW-056	Container Storage Units and Waste Pile Units
TNHW-057	K-1202 and K-1420-A Tank Storage Units

^aIncorporated May 1997; was originally TN1890090003 (TNHW-010) up to May 1997.

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The ETTP is registered as a large-quantity generator and a TSD facility under EPA ID Number TN0890090004. The ETTP has received four RCRA permits (see Table 2.1). The K-1435 Toxic Substances Control Act (TSCA) Incinerator is a hazardous waste treatment unit operating under a RCRA permit (TNHW-015) issued by TDEC on September 28, 1987. A revised RCRA permit based on trial burn results was received in December 1995. A reapplication of this permit was submitted to TDEC in March 1997. A second permit (TNHW-015A) is for storage of waste at the incinerator. Two other permits (TNHW-056 and TNHW-057) cover container and tank storage at various locations throughout the plant.

1997 modifications to all four ETTP RCRA permits included changes in the facility name, changes in perimeter fencing, and an update of contingency plan information. Modifications to TNHW-015 and TNHW-015A allowed for the storage and treatment of F007 waste (cyanide salts present in electroplating solutions). Additional minor permit modifications provided clarification and updated information regarding the individual RCRA units.

2.2.1.1 RCRA Assessments, Closures, and Corrective Measures

The Hazardous and Solid Waste Amendments (HSWA) to RCRA, passed in 1984, require any facility seeking a RCRA permit to identify, investigate, and (if necessary) clean up all former and current solid waste management units (SWMUs).

The original HSWA permit (HSWA TN-001) for the ORR was issued by the EPA as an attachment to the RCRA permit for Building 7652 at ORNL. The HSWA permit requires DOE to address past, present, and future releases of hazardous constituents to the environment. The HSWA permit requirement for corrective action has been integrated into the ORR Federal Facility Agreement (FFA) (see Sect. 2.2.2 for details). EPA issued a preliminary draft of an updated HSWA permit (HSWA TN-001) in August 1996 and DOE was asked to review and comment. During 1997, EPA responded to DOE's comments on the draft permit, and DOE has provided further information to support the permitting process.

The renewed permit will address contaminant releases from SWMUs and also from RCRA Areas of Concern (AOCs). AOCs are areas contaminated by a release of hazardous constituents that originated from something other than a SWMU. Under the existing HSWA permit, DOE must notify EPA within 30 days of identification of a new SWMU or AOC, or of planned significant changes to SWMUs that could alter further investigation or corrective action. DOE has provided to EPA a proposed Appendix A to the permit that identifies SWMUs and AOCs for action or no action (see Table 2.2). The renewed permit is expected to be issued in 1998.

At the Y-12 Plant, 26 RCRA units have been certified closed by TDEC since the mid-1980s. Closure of the Interim Reactive Waste Treatment Area at the Y-12 Plant was completed in 1997, and acceptance of the closure certification by TDEC is expected in early 1998.

Table 2.2. Summary of proposed Appendix A to HSWA permit

Appendix A section	Title	Number of sites proposed
1a	List of SWMUs and AOCs requiring further investigation under the Federal Facility Agreement	239
1b	List of SWMUs and AOCs requiring further investigation	0
2	List of SWMUs and AOCs requiring no further action/ investigation at this time.	270
3	List of SWMUs and AOCs requiring confirmatory sampling	0

ORNL's Solid Waste Storage Area (SWSA) 6 is an interim-status disposal site (landfill) that underwent partial closure that included construction of eight interim-measure caps. A revised Closure Plan for SWSA 6 (which included the eight caps, the Hillcut Test Facility, and the Former Explosives Detonation Trench) was resubmitted in July 1995 to TDEC. The revised Closure Plan defers final closure to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) remediation process, which is expected to integrate the RCRA closure requirements. On November 26, 1996, TDEC approved one portion of the SWSA 6 Closure Plan revision: the request to discontinue the maintenance and repair of the eight interim caps. TDEC action is still pending on the balance of the Closure Plan and on the DOE submittal of the associated Environmental Monitoring Plan and Post-Closure Permit Application. The remedy selection under CERCLA is expected to be completed in 1998.

Closure of ORNL's Building 7555 was completed on December 16, 1997, and closure was approved by TDEC on December 31, 1997.

At the ETTP, closure of the K-1417-B unit is ongoing, and certification of closure must be submitted to TDEC by May 1999.

2.2.1.2 Land Disposal Restrictions

The 1984 RCRA amendments established land disposal restrictions (LDRs), which prohibit the land disposal of untreated hazardous wastes. The amendments require that all untreated wastes meet treatment standards before land disposal or that they be disposed of in a land disposal unit

from which there will be no migration of hazardous constituents for as long as the waste remains hazardous. These restrictions also prohibit storage of restricted hazardous or mixed waste except as necessary to facilitate recovery, treatment, or disposal.

Currently, with the exception of a few organic mixed wastes, the same restrictions apply to mixed wastes, which are composed of a mixture of radioactive and hazardous wastes.

In September 1992 the Federal Facility Compliance Act was passed by Congress to address the extended storage of mixed waste by DOE through agreement with host states. DOE negotiated a Federal Facility Compliance Agreement with EPA in June 1992 and established the initial requirements for treating wastes stored on the reservation. This agreement was replaced in 1995 with a state commissioner's order. The Tennessee commissioner's order signed on September 26, 1995, culminated negotiations between DOE and the state and established a Site Treatment Plan to address treatment and disposal of DOE's mixed waste at Oak Ridge facilities (discussed in Sect. 2.2.4). To date, all milestones under the Site Treatment Plan have been met. The Site Treatment Plan is updated annually to reflect the most current treatment objectives (Sect. 2.2.4).

2.2.2 RCRA-CERCLA Integration

The CERCLA response action and RCRA corrective action processes are similar and include four steps with similar purposes (Table 2.3).

Table 2.3. RCRA and CERCLA corrective action processes

RCRA	CERCLA	Purpose
RCRA facility assessment	Preliminary assessment/site investigation	Identify releases needing further investigations
RCRA facility investigation	Remedial investigation	Characterize nature, extent, and rate of contaminant releases
Corrective measures study	Feasibility study	Evaluate and select remedy
Corrective measures implementation	Remedial design/remedial action	Design and implement chosen remedy

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EPA, DOE, and TDEC entered into an inter-agency agreement known as the ORR FFA to ensure that the environmental impacts associated with past and present activities at the ORR are thoroughly investigated and that appropriate remedial actions or corrective measures are taken as necessary to protect human health and the environment. This agreement established a procedural framework and schedule for developing, implementing, and monitoring response actions on the ORR in accordance with CERCLA. The ORR FFA is also intended to integrate the corrective action processes of RCRA required under the HSWA permit with CERCLA.

As a further example, three RCRA postclosure permits, one for each of the three hydrogeologic regimes at the Y-12 Plant, have been issued and incorporate the seven major closed waste disposal areas at the Y-12 Plant. These are noted in Table 2.4. Groundwater corrective actions have been deferred to CERCLA. Reporting of groundwater-monitoring data will

comply with RCRA postclosure permit conditions as well as CERCLA requirements.

2.2.3 Comprehensive Environmental Response, Compensation, and Liability Act

CERCLA, also known as Superfund, was passed in 1980 and was amended in 1986 by the Superfund Amendments and Reauthorization Act (SARA). Unlike the other regulatory programs summarized in this chapter, such as RCRA or the Clean Water Act (CWA), which address ongoing waste generation, storage, disposal, or discharge of waste or wastewaters, CERCLA is a process to address abandoned or uncontrolled hazardous substance sites where a release has or may have occurred. Under CERCLA, a site is investigated and remediated if it poses significant risk to health or the environment. The ORR was placed on the EPA National Priorities List (NPL) in December 1989. The NPL is a comprehensive list of sites/facilities that have been found to pose a sufficient threat to human health and/or the environment to warrant cleanup under CERCLA. An interagency agreement under Section 120(c) of CERCLA was signed in January 1991 between EPA, TDEC, and DOE known as the ORR FFA (see Sect. 2.2.2). The FFA Appendix C lists all of the inactive sites/areas that will be investigated, and possibly remediated, under CERCLA. Milestones for completion of CERCLA documents are available in Appendix E of the FFA.

It is important to note that environmental restoration activities on the ORR are in transition. DOE-ORO has incorporated aggressive management and productivity goals into its planning for the accelerated completion of the DOE Environmental Management mission as detailed in the 1997 document, *Oak Ridge Operations Office Environmental Management, Accelerating Clean-Up: Focus on 2006*. Key assumptions for the accomplishment of these goals are:

Table 2.4. Postclosure permits for Y-12 Plant hydrogeologic regimes

Hydrogeologic regime	Waste area	Postclosure permit
Bear Creek Valley	1. Bear Creek Burial Grounds (including the walk-in pits) 2. Oil Landfarm 3. S-3 Pond Site (west)	TNHW-087
Chestnut Ridge	1. Chestnut Ridge Sediment Disposal Basin 2. Chestnut Ridge Security Pits 3. Kerr Hollow Quarry	TNHW-088
Upper East Fork Poplar Creek	1. New Hope Pond 2. S-3 Pond site (east)	TNHW-089

- reindustrialization will be the primary method of accomplishment for D&D of the ETPP;
- an on-site waste management facility will be operational on the ORR in fiscal year 2000 for wastes resulting from the CERCLA actions;
- the watershed approach will be implemented for assessment and cleanup of the ORR; and
- aggressive, enhanced performance (greater efficiency) will be attained by transition to a management and integration (M&I) contract with full projectization of work scope and extensive utilization of subcontractors.

2.2.4 Federal Facility Compliance Agreement

The Federal Facility Compliance Act was signed on October 6, 1992, to bring federal facilities (including those under DOE) into full compliance with RCRA. The act waives the government's sovereign immunity, allowing fines and penalties to be imposed for RCRA violations at DOE facilities. In addition, the act requires that DOE facilities provide comprehensive data to EPA and state regulatory agencies on mixed-waste inventories, treatment capacities, and treatment plans for each site. The act ensures that the public will be informed of waste treatment options and encourages active public participation in the decisions affecting federal facilities. TDEC is the authorized regulatory agency under the act for the DOE facilities in the state of Tennessee.

Site Treatment Plans are required for facilities at which DOE generates or stores mixed waste. The purpose of the Site Treatment Plan is to identify to TDEC the proposed options (treatment method, facility, and schedule) for treating mixed waste at the ORR. For some waste types, these options include continued waste characterization for use, development, and/or modification of treatment technologies.

The ORR Site Treatment Plan calls for mixed low-level (radioactive) waste (LLW) on the ORR to be treated by a combination of commercial

treatment capabilities and existing and modified on-site treatment facilities. Mixed transuranic (TRU) waste streams on the ORR, composed of both contact- and remote-handled wastes, will be treated in the proposed Transuranic Processing Facility (TPF) only as necessary to meet the waste acceptance criteria for disposal at the Waste Isolation Pilot Plant (WIPP).

The Site Treatment Plan was issued to TDEC on April 4, 1995. TDEC has reviewed and modified the plan in accordance with Section 3021(b)2 of RCRA. TDEC has issued a commissioner's order (Sect. 2.2.1.2), effective October 1, 1995, that requires compliance with the approved plan.

The Site Treatment Plan provides overall schedules, milestones, and target dates for achieving compliance with LDRs; a general framework for the establishment and review of milestones; and other provisions for implementing the Site Treatment Plan that are enforceable under the commissioner's order.

Semiannual progress reports document the quantity of LDR mixed waste in storage at the end of the previous 6-month period and the estimated quantity to be placed in storage for the next five fiscal years. All milestones and commitments under the Site Treatment Plan have been met for CY 1997. The annual update of the Site Treatment Plan for CY 1997 was approved by TDEC in December 1996, and the annual update, to be in effect in FY 1998, was issued in October 1997 (*Site Treatment Plan for Mixed Wastes on the U.S. Department of Energy Oak Ridge Reservation*, October 1997).

The Site Treatment Plan will terminate when there is no longer any LDR mixed waste being stored on the ORR, regardless of when it was generated. In the absence of a compliant Site Treatment Plan, LDR mixed-waste storage would be in violation of RCRA Section 3004(j).

2.2.5 Underground Storage Tanks

USTs containing petroleum and hazardous substances (HS) are regulated under Subtitle I of RCRA, 40 CFR 280. TDEC has been granted authority by EPA to regulate USTs containing

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petroleum under TDEC Rule 1200-1-15; however, HS USTs are still regulated by EPA. Table 2.5 summarizes the status of USTs on the ORR.

ORNL has responsibility for 54 USTs registered with the TDEC under Facility ID # 0-730089; all 54 USTs are in compliance with the applicable portions of 40 CFR 280 and Rule 1200-1-15. These 54 UST systems can be categorized as follows.

Three tanks remain in service and are relatively new UST systems that meet the 1998 final standards for new tank installations. One UST site is in a groundwater monitoring program, anticipated to be completed in August 1999. Twenty UST case closures are pending at TDEC. Two HS UST case closures are pending at EPA.

Table 2.5. ORR UST status, 1997

	Y-12 Plant	ORNL	ETTP
Active/in-service	4	3	2
Closed	40	51 ^a	14
Hazardous substance	3 ^b	0 ^c	6 ^d
Upgraded	0	0 ^e	0
Known or suspected sites	0	0	16
Total	47	54	38

^aThe 51 “closed” USTs include deferred or excluded tanks of various categories, as detailed in the text.

^bTwo USTs are deferred because they are regulated by the Atomic Energy Act of 1954. The third is a permanently closed methanol UST.

^cClosed tanks include two hazardous substance tanks, both of which were excavated, removed, and dismantled.

^dFour USTs were permanently closed that were used to store natural gas odorant and are regulated under the Pipeline Safety Act. A fifth UST, designed as a spill-overflow tank, has never permanently been placed into service. A sixth UST was permanently closed that stored a methanol/gasoline mixture.

^eIn previous reports, three upgraded USTs were listed for ORNL. These are now listed above as “active/in-service” because they are in use.

Thirteen USTs are deferred or exempt from regulation under RCRA Subtitle I and can be categorized as follows: two radioactive waste oil tanks closed under RCRA Subtitle C; one radioactive waste oil tank permitted under RCRA Subtitle C; two radioactive waste tanks closed under the FFA; two exempt heating oil tanks, which were closed as a best management practice (BMP); one wastewater tank regulated under the CWA; one RCRA SWMU; and four USTs with volumes of 110 gal or less, which were closed as a BMP.

Thirteen UST case closure letters have been received from TDEC. Two tanks were closed before the effective date of 40 CFR 280 (December 22, 1988) but after the UST registration date (January 1, 1974). All USTs not meeting the 1998 standards have been closed, the last of which was closed in November 1997.

The ORNL UST Program was also given responsibility for, and completed the closure of, three additional USTs, each of which was registered to another facility. Another four USTs never required registration because they were closed prior to January 1, 1974; however, these USTs are still potentially regulated if evidence of a release is discovered.

The Y-12 Plant UST Program includes four active petroleum USTs that meet all current regulatory compliance requirements. The UST registration certificates for these tanks are current, and certificates are posted at the UST locations, enabling fuel delivery until March 31, 1999.

At four other Y-12 Plant former UST sites, alternatives to “active remediation” are being pursued. These alternatives include the Site Ranking for the 9201-1 and 9204-2 UST sites and a Site-Specific Standard Request (SSSR) for the East End Fuel Facility (9754 and 9754-2) and the Rust Garage Facility (9754-1 and 9720-15) UST sites. If the sites qualify by TDEC DUST rules for these alternatives, and with approval by TDEC, the tank owner/operator is allowed to conduct semiannual groundwater monitoring in lieu of a remediation scenario.

In 1997, TDEC granted final closure for the 9201-1 and 9204-2 UST sites following the second year of the monitoring-only program and submission of the closure reports.

TDEC did not grant approval for an SSSR for the Rust Garage Facility. However, because this site is affected by commingling plumes from adjacent former hazardous waste disposal sites, the state has approved further investigation and remediation of this site to be addressed through the CERCLA process. Additionally, TDEC did not approve the SSSR for the East End Fuel Station USTs. A petition has been submitted to the TDEC UST Board to reconsider the request. If the TDEC board denies the petition, a corrective action implementation plan will be required and a schedule for corrective action will be developed.

The ETTP UST Program includes two active petroleum USTs that meet all current regulatory compliance requirements. The UST registration certificates are updated annually and are conspicuously posted in accordance with TDEC rules. Fourteen other petroleum USTs have been removed or closed in place with TDEC regulators' recommendation of "case closed" status.

One methanol/gasoline hazardous substance UST was removed in May 1997. A "case closed" status was granted by EPA-Region IV regulators. Four methyl mercaptan hazardous substance USTs were removed in July 1996. One other hazardous substance UST designed as a spill overflow tank was never activated.

Sixteen known and/or suspected historical USTs are also included in the ETTP UST Program as a BMP. These exempted historical USTs are those UST systems that were out of service before January 1, 1974. There is a potential that historical UST sites would have to adhere to closure requirements if directed by UST regulators. Magnetic and electromagnetic geophysical techniques are being used for detection and characterization of these historical UST sites and other underground structures to provide property database information for reindustrialization of the ETTP.

A detailed description of all ORNL, Y-12 Plant, and ETTP USTs and their current status is included in Appendix E.

2.2.6 National Environmental Policy Act

The National Environmental Policy Act (NEPA) provides a means to evaluate the potential environmental impact of proposed federal activities and to examine alternatives to those actions. The NEPA review process results in the preparation of NEPA documents in which federal, state, and local environmental regulations and DOE orders applicable to the environmental resource areas must be considered. These environmental resource areas include air, surface water, groundwater, terrestrial and aquatic ecology, threatened and/or endangered species, land use, and environmentally sensitive areas. Environmentally sensitive areas include floodplains, wetlands, prime farm land, habitats for threatened and/or endangered species, historic properties, and archaeological sites. Each ORR site NEPA program maintains compliance with NEPA through the use of its site-level procedures. These procedures assist in establishing effective and responsive communications with program managers and project engineers to establish NEPA as a key consideration in the formative stages of project planning. Table 2.6 notes the types of NEPA activities conducted at the ORR during 1997.

During 1997, ORNL operated under a procedure that provided requirements for project reviews and compliance with NEPA. It called for review of each proposed project, activity, or facility for its potential to result in significant impacts to the environment. Review and documentation included 19 cooperative research and development agreements (CRADAs) with industries and corporations and 46 other research actions, a majority of which were conducted by the Environmental Sciences Division. A CRADA is a cooperative agreement between a DOE facility and a private entity to collaborate on ideas, share costs, and pool the results of a particular R&D program. Sixteen "generic" categorical exclusions (CXs) were approved by DOE. A CX is one of a category of actions defined in 40 CFR

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Table 2.6. NEPA activities during 1997

Types of NEPA documentation	Y-12 Plant	ORNL	ETTP	ORISE
Categorical exclusion (CX) recommendation	5	33	10	
Specific CX granted	5	31 ^a	9	
Approved under general CX documents	63	49	40	0
Environmental assessment	0	0	1	
Special environmental analysis	0	0	0	
Programmatic environmental assessment	0	0	0	
Supplemental analysis	0	0	0	
Environmental impact statement	0	0	0	
Supplemental environmental impact statement	0	0	0	
Programmatic environmental impact statement	0	0	0	

^aIncludes 16 revised five-site generic CXs.

1508.4 that do not individually or cumulatively have a significant effect on the human environment and for which neither an environmental assessment (EA) nor an environmental impact statement (EIS) is normally required. Generic CXs expedite the NEPA process by allowing ORNL to group activities and proceed with a proposed action after completion of internal screening and documentation. NEPA compliance reviews were also completed for the transfer of El Verde Research Station Site from DOE to the Forest Service and transfer of custody of a site located at Mayaguez, Puerto Rico, from DOE to the U.S. Department of Agriculture. Reviews of NEPA values were conducted for the CERCLA actions, *Surface Impoundments Operable Unit* and *Fuel and Flush Salt Removal from the Molten Salt Reactor Experiment*. Other NEPA reviews covered routine maintenance actions, laboratory and office renovation and upgrades, reroofing of ORNL facilities, and waste minimization and reuse.

DOE has proposed development at ORNL of a high-energy linear accelerator facility, now called the Spallation Neutron Source (SNS), that would serve as a cornerstone for advanced research in neutron scattering into the next century. The proposed site for the SNS facility is on the ORR, on Chestnut Ridge approximately 2 miles northeast of ORNL. A site characterization survey, ecological resource surveys (potential habitat

for federal- and state-listed animal and plant species and jurisdictional wetlands), and an archaeological survey have been completed, and findings from these surveys have been incorporated into the draft EIS for the proposed project.

Much of the NEPA activity at the ETTP during 1997 involved review of potential leases of the land and facilities. The *Final Environmental Assessment, Lease of Land and Facilities Within the East Tennessee Technology Park, Oak Ridge, Tennessee*, was completed and approved in 1997 and was issued in December with a finding of no significant impact (FONSI). The EA was written to describe the baseline environmental conditions at the site; to analyze potential generic impacts to the baseline environment from future tenant operations based on defined bounding scenarios; and to identify and characterize cumulative impacts of future industrial uses of the site. In addition, the EA provides DOE with environmental information for developing lease restrictions. In 1997, NEPA reviews supported 13 potential lease actions and one license action at the ETTP. Reviews of NEPA values were conducted for two major D&D projects and eight CERCLA investigation or early action projects. Other NEPA reviews covered more routine maintenance actions, such as road repair, re-roofing, asbestos abatement, and equipment relocation or maintenance.

At the Y-12 Plant, job-specific CX documents were prepared and approved in 1997 for a number of projects: demolition and disposition of several unused protective services buildings and towers, improvements to treatment systems at the Central Pollution Control Facility, expansion of the Industrial Landfill spoil area, installation of a new portal security facility, and installation of a new groundwater treatment technology. Other NEPA reviews covered routine actions, such as office renovations, repairs to storm and sewer systems, security upgrades, and infrastructure improvements.

2.2.7 National Historic Preservation Act

Section 106 of the National Historic Preservation Act (NHPA) requires that federal agencies take into account the effects of their undertakings on properties included in or eligible for inclusion in the *National Register of Historic Places*. To comply with Section 106 of the NHPA, and its implementing regulations at 36 CFR 800, DOE-ORO was instrumental in the ratification of a programmatic agreement among DOE-ORO, the Tennessee state historic preservation officer (SHPO), and the Advisory Council on Historic Preservation concerning management of historical and cultural properties on the ORR. The programmatic agreement was ratified on May 6, 1994. It stipulates that DOE-ORO will prepare a cultural resource management plan (CRMP) for the ORR and will provide a draft of the CRMP to the Tennessee SHPO and Advisory Council on Historic Preservation within 24 months of the ratification of the agreement. The agreement also stipulates that DOE-ORO will conduct surveys to identify significant historical properties on the ORR. A draft CRMP has been completed and reviewed by the SHPO and the Advisory Council. Comments were incorporated into the CRMP in 1997 and early 1998, and the CRMP will be released for public comment in 1998.

Compliance with NHPA at ORNL, the Y-12 Plant, and the ETTP is achieved and maintained in conjunction with NEPA compliance. The scope of proposed actions is reviewed in accordance with

the programmatic agreement and, if warranted, consultation is initiated with the SHPO and the Advisory Council on Historic Preservation, and the appropriate level of documentation is prepared and submitted. ORNL submitted one historical review in 1997 for dismantlement of Building 3004. Seven reviews were prepared for submittal in 1997 from the ETTP. The submittals dealt with leasing portions of property and/or land on the ORR.

The ETTP and Y-12 Plant have been surveyed to identify sites eligible for inclusion in the *National Register*, and an archaeological survey has been completed. Final reports for both the Y-12 Plant and the ETTP are expected by the end of 1998. ORR-wide surveys to identify and evaluate pre-World War II structures and known archaeological sites for eligibility in the *National Register* were completed in 1995. Survey results were incorporated into the CRMP.

A survey of all ORISE structures was conducted to comply with the NHPA. Two properties, the Freels Cabin and the Atmospheric Turbulence Diffusion Laboratory, were identified as previously included in the *National Register*. Management responsibilities for the Freels Cabin have since been transferred to ORNL. Section 106 of the NHPA requires federal agencies to coordinate with the state and allow the SHPO to review proposed demolition projects and other activities adversely affecting existing structures. During the past 3 years, ORISE removed 40 surplus structures (some requiring decontamination) from the ORR.

2.2.8 Protection of Wetlands

Executive Order 11990 (issued in 1977) was established to mitigate adverse effects to wetlands caused by destruction or modification of wetlands and to avoid new construction in wetlands wherever possible. Avoidance of these effects is ensured through implementation of the sensitive-resource analysis conducted as part of the DOE NEPA review process. Protective buffer zones and application of BMPs are required for activities on the ORR. Coordination with TDEC, the U.S. Army Corps of Engineers (COE), and TVA is

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necessary for activities involving waters of the United States, which include wetlands and floodplains. This is also true for the state and waters of the state. Generally, this coordination results in permits from the COE, TVA, and/or the state (see Sect. 2.2.13.3 for permitting details). In addition, TDEC has developed a regulatory position on impacted wetlands that includes mitigation; any affected wetlands must be replaced in area and function by newly constructed wetlands or enhancement of previously impacted areas.

The ORR implements protection of wetlands through each site NEPA program in accordance with 10 CFR 1022, "Floodplain/Wetlands Environmental Review Requirements." The Y-12 Plant, ORNL, and the ETTP practice wetlands protection by establishing buffer zones and other BMPs whenever activities are proposed that may introduce a potential environmental impact. Wetlands protection, documentation, and reporting requirements are administered through the NEPA review and documentation process. Each of the sites also has conducted surveys for the presence of wetlands, and conducts surveys on a project or program as-needed basis. Wetland surveys and delineations have been conducted on about 14,000 acres (5668 ha) of the 34,500 acres (13,968 ha) that make up the reservation. About 800 acres (324 ha) of wetlands have been identified in the areas in which surveys have been conducted. Surveys for the remaining 20,500 acres (8300 ha) will be conducted only as needed.

The Y-12 Plant has conducted two surveys of its wetlands resources. *Identification and Characterization of Wetlands in the Bear Creek Watershed* (MMES 1993) was completed in October 1993, and a wetland survey of selected areas in the Y-12 Plant area of responsibility was completed in October 1994. The first report surveys the Y-12 Plant and surrounding areas; the second report, *Wetland Survey of Selected Areas in the Oak Ridge Y-12 Plant Area of Responsibility, Oak Ridge, Tennessee*, Y/ER-279, January 1997, surveys additional areas for which ER activities are planned.

In 1995, TDEC approved a wetlands mitigation plan for First Creek at ORNL in conjunction

with a sediment-removal project on Melton Branch. Implementation of the plan was completed on schedule in March 1996 with annual reports submitted to TDEC as required. The plan required that a 1000-linear-foot reach of First Creek be planted in specific trees and shrubs and that it be protected and maintained as a stream-enhancement zone. This protection and maintenance continued through 1997. A wetlands survey of ORNL areas, *Wetland Survey of the X-10 Bethel Valley and Melton Valley Groundwater Operable Units at ORNL* (Rosensteel 1996), was completed and published in 1996.

A partial wetlands survey for areas within the ETTP area of responsibility was conducted during the summer of 1994. Not all areas within the ETTP have been surveyed for wetlands, and it is likely that additional locations will be classified as wetlands. The wetlands that have been identified are protected in accordance with Executive Order 11990.

Since 1994, additional wetland surveys and wetland boundary delineations have been performed in the main ETTP area, at the K-901-A area, the Atomic Vapor Laser Isotope Separation (AVLIS) Site, and the ETTP South Site. A revised wetland assessment for site investigation activities at the ETTP was approved by DOE-ORO in December 1996.

2.2.9 Floodplains Management

Executive Order 11988 (issued in 1977) was established to require federal agencies to avoid to the extent possible adverse impacts associated with the occupancy and modification of floodplains and to avoid direct or indirect support of floodplain development wherever there is a practicable alternative. Agencies must determine whether a floodplain is present that may be affected by an action, assess the impacts on such, and consider alternatives to the action. The executive order requires that provisions for early public review and measures for minimizing harm be included in any plans for actions that might occur in the floodplain. Floodplain assessments and the associated notices of involvement and statement of findings are prepared in accordance with

10 CFR 1022, usually as part of the NEPA review and documentation process.

2.2.10 Endangered Species Act

Good stewardship, state laws (*The Rare Plant Protection and Conservation Act of 1985*, Tennessee Code Annotated Section 70-8-301 to 314 and *Tennessee Nongame and Endangered or Threatened Wildlife Species Conservation Act of 1974*, Tennessee Code Annotated Section 70-8-101 to 110) and federal laws (*Endangered Species Act of 1973*, 16 U.S.C. 1531 et seq.) dictate that animal and plant species of concern be considered when a proposed project has the potential to alter their habitat or otherwise harm them. At the federal level, such species are classified as endangered, threatened, or species of concern; at the state level, species are considered endangered, threatened, or of special concern (plants) or in need of management (animals). All such species are termed threatened and endangered (T&E) species in this report.

2.2.10.1 Threatened and Endangered Animals

Listed animal species known to be currently present on the reservation (excluding the Clinch River bordering the reservation) are given along with their status in Table 2.7. The list illustrates the diversity of birds on the ORR, which is also habitat for many unlisted species some of which are in decline nationally or regionally. Other listed species may also be present, although they have not been observed recently. These include several species of mollusks (such as the spiny riversnail), amphibians (such as the hellbender), birds (such as Bachman's sparrow), and mammals (such as the smoky shrew). The ORR has been more thoroughly surveyed for birds than for other animal groups, except perhaps fish and aquatic invertebrates. The only federally listed animal species that have been recently observed (the gray bat, bald eagle, and peregrine falcon) are represented by one to several migratory or transient individuals rather than by permanent residents, although this situation may change as these spe-

cies continue to recover. A few individual bald eagles, for example, have become winter resident rather than transient. Similarly, several state-listed bird species, such as the anhinga, olive-sided flycatcher, sandhill crane, double-crested cormorant, and little blue heron are currently uncommon migrants or visitors to the reservation; however, the double-crested cormorant and little blue heron are increasing or will probably increase in numbers. Others, such as the cerulean warbler, northern harrier, great egret, and yellow-bellied sapsucker, are common migrants or winter residents that do not nest on the reservation.

2.2.10.2 Threatened and Endangered Plants

Twenty-six plant species currently known to occur on the ORR are listed by the state of Tennessee, including the purple fringeless orchid, pink lady's slipper, and Canada lily (Table 2.8). Four species (spreading false foxglove, Appalachian bugbane, tall larkspur, and butternut) have been under review for listing at the federal level and were listed under the formerly used "C2" candidate designation.

Whorled mountain mint is found on the ORR, but its taxonomy is uncertain. A species of *Pycnathemum* is also present; it is believed to be either *Pycnathemum verticillatum* or *Pycnathemum torrei*. If the presence of either were confirmed, it would be listed by the state. Two additional species listed by the state, *Lilium michiganense* and *Carex oxylepis* (var. *pubescens*), were identified in the past on the ORR; however, they have not been found in recent years. Several state-listed plant species currently found on adjacent lands may be present on the ORR as well, although they have not been located.

2.2.11 Environmental Justice

On February 11, 1994, President Clinton promulgated Executive Order 12898, "Federal Actions To Address Environmental Justice in Minority Populations and Low-Income Populations." The executive order requires that federal

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Table 2.7. Animal species of concern reported from the Oak Ridge Reservation^a

Species	Common name	Legal status ^b	
		Federal	State
<i>Fish</i>			
<i>Phoxinus tennesseensis</i>	Tennessee dace		NM
<i>Amphibians and reptiles</i>			
<i>Hemidactylium scutatum</i>	Four-toed salamander		NM
<i>Birds</i>			
<i>Haliaeetus leucocephalus</i>	Bald eagle	T	T
<i>Falco peregrinus</i>	Peregrine falcon	T	E
<i>Dendroica cerulea</i>	Cerulean warbler	C	
<i>Pandion haliaetus</i>	Osprey		T
<i>Ammodramus savannarum</i>	Grasshopper sparrow		NM
<i>Accipiter striatus</i>	Sharp-shinned hawk		NM
<i>Accipiter cooperii</i>	Cooper's hawk		NM
<i>Circus cyaneus</i>	Northern harrier		NM
<i>Anhinga anhinga</i>	Anhinga		NM
<i>Casmerodius alba</i>	Great egret		NM
<i>Leucophoyx thula</i>	Snowy egret		NM
<i>Contopus borealis</i>	Olive-sided flycatcher		NM
<i>Grus canadensis</i>	Sandhill crane		NM
<i>Lanius ludovicianus</i>	Loggerhead shrike		NM
<i>Phalacrocorax auritus</i>	Double-crested cormorant		NM
<i>Sphyrapicus varius</i>	Yellow-bellied sapsucker		NM
<i>Egretta caerulea</i>	Little blue heron		NM
<i>Mammals</i>			
<i>Myotis grisescens</i>	Gray bat	E	E
<i>Sorex longirostris</i>	Southeastern shrew		NM

^aLand and surface waters of the ORR exclusive of the Clinch River, which borders the ORR.

^bE = endangered, T = threatened, C = species of concern, NM = in need of management.

**Table 2.8. Protected vascular plant species found on the Oak Ridge Reservation
(September 1997)**

Species	Common name	Habitat on ORR	Status ^a
<i>Aureolaria patula</i>	Spreading false-foxglove	River bluff	(C2), T
<i>Carex gravida</i>	Heavy sedge	Varied	S
<i>Carex oxylepis</i> var. <i>pubescens</i> ^b	Hairy sharp-scaled sedge	Shaded wetlands	S
<i>Cimicifuga rubifolia</i>	Appalachian bugbane	River slope	(C2), T
<i>Cypripedium acaule</i>	Pink lady's-slipper	Dry to rich woods	E-CE
<i>Delphinium exaltatum</i>	Tall larkspur	Barrens and woods	(C2), E
<i>Diervilla lonicera</i>	Northern bush-honeysuckle	River bluff	T
<i>Draba ramosissima</i>	Branching whitlow-grass	Limestone cliff	S
<i>Elodea nuttallii</i>	Nuttall waterweed	Pond, embayment	S
<i>Fothergilla major</i>	Mountain witch-alder	Woods	T
<i>Hydrastis canadensis</i>	Golden seal	Rich woods	S-CE
<i>Juglans cinerea</i>	Butternut	Slope near stream	(C2), T
<i>Juncus brachycephalus</i>	Small-head rush	Wetland	S
<i>Lilium canadense</i>	Canada lily	Moist woods	T
<i>Lilium michiganense</i> ^c	Michigan lily	Moist woods	T
<i>Liparis loeselii</i>	Fen orchid	Forested wetland	E
<i>Panax quinquefolius</i>	Ginseng	Rich woods	S-CE
<i>Platanthera flava</i> var. <i>herbiola</i>	Tuberculed rein-orchid	Forested wetland	T
<i>Platanthera peramoena</i>	Purple fringeless orchid	Wet meadow	T
<i>Pycnanthemum verticillatum</i>	Whorled mountain-mint	Wetlands and barrens	E
<i>Rhynchospora colorata</i>	White-topped sedge	Rocky edge of pond	[S]
<i>Ruellia purshiana</i>	Pursh's wild-petunia	Dry, open woods	S
<i>Saxifraga careyana</i>	Carey saxifrage	River bluff, sinkhole	S
<i>Scirpus fluviatilis</i>	River bulrush	Wetland	S
<i>Spiranthes lucida</i>	Shining ladies'-tresses	Wetland	T
<i>Viola tripartita</i> var. <i>tripartita</i>	Three-parted violet	Rocky woods	S

^aStatus codes:

(C2) Special concern, under review for federal listing; was listed under the formerly used C2 candidate designation. More information needed to determine status.

E Endangered in Tennessee.

T Threatened in Tennessee.

S Special concern in Tennessee.

-CE Status as a result of commercial exploitation.

[S] The Oak Ridge Reservation population of *Rhynchospora colorata* is the only known population of this species in the state of Tennessee. Because it is a relatively recent find, the state flora has not yet been updated to include *Rhynchospora colorata*. Tennessee Heritage Program staff have suggested that it be considered special concern pending further review (personal communication).

^b*Carex oxylepis* var. *pubescens* has not been re-located during recent surveys.

^c*Lilium michiganense* is believed to have been extirpated from the ORR by the impoundment at Melton Hill.

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actions not have the effect of excluding, denying, or discriminating on the basis of race, color, national origin, or income level, and federal agencies must ensure that there are no disproportionate impacts from their actions on low-income and minority communities surrounding their facilities.

An environmental justice strategy is in place at DOE-ORO under the direction of the Diversity Programs Office. It addresses the need to effectively communicate DOE activities to minority communities. Efforts are under way to ensure that DOE activities are presented to the public in a manner that does not require stakeholders to possess a technical background in order for them to effectively participate in the decision-making process.

In addition, each DOE planned action that is addressed under NEPA must include an analysis of the health, environmental, economic, and demographic impacts of the planned action on surrounding minority and low-income communities that could be affected by the action.

2.2.12 Safe Drinking Water Act

The Safe Drinking Water Act (SDWA) of 1974 is an environmental statute for the protection of drinking-water sources. The act requires EPA to establish primary drinking-water regulations for contaminants that may cause adverse public health effects. Although many of the requirements of the SDWA apply to public water supply systems, Section 1447 states that each federal agency having jurisdiction over a federally owned or maintained public water system must comply with all federal, state, and local requirements regarding the provision of safe drinking water. Because the systems that supply drinking water to the ORR are DOE-owned, the requirements of Section 1447 apply. The Underground Injection Control (UIC) program, adopted pursuant to the SDWA, regulates the emplacement of fluids into the subsurface by means of injection wells.

Potable water for the city of Oak Ridge, the Y-12 Plant, and ORNL is received from a DOE-owned water-treatment facility located northeast of the Y-12 Plant and currently managed

by East Tennessee Mechanical Contractors in partnership with Johnson Controls World Services, Inc. Both ORNL and the Y-12 Plant are designated as nontransient, noncommunity water-distribution systems by the TDEC Division of Water Supply and are subject to the Tennessee Regulations for Public Water Systems and Drinking Water Quality, Chapter 1200-5-1. Under the TDEC regulations, distribution systems that do not perform water treatment can use the records sent to the state by the water treatment facility from which water is received to meet applicable compliance requirements. In 1997, the DOE water treatment plant met all of the Tennessee radiological and nonradiological standards and scored 100 on the annual TDEC review.

ORNL's water distribution system has qualified for triennial lead and copper sampling. In 1997, the system was sampled; none of the samples exceeded the Tennessee lead or copper action levels.

In June 1997, ORNL received two Class V Underground Injection Control Permits from TDEC for Environmental Sciences Division experiments in ORNL Waste Area Grouping (WAG) 5. The experiments involve the use of underground tracers (i.e., isotopes of cobalt, cadmium, and chromium; an isomer of fluorobenzoic acid; and a bromide salt) to improve the predictive capability of the fate and transport of subsurface plumes. One of these permits was renewed by TDEC in December 1997. The other permit does not have an expiration date and therefore does not require renewal.

The K-1515 Sanitary Water Plant provides drinking water for the ETTP and for an industrial park located on Bear Creek Road south of the site. The DOE-owned facility is classified as a nontransient, noncommunity water-supply system by TDEC and is subject to state regulations. The plant is in compliance with the drinking-water quality standards; monthly and quarterly testing for required constituents is carried out and reported to TDEC. Requirements of the lead and copper rule have been met, and the plant has been granted approval to reduce monitoring for these constituents to once per year. In 1997, the DOE

water treatment plant met Tennessee radiological and nonradiological standards.

A cross-contamination control program implemented at the Y-12 Plant, ORNL, and the ETTP prevents and eliminates cross-connections of sanitary water with process water and uses backflow-prevention devices and an engineering review and permitting process. As part of the program, an inventory of installed backflow-prevention devices is maintained, and inspection and maintenance of the devices are conducted in accordance with regulatory requirements.

2.2.13 Clean Water Act

The CWA was originally enacted as the Water Pollution Control Act in 1948, then later established as the Federal Water Pollution Control Act in 1972. Since that time, the CWA received two major amendments. The objective of the CWA is to restore, maintain, and protect the chemical, physical, and biological integrity of the nation's waters. With continued amendments, the CWA has established a comprehensive federal and state program to protect the nation's waters from pollutants. Congress continues to work on amendments to and reauthorization of the CWA.

2.2.13.1 National Pollutant Discharge Elimination System

One of the strategies developed to achieve the goals of the CWA was the establishment by the EPA of limits on specific pollutants that are allowed to be discharged to waters of the United States by municipal sewage treatment plants and industrial facilities. In 1972, the EPA established the National Pollutant Discharge Elimination System (NPDES) permitting program to regulate compliance with these pollutant limitations. The program was designed to protect surface waters by limiting effluent discharges into streams, reservoirs, wetlands, and other surface waters.

The Y-12 Plant NPDES permit (TN0002968) became effective on July 1, 1995, and encompasses approximately 100 active point-source discharges or storm water monitoring locations requiring compliance monitoring. The monitoring

resulted in approximately 9800 laboratory analyses in 1997, in addition to numerous field observations. Monitoring of discharges demonstrates that the Y-12 Plant has achieved an NPDES permit compliance rate of 99.7%; biological monitoring programs conducted on nearby surface streams provide evidence of the continued ecological recovery of the streams. At the Y-12 Plant, there were seven NPDES noncompliances in 1997, compared with ten in 1996 (Fig. 2.1).

In May 1995, the Y-12 Plant appealed two provisions of the permit: the biomonitoring limitations placed on East Fork Poplar Creek (EFPC) Outfall Point 201 and the mercury limitations at Monitoring Station 17. These limits are stayed while resolution of both issues is being sought by personnel from the Y-12 Plant and TDEC. The current permit requires storm water characterizations at selected monitoring locations in accordance with the Y-12 Plant Storm Water Pollution Prevention Plan. Other documents submitted to TDEC in accordance with the NPDES permit include the revised Radiological Monitoring Plan

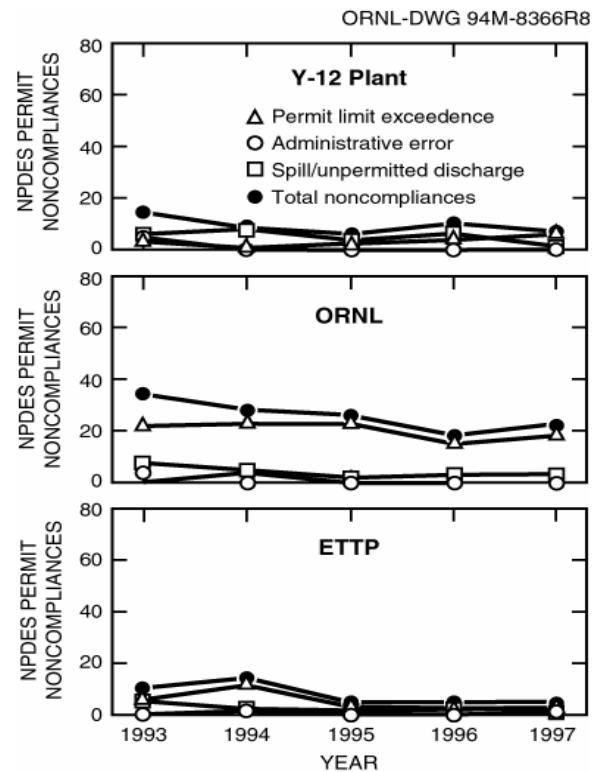


Fig. 2.1. Five-year summary of NPDES noncompliances.

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and the Biological Monitoring and Abatement Program (BMAP) Plan. A report on the analysis of fecal coliform bacteria levels at selected storm water monitoring points has been previously submitted.

ORNL is currently operating under NPDES Permit 0002941, which was renewed by TDEC on December 6, 1996, and went into effect February 3, 1997. The ORNL NPDES permit lists 164 point-source discharges that require compliance monitoring. Approximately 100 of these are storm drains, roof drains, and parking lot drains. Compliance was determined by approximately 18,000 laboratory analyses and measurements in 1997, in addition to numerous field observations by ORNL field technicians. The NPDES permit limit compliance rate for all discharge points for 1997 was greater than 99% (Fig. 2.1).

Compared with the previous permit, the new ORNL permit includes more stringent limits, based on compliance with water quality criteria, at a number of outfalls. The new permit also requires ORNL to conduct detailed characterization of numerous storm water outfalls, conduct an assessment and evaluation to modify the Radiological Monitoring Plan, develop and implement a Storm Water Pollution Prevention Plan, implement a revised BMAP plan, and develop and implement a Chlorine Control Strategy. DOE appealed certain contested limits and conditions of the renewed permit, including numeric limits on effluent mercury, arsenic, and selenium.

The ETTP NPDES permit includes 3 major outfalls, 2 minor outfalls, and 136 storm drain outfalls. From about 35,000 NPDES laboratory and field measurements completed in 1997, only 4 noncompliances occurred, indicating a compliance rate of more than 99% (Fig. 2.1). Only one of the noncompliances occurring during 1997 was the result of an exceedence of the wastewater discharge limits.

The ETTP is operating under NPDES Permit TN0002950, issued with an effective date of October 1, 1992. A major permit modification became effective June 1, 1995, and the permit expired on September 29, 1997. To facilitate the transfer of ownership/operation of ETTP facilities to other parties, it was determined that separate

NPDES permits would be required for each of the ETTP treatment facilities. In addition, it was determined that a separate NPDES for the storm water drainage system would be necessary. The EPA forms that must be completed as part of the application for the ETTP NPDES permit for the storm drainage system required a large quantity of analytical data that had not been collected during previous storm drain sampling efforts. Therefore, Phase I of the 1996–1997 Storm Water Pollution Prevention (SWPP) sampling effort was conducted to collect analytical data that would allow for completion of the NPDES permit renewal application for the ETTP storm water drainage system. Phase I sampling included collection of samples from specific storm water outfalls during wet weather conditions and collection of samples from storm water outfalls that flow on a continuous basis during dry weather conditions.

Phase II sampling was conducted to further define the presence of contaminants in the storm drain system that have been detected during SWPP sampling efforts conducted in previous years. Analytical results from these past sampling efforts were compared to screening criteria developed from several sources. Parameters for which the analytical results exceeded these screening criteria were monitored as part of the 1996–1997 SWPP sampling effort to determine if any change in the levels of these contaminants had occurred over time.

2.2.13.2 Sanitary Wastewater

The CWA includes pretreatment regulations for publicly owned treatment works (POTW). Sanitary wastewater from the Y-12 Plant is discharged to the city of Oak Ridge POTW under an industrial and commercial wastewater discharge permit. City personnel performed semiannual inspections on February 5 and August 26, 1997. No deficiencies of the Y-12 Plant Sanitary Sewer Compliance Program were noted during the inspections.

Lockheed Martin Energy Systems received a pump-and-haul permit, State Permit No. 97-010, for operation of a pump-and-haul system for disposal of sanitary wastewater to an off-site

municipal sewage facility on September 30, 1997. The permit became effective on October 1, 1997, and will expire September 30, 2002. The permit was issued for removal of sanitary waste from a temporary office trailer that is being used during a 3-year sludge disposal project associated with the Y-12 Plant West End Treatment Facility.

A revised discharge permit (Permit Number 1-91) was issued August 25, 1997, by the city of Oak Ridge. A number of allowable discharge concentrations were modified in the new permit. The permit sets a discharge limit for radionuclides, and this limitation has been appealed by DOE. The city of Oak Ridge has noted that the appeal must be resolved before the city will approve a request from the Y-12 Plant to discharge any new nondomestic wastewaters.

Sanitary sewer radiological sample results at the Y-12 Plant are routinely reviewed to determine compliance with DOE Order 5400.5, "Radiation Protection of the Public and Environment." Sample results are compared to the derived concentration guides (DCGs) listed in the order. No radiological parameter that is monitored (including uranium) has exceeded a DCG. Typically, sample results indicate that the Y-12 Plant radiological discharges are three orders of magnitude below their respective DCG.

During 1997, the Y-12 Plant experienced three exceedences of the Industrial User discharge permit issued by the city of Oak Ridge. The exceedences were for iron, copper, and cyanide. The limit for iron was 0.15 mg/L, and the discharge concentration on January 16 was 1.91 mg/L (the new discharge limit for iron is 15.0 mg/L). The limit for copper was 0.04 mg/L, and the discharge concentration on February 11 was 0.217 mg/L (the new discharge limit for copper is 0.092 mg/L). The limit for cyanide was 0.014 mg/L, and the discharge concentration on June 24 was 0.015 mg/L (the new discharge limit for cyanide is 0.062 mg/L). Although no specific cause could be determined, there are a number of construction activities involving the sanitary sewer that may have contributed to these exceedences. The construction activities are part of an ongoing multimillion dollar sanitary sewer

upgrade project that is expected to continue through FY 1999.

At ORNL, sanitary wastewater is collected, treated, and discharged separately from other liquid wastewater streams through an on-site sewage treatment plant. Wastewater discharged into this system is regulated by means of internally administered waste acceptance criteria based on the plant's NPDES operating permit parameters. Wastewater streams currently processed through the plant include sanitary sewage from facilities in Bethel and Melton valleys, area runoff of rainwater that infiltrates the system, and specifically approved small volumes of nonhazardous biodegradable wastes such as scintillation fluids. The effluent stream from the sewage treatment plant is ultimately discharged into White Oak Creek (WOC) through an NPDES-permitted outfall (X-01). Infiltration into the system and the discharge from the on-site laundry have, at times, caused the sludge generated during the treatment process to become slightly radioactive. As a result, the sludge is treated as solid LLW and is stored in an ORNL SWSA. ORNL has completed a line-item project for comprehensive upgrades of its sanitary sewage system. Upgrades include sealing the collection system to reduce infiltration of contaminated groundwater and surface water and redirecting discharges from the laundry to appropriate alternative treatment facilities. The activity level of ORNL Sewage Treatment Plant sludge continues to decline.

ETTP domestic wastewater is treated at the on-site K-1203 Sewage Treatment Plant and discharged pursuant to the NPDES permit. A sewer use ordinance and a wastewater control and surveillance program are in effect to ensure adequate treatment of wastewater at the K-1203 Sewage Treatment Plant and also to ensure that effluent from the facility continues to meet all NPDES permit limits. During calendar year 1995, numerous NPDES noncompliances were experienced at the K-1203 Sewage Treatment Plant as a result of upset conditions resulting from inflow and infiltration into the sewage collection system during periods of heavy rainfall. A sewer rehabilitation project to reline and refurbish the sewage collection system to reduce inflow and infiltration

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was completed in July 1997. Since completion of the project, inflow and infiltration have been significantly reduced and no upset conditions resulting in NPDES noncompliances have occurred at the facility. Past operations at the site have resulted in the sludge generated at the K-1203 Sewage Treatment Plant being slightly radioactive. As a result, the sludge is treated as LLW and stored on site upon removal from the drying beds.

2.2.13.3 Aquatic Resources Protection

The COE, TVA, and TDEC conduct permitting programs for projects and activities with the potential to affect aquatic resources, including navigable waters, surface waters (including tributaries), and wetlands. These are the COE Section 404 dredge-and-fill permits, TDEC Aquatic Resources Alteration Permits (ARAPs), and TVA 26A approvals. (See Sect. 2.5, Environmental Permits, for ARAP permits.)

An ARAP was issued to the Y-12 Plant in 1997 for removal of debris in EFPC.

On August 22, 1997, a COE permit was issued to the ETTP for the K-1250-4 Bridge Replacement Project.

In 1997 ORNL received ARAP, COE, and TVA permits for a variety of projects including culvert and roadbed upgrades on Jones Island Road and debris removal from weirs on White Oak Creek and Northwest Tributary.

2.2.13.4 Oil Pollution Prevention

Section 311 of the CWA regulates the discharges of oils or petroleum products to waters of the United States and requires the development and implementation of a Spill Prevention Control and Countermeasures (SPCC) Plan to minimize the potential for oil discharges. Currently, each facility implements a site-specific SPCC plan. This section of the CWA was significantly amended by the Oil Pollution Act of 1990, which has as its primary objective the improvement of responses to oil spills.

The Oil Pollution Act requires certain facilities to prepare and implement a facility response

plan for responding to a worst-case discharge of oil. The ETTP is subject to the requirements for preparing such a plan because of its oil storage capacity and location. An updated plan was issued in February 1997. The plan includes designation of response personnel, description of response equipment, identification of the worst-case discharge scenario and associated response actions, personnel training requirements, testing and inspection requirements, and other oil spill-prevention and response measures. No facility response plan was required for the Y-12 Plant or ORNL beyond those outlined in the site SPCC.

2.2.14 Clean Air Act

Authority for enforcement of the Clean Air Act (CAA) is shared between TDEC for nonradioactive emission sources and EPA for radioactive emission sources. EPA also enforces rules issued pursuant to the 1990 CAA Amendment, Title VI—Stratospheric Ozone Protection.

2.2.14.1 General CAA Compliance

The TDEC Air Permit Program ensures compliance with the federal CAA and TDEC rules for air emission sources. All three ORR facilities are subject to TDEC air permitting program rules. Each site is in compliance with all federal air regulations and TDEC air-permit conditions.

CAA compliance program staff participate in regulatory inspections and internal compliance assessment audits to improve compliance with applicable regulations or permit conditions. All sources of air emissions are permitted, and documentation of compliance is maintained at each site. A number of sources that are exempt from permitting requirements under state of Tennessee rules are identified for internal purposes as well. All emission sources permitted by TDEC are operating in compliance with their respective permits. Programs for permitting, compliance inspection, and documentation of compliance are in place and have been effective and ensure that all ORR operations remain in compliance with all federal and state air pollution control regulations.

2.2.14.2 Compliance with 1990 CAA Amendments

To comply with Title III, Hazardous Air Pollutants (HAPs), the major emphasis at the three sites has been on continued applicability determinations of final rules promulgated by EPA during 1997.

With respect to Title V, New Operating Permit Program, TDEC continues to administer the Title V Major Source Operating Permit Program based on EPA's 1996 interim final approval. In 1997, Title V operating permit applications were submitted for ORNL and Y-12 Plant facilities. The ETTP submitted a Title V application in 1996 as part of Tennessee's early Title V submittal program. All three applications have been declared complete by TDEC. A comprehensive Title V permit, or combination of permits, for each ORR facility will replace the individual source permits that are currently active at each facility. During 1997, the three ORR facilities began preparations for expected state program changes. Several changes will be required prior to the state receiving EPA final approval. The most notable changes will be in regulations addressing insignificant (exempt) activities. As a result of changes in the 40 CFR 70 regulations, EPA has extended the date for final approval for state Title V programs. TDEC is expected to get full approval for Title V in 2000.

The Title VI, Stratospheric Ozone Protection Activities, regulations include maintenance of established programs for stratospheric ozone protection. These programs have been implemented for motor vehicle air-conditioner and other refrigeration equipment and include elements for demonstrating compliance with equipment leak repair, container labeling, regulated substances purchasing, and technician and equipment certifications.

2.2.14.3 National Emission Standards for Hazardous Air Pollutants for Radionuclides

The ORR facilities were in compliance with the Radionuclide National Emission Standards for

Hazardous Air Pollutants (Rad-NESHAP) dose limit of 10 mrem/year to the maximum exposed individual of the public during 1997. Based on modeling of emissions from major and minor point sources, the off-site effective dose equivalent (EDE) was 0.41 mrem/year in 1997.

Continuous emissions monitoring is conducted at the ETTP TSCA Incinerator, seven stacks at ORNL, and exhaust stacks serving uranium-processing areas at the Y-12 Plant. Grab samples and other EPA-approved estimation techniques are used on remaining minor emission points, grouped area sources, and fugitive emissions. All three ORR facilities met the emission and test procedures of 40 CFR 61, Subpart H in 1997.

2.2.14.4 NESHAP for Asbestos

The ORR facilities have numerous buildings and equipment that contain asbestos materials. The compliance program for asbestos management includes demolition and renovation notifications, inspections, monitoring, abatement, and disposal of asbestos materials. One asbestos release of reportable quantities (RQs) under CERCLA was identified at the ETTP in 1997. Release quantities were small with no observable off-site migration. No releases of RQs were reported at the Y-12 Plant or ORNL.

2.2.14.5 State-Issued Air Permits

The Y-12 Plant has 40 active air permits covering 162 air emission points. There are 169 documented exempt minor sources and 395 exempt minor emission points. During 1997, Y-12 Plant personnel requested cancellation of 18 permits for air sources no longer in service or exempt under Tennessee Air Pollution Rule 1200-3-9.

At the end of CY 1997, ORNL had 21 active operating permits covering 250 sources. During 1997, the state rescinded four of ORNL's operating permits as insignificant emissions units and one new operating permit was issued consolidating three permitted sources.

There were 253 active air emission sources at the ETTP at the end of 1997. The total includes 45 sources covered by 12 TDEC air operating permits. All remaining active air emission sources are exempt from permitting requirements, except one source that initiated operations under a permit to construct.

2.2.15 Toxic Substances Control Act

TSCA was passed in 1976 to address the manufacture, processing, distribution in commerce, use, and disposal of chemical substances and mixtures that present an unreasonable risk of injury to human health or the environment. TSCA mandated that EPA identify and control chemical substances manufactured, processed, distributed in commerce, and used within the United States. The EPA imposes strict information-gathering requirements on both new and existing chemical substances, including polychlorinated biphenyls (PCBs).

2.2.15.1 Polychlorinated Biphenyls

TSCA specifically bans the manufacture, processing, and distribution in commerce of PCBs but authorizes the continued use of some existing PCBs and PCB equipment. TSCA also imposes marking, storage, and disposal requirements for PCBs. The codified regulation governing PCBs mandated by TSCA is found at 40 CFR 761 and is administered by EPA. Most of the requirements of 40 CFR 761 are matrix and concentration dependent. For example, the ban on manufacturing, processing, use, and distribution in commerce applies to PCBs at any concentration. Storage and disposal requirements generally apply to PCBs at 50 parts per million (ppm) or greater; however, these requirements may apply at lower concentrations in some instances. TDEC restricts PCBs from disposal in landfills and classifies PCBs as special wastes under Tennessee solid waste regulations. A special waste exemption is required from the state of Tennessee to dispose of PCBs at concentrations of 2 ppm up to 49 ppm in landfills. Additionally, PCB discharges into waterways are

restricted by the state-regulated CWA and NPDES programs.

2.2.15.2 Authorized and Unauthorized Uses of PCBs

EPA promulgated regulations in 1979 implementing the TSCA ban on the manufacture, use, processing, and distribution in commerce of PCBs; however, specific applications of PCBs were authorized for continued use under restricted conditions. A variety of PCB systems and equipment have been in service at the ORR during its 50-year history. Many of these systems and equipment were used in accordance with industry standards at the time, and their continued use was authorized under the 1979 PCB regulations. Systems that were authorized included transformers, capacitors, and other electrical distribution equipment; heat-transfer systems; and hydraulic systems. The vast majority of these PCB uses have been phased out at the ORR. Small amounts of PCBs remain in service in PCB light ballasts; however, ballasts containing PCBs are being replaced by non-PCB ballasts during normal maintenance. Most transformers that contained PCBs either have been retrofilled (replacement of PCB fluid with non-PCB dielectric fluid) to reduce the PCB concentration to below regulated limits or have been removed from service altogether. Some small pole-mounted transformers remaining in service at the ETTP and Y-12 Plant electrical systems are scheduled to be tested for PCBs during normal maintenance. It is unlikely that any of these small transformers contain PCBs at concentrations regulated for disposal; however, they are assumed to contain PCBs until verified otherwise. In 1997, thirty-five pole mounted transformers were removed from the Y-12 Plant PCB Annual Inventory after analytical verification.

The 1979 regulations did not anticipate the use of PCBs in many applications for which they were used. As a result, those past uses not specifically authorized present compliance issues under TSCA. At the ORR, unauthorized uses of PCBs have been found in building materials, lubricants, and nonelectrical systems. More such unautho-

alized uses are likely to be found during the course of D&D activities. The most widespread of these unauthorized uses of PCBs are PCB-impregnated gaskets in the gaseous diffusion process motor ventilation systems at the ETTP. A discovery occurred in 1997 at the Y-12 Plant when expansion joint material containing regulated PCB levels was discovered in the basement of a building on the Y-12 Plant site. EPA was notified of this discovery and the intent to leave the material in place for the duration of its useful life.

2.2.15.3 PCB Compliance Agreements

The Oak Ridge Reservation PCB Federal Facilities Compliance Agreement (ORR-PCB-FFCA) between EPA Region 4 and DOE became effective on December 16, 1996. The agreement addresses PCB compliance issues at the ETTP, ORNL, the Y-12 Plant, and ORISE. For the ETTP, the agreement supersedes a previous agreement known as the Uranium Enrichment Toxic Substances Control Act Federal Facilities Compliance Agreement (UE-TSCA-FFCA). The UE-TSCA-FFCA continues in force for the Portsmouth and Paducah gaseous diffusion plants. Additionally, the ORR-PCB-FFCA supersedes the National PCB FFCA of August 8, 1996, between DOE-HQ and EPA-HQ for ORNL, the Y-12 Plant, and those wastes at the ETTP that were not covered under the UE-TSCA-FFCA.

The agreement specifically addresses the unauthorized use of PCBs, storage and disposal of PCB wastes, spill cleanup and/or decontamination, PCBs mixed with radioactive materials, PCB R&D, and records and reporting requirements for the ORR. During 1997, two variances were granted by the EPA: one to allow an alternate inspection method for remote-handled and Class III/ IV radioactive PCB waste, dated August 19, 1997, and one concerning "legacy" laboratory waste, dated August 14, 1997.

2.2.15.4 ETTP TSCA Incinerator PCB Disposal Approval

The ETTP TSCA Incinerator is currently operating under an extension of EPA Region 4

approval granted on March 20, 1989. This extension is based on submittal of a reapplication for PCB disposal approval filed with EPA Region 4 on December 20, 1991, which was within the time frame allowed for reapplication. Minor amendments, updates, and corrections to this reapplication identified by DOE have been made in the interim and have been submitted to EPA. Since the submittal of the December 20, 1991, reapplication, a joint RCRA/PCB permit reapplication has been under development. This joint reapplication was submitted in March 1997 to TDEC under RCRA for treatment of hazardous wastes and to EPA Region 4 for disposal of PCB wastes. The new reapplication will replace the December 20, 1991, PCB disposal reapplication. In anticipation of this joint application, EPA Region 4 has delayed action on renewal of the PCB incineration approval.

2.2.15.5 PCB Research and Development Approvals

EPA Region 4 had previously granted ORNL authorization to conduct R&D for development of alternative disposal techniques for PCBs. The approvals authorized PCB R&D using stabilization/solidification techniques, base-catalyzed destruction processes, a chemically enhanced oxidation/reduction process, and a microbial degradation procedure. During 1997, ORNL researchers continued investigations of alternative disposal methods for PCBs under the approval of EPA Region 4.

2.2.16 Federal Insecticide, Fungicide, and Rodenticide Act

The Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) governs the sale and use of pesticides and requires that all pesticide products be registered by EPA before they may be sold. The regulations for the application, storage, and disposal of pesticides are presented in 40 CFR 150–189.

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The Y-12 Plant, the ETTP, and ORNL maintain procedures for the storage, application, and disposition of pesticides. Individuals responsible for application of FIFRA materials are certified by the Tennessee Department of Agriculture. If a pesticide can be used according to directions without unreasonable adverse effects on the environment or applicator (i.e., if no special training is required), it is classified for general use. A pesticide that can harm the environment or injure the applicator even when being used according to directions is classified for restricted use.

No restricted-use pesticide products are used at the Y-12 Plant, the ETTP, or ORNL. Safrotin®, used for control of cockroaches, is the only restricted-use pesticide stored at the Y-12 Plant. No purchases of this restricted-use material have been made since August 1993, and it was last used in 1995. Ficam-W, a general-use pesticide, has been substituted for Safrotin, and efforts for proper disposal of the remaining Safrotin are under way. An inventory of pesticide products is maintained for use at each facility. It is site policy to store, apply, and dispose of these products in a manner that ensures full compliance with FIFRA requirements.

2.2.17 Emergency Planning and Community Right-To-Know Act

The Emergency Planning and Community Right-To-Know Act (EPCRA), also referred to as Superfund Amendments and Reauthorization Act (SARA) Title III, requires reporting of emergency planning information, hazardous chemical inventories, and environmental releases to federal, state, and local authorities. The ongoing requirements of EPCRA are contained in Sections 302, 303, 304, 311, 312, and 313 of SARA Title III and are given in the notes to Table 2.9.

The ORR had no releases subject to Section 304 notification requirements during 1997. The Section 311 lists are updated frequently and are provided to the appropriate officials. The Section 312 inventories for 1997 identified hazardous

chemicals, documented their locations, and summarized the hazards associated with them. Of these Section 312 chemicals, 55 were located at the Y-12 Plant, 26 at ORNL, and 19 at the ETTP.

The annual Toxic Release Inventory (TRI) report is a requirement of Section 313. The report is due to the EPA and TDEC by July 1 of each year for the previous calendar year and addresses releases of toxic chemicals into the environment, waste management activities, and pollution prevention activities associated with those chemicals. Chemicals that exceed the reporting threshold, based on quantities used, processed, or manufactured, are identified and included in the report. The TRI report covering CY 1997 has been submitted for the ORR and reports eight of the

Table 2.9. EPCRA (SARA Title III) compliance information for the ORR

Y-12 Plant	ORNL	ETTP
<i>302–303, Planning notification^a</i>		
In compliance	In compliance	In compliance
<i>304, Extremely hazardous substance release notification^b</i>		
In compliance	In compliance	In compliance
<i>311–312, Material safety data sheet/chemical inventory^c</i>		
In compliance	In compliance	In compliance
<i>313, Toxic chemical release reporting^d</i>		
In compliance	In compliance	In compliance

^aRequires that Local Emergency Planning Committee and State Emergency Response Commission be notified of EPCRA-related planning.

^bAddresses reporting to state and local authorities of off-site releases.

^cRequires that either material safety data sheets (MSDSs) or lists of hazardous chemicals for which MSDSs are required be provided to state and local authorities for emergency planning.

^dRequires that releases of toxic chemicals be reported annually to EPA and the state.

nine toxic chemicals given in Table 2.10. Only those chemicals that exceed the reporting threshold must be reported, and tetrachloroethene, which had been reported in previous reports, had fallen below the reporting threshold for the current report. This material had been used in CY 1996 for the TSCA Incinerator trial burns but was not used in CY 1997.

Because of new EPA guidance regarding Section 313 reporting, two new toxic chemicals (copper compounds and manganese compounds) were added to the CY 1997 report, and the quantities of other chemicals reported increased substantially as a result of the new bases for

reporting. The report for 1997 included higher quantities for chemicals, such as aerosol forms of HCl, which were manufactured incidentally as by-products of coal combustion in the steam plants, as well as lead, which was transferred off-site for treatment or disposal.

The Y-12 Plant triggered the reporting threshold for ozone as a result of its manufacture as a by-product of microbial control at cooling towers. The ETTP also created ozone as a by-product in the ultraviolet system at the Sewage Treatment Plant. In both cases, the ozone by-product is immediately dissolved in water and results in a release measuring zero.

Table 2.10. EPCRA Section 313 toxic chemical release and off-site transfer summary for the ORR

Chemical	Year	Quantity (lb)			
		Y-12 Plant ^a	ORNL	ETTP	Total
Methanol	1996	27,630	107	0	27,737
	1997	32,405	436	0	32,841
Hydrochloric acid	1996	870 ^b	0	160	1,030
	1997	98,100	46,508	37	144,645
Lead	1996	9	3,355	69	3,433
	1997	1,392	6,598	15,554	23,544
Nitric acid	1996	161	1	0	162
	1997	545	129	0	674
Tetrachloroethene	1996	1	32	1	34
	1997	<i>c</i>	<i>c</i>	<i>c</i>	<i>c</i>
Ozone	1996	<i>d</i>	<i>d</i>	<i>d</i>	<i>d</i>
	1997	0	0	0	0
Copper compounds	1996	<i>d</i>	<i>d</i>	<i>d</i>	<i>d</i>
	1997	34,040	297	949	35,286
Manganese compounds	1996	<i>d</i>	<i>d</i>	<i>d</i>	<i>d</i>
	1997	40,190	1,080	3,372	44,642
Chlorine	1996	0	0	0	0
	1997	0	0	0	0
Total	1996	28,671	3,495	230	32,396
	1997	206,672	55,048	19,912	281,632

^aRepresents total releases to air, land, and water, and includes off-site transfer.

^bOn July 25, 1996, EPA changed the EPCRA 313 implementing regulations to require reporting only for aerosol forms of hydrochloric acid.

^cTetrachloroethene fell below reporting threshold for the CY 1997 EPCRA report.

^dNot reported.

The reporting of copper compounds and manganese compounds was triggered by the Y-12 Plant and ORNL coal-burning steam plants. The ETTP report includes copper compounds and manganese compounds in wastes treated at the Central Neutralization Facility (CNF), the TSCA Incinerator, and transportable vitrification system (TVS) and waste shipments to Envirocare.

The large increase in lead reporting was in part a result of activities at the ORNL lead shop, where 23,600 pounds of lead was melted and poured to form bricks and other shapes during 1997. Also, the ETTP report reflects 15,250 pounds of lead shipped off-site to Envirocare for treatment and disposal. This lead came from Puerto Rico and had been stored on-site since the late 1980s.

2.2.18 Environmental Occurrences

CERCLA requires that the National Response Center be notified if a nonpermitted release of an RQ or more of a hazardous substance (including radionuclides) is released to the environment within a 24-hour period. The CWA requires that the National Response Center be notified if an oil spill causes a sheen on navigable waters, such as rivers, lakes, or streams. When notified, the National Response Center alerts federal, state, and local regulatory emergency organizations so they can determine whether government response is appropriate.

During 1997, Y-12 Plant staff reported no CERCLA RQ releases to federal and state agencies.

The National Response Center and Tennessee Emergency Management Agency (TEMA) were notified of four incidents that involved oil sheens observed on EFPC, and TEMA was notified of a fish kill that affected approximately 24,000 fish (detailed in Sect. 2.6).

During 1997, ORNL reported no CERCLA RQ releases to federal and state agencies.

In 1997, one release occurred at the ETTP that required notification of the National Response Center or TEMA. This involved the discovery of

asbestos-containing material from plant steam lines on the ground.

2.3 DOE ORDERS AND STANDARDS DEVELOPMENT

Until recently, DOE directed the environmental, safety, and health (ES&H) aspects of all work through rules and directives such as orders, notices, and manuals. However, this approach suffers from several disadvantages. Most notably, it has been difficult to develop orders that recognize and deal with the wide diversity of the work. This can lead to inappropriate application of high-hazard requirements to low-hazard activities. Also, because the order-based approach does not easily incorporate the benefits of experience, safety practices can rapidly become obsolete or ineffective. In many cases, order requirements duplicate what is already required by law or regulation. In the past, DOE orders were not always clear about DOE's expectations for contractors. To compensate for this uncertainty, contractors took conservative steps to ensure that their operations would meet DOE orders.

Recognizing the disadvantages of that approach, DOE has developed and implemented a policy for an integrated standards program. This policy addresses evolving obligations with regard to federal, state, and local laws and regulations; use of technical standards; and development of new standards for programs, processes, and products unique to the department's operations, consistent with statutes and procedures for involvement of the public and other stakeholders. The current process has evolved over the past few years.

2.3.1 Standards/Requirements Identification Documents

In 1995, DOE implemented the Standards/Requirements Identification Documents (S/RIDs) concept in response to a recommendation from the Defense Nuclear Facilities Safety Board (DNFSB). The recommendation was that DOE

should develop mechanisms for identifying which standards are applicable to the specific work being performed, determining whether those standards are fully implemented, and determining whether the standards are appropriate and adequate to ensure protection to workers, the public, and the environment. The S/RIDs covering all environment-, safety-, and health-related activities were included in the DOE contracts for LMES and LMER in October 1995 and January 1996, respectively. This change established the S/RIDs as the contractual set of ES&H requirements rather than DOE orders at that time.

2.3.2 Work Smart Standards

In 1996, LMER and LMES implemented the “Necessary and Sufficient” process to identify standards for ES&H activities as part of a pilot project sanctioned by the DOE Department Standards Committee. This process was subsequently renamed by DOE as “work smart standards.” WSS are sets of environment, safety, and health laws, regulations, and other standards that have been chosen for applicability and appropriateness for a particular scope of work. Although S/RIDs are generally limited to activities conducted under the offices of Defense Programs (DP) and Environmental Restoration and Waste Management (EM), WSS are intended to apply to all departmental activities. The WSS process allows adoption of consensus standards, developed and used by others in industry, and all applicable requirements from laws and regulations are automatically included. The WSS sets of standards are designed to provide adequate protection (when properly implemented) against the hazards associated with a particular scope of work.

2.3.2.1 Status of WSS Development and Implementation

For the ORR EMEF activities, headquartered at the ETTP site, WSS have been established and are the contractual set of ES&H requirements (with the exception of Occurrence Reporting and Emergency Management S/RIDs, which are still applicable to EMEF) rather than DOE orders.

Implementation of WSSs for Defense and Manufacturing Programs (Y-12 Plant) has been completed for the Y-12 General Manufacturing Organization (GMO), which provides manufacturing and support services to the Y-12 Plant and its customers, including the Y-12 nuclear facilities and the U.S. Navy, in the areas of machining, forming, rolling, heat treating, welding, and laser cutting on a wide variety of metals and nonmetals. These operations are equivalent to those found in private industry general machine shops. The expansion of this WSS set, to encompass the remaining Y-12 site activities having standard industrial hazards and activities with radiological and nuclear hazards, is progressing.

At LMER, WSSs have been approved for all R&D activities and on a facility-specific basis for the Radiochemical Research Facilities, the five Accelerator Facilities, the Radiochemical Technology Facilities, the Radiochemical Engineering Development Center, the Radiochemical Development Facility, the Irradiated Materials Examination and Testing Facility, the Irradiated Fuels Examination Laboratory, the Hazardous Waste Operations Facilities, the Waste Management and Remedial Action Division (WMRAD) Radiological and Industrial Facilities, and the WMRAD Nuclear Category 2 and 3 facilities. Exceptions to the WSSs include the emergency management requirements and occurrence reporting requirements

A stand-alone set of WSS for construction and construction-like activities on the ORR have also been approved.

2.3.3 Department of Energy Acquisition Regulations

On June 27, 1997, DOE published a final rule (62 FR 34842 - 34872) amending the Department of Energy Acquisition Regulations (DEAR) to require each DOE contract to contain a requirement for the contractor to develop, document, and implement an Integrated Safety Management System (ISMS). An ISMS integrates environment, safety, and health into work planning and execution and includes pollution prevention and waste minimization. The regulation provides detailed

guiding principles for contractors and any of their subcontractors to follow in the performance of work (DEAR clause 970.5204-2).

In June 1997, in response to DEAR clause 970.5204-2, the Y-12 Plant implemented a sitewide ISMS through upgrades and improved integration of existing health, safety, and environmental programs and resources. A guidance document was issued (*Y-12 Integrated Safety Management System*, Y/AD-635, May 30, 1997) that describes implementation in the Y-12 Plant's highest-risk facilities and a tailored approach in the balance-of-plant (BoP) facilities based on the hazards and risks associated with work in those facilities.

In October 1997, in a rapidly changing ETPP administrative environment resulting from the transition from a management and operating (M&O) to an M&I contractor, an ISMS program description was issued (*Description of the Integrated Safety Management System for Environmental Management and Enrichment Facilities*, October 1997). The EMEF ISMS, which was designed to serve business unit elements operating in either the M&O or M&I mode, is based on the seven guiding principles and five safety management functions contained in DOE policy DOE P 450.4, Safety Management System Policy.

Late in 1997, ORNL drafted a program description for implementing an ISMS at the Laboratory. Prior to preparation of the draft, however, benchmarking was conducted to observe ISMS programs at other DOE sites, including Fermi National Accelerator Laboratory, Argonne National Laboratory, and the Lawrence Berkeley National Laboratory. In addition, an ORNL ISMS steering committee was established and an ORNL-level policy statement (*Integrated Safety Management Policy Statement*, Effective Date January 1, 1998), which was endorsed by all upper-level managers at the Laboratory, was issued.

2.3.4 DOE Order 5400.1, General Environmental Protection Program, and DOE Order 231.1, Environment, Safety and Health Reporting

Through DOE's Accelerated Orders Reduction effort, certain requirements in DOE Order 5400.1, General Environmental Protection Program, have been modified. Some have been transferred to DOE Order 231.1, Environment, Safety and Health Reporting, and others have been canceled. For example, the requirement to produce the Annual Site Environmental Report documenting the site's environmental management performance has been transferred to DOE Order 231.1. However, canceled orders or paragraphs of orders incorporated by reference into a contract shall remain in effect until the contract is modified. DOE Order 5400.1 remains the contractual requirement for LMES; thus, this Annual Site Environmental Report is prepared as a requirement of DOE Order 5400.1.

DOE Order 5400.1 establishes environmental protection program requirements, authorities, and responsibilities for DOE operations to ensure compliance with applicable federal, state, and local environmental protection laws and regulations, executive orders, and internal DOE policies. The order specifically defines the mandatory environmental protection standards (including those imposed by federal and state statutes), establishes reporting of environmental occurrences and periodic routine significant environmental protection information, and provides requirements and guidance for environmental monitoring programs. Implementation of the order is provided by specific program plans, as detailed in Chapter III of the order. The internal environmental protection programs mandate the creation of several environmental reports.

An environmental monitoring plan (EMP) is to be prepared, reviewed annually, and updated every 3 years or as needed. Revision 2 of *The Environmental Monitoring Plan for the ORR* (DOE 1997a) was reissued by DOE in December 1997. The EMP provides a single point of reference for the effluent monitoring and environmental surveillance programs of the Y-12 Plant, ORNL, the ETTP, and ORR areas outside specific facility boundaries.

2.3.5 DOE Order 5400.5, Radiation Protection of the Public and the Environment

DOE Order 5400.5 provides guidance and establishes radiation protection standards and central practices designed to protect the public and the environment against undue risk from DOE operations. This order requires that no member of the public receive an EDE in a year greater than 100 mrem via all pathways and that no member of the public receive a radiation dose equivalent greater than 10 mrem in a year from airborne emissions. In addition, dose limits imposed by other federal regulations (40 CFR Parts 61, 191, and 192 and 10 CFR Parts 60 and 72) must be met. The primary dose limit is expressed as an EDE, which requires the weighted summation of doses to specified organs of the body. Monitoring effluents released to the environment is required to ensure that radiation doses to the public are as low as reasonably achievable (ALARA) and are consistent with prescribed dose standards.

2.4 APPRAISALS AND SURVEILLANCES OF ENVIRONMENTAL PROGRAMS

Numerous appraisals, surveillances, and audits of the ORR environmental activities occurred during 1997 (see Tables 2.11, 2.12, and 2.13). These tables do not include internal LMER,

LMES, or Lockheed Martin corporate assessments for 1998.

2.4.1 Defense Nuclear Facilities Safety Board

Under its enabling statute (Public Law 100-456), the board is responsible for independent, external oversight of all activities in DOE's nuclear weapons complex affecting nuclear health and safety. The board reviews operations, practices, and occurrences at DOE's defense nuclear facilities and makes recommendations to the secretary of Energy to protect public health and safety.

In September 1994, during a DNFSB tour of a storage building in 9204-2E, a discrepancy with specific stipulations of the criticality safety approval for storage of fissile material in that area was identified. As a result, a number of operations at the Y-12 Plant were curtailed. However, environmental operations (compliance monitoring, reporting, and oversight) have continued uninterrupted, and there have been no environmental impacts as a result of the stand-down. Operations in Y-12 facilities have been resumed in phases, and restart of the Enriched Uranium Operations is planned for 1998.

2.5 ENVIRONMENTAL PERMITS

Table 2.14 contains a summary of environmental permits for the three ORR sites. Continuing permits, required at each of the ORR facilities, are RCRA operating permits, NPDES permits, and operating air permits.

2.6 NOTICES OF VIOLATIONS AND PENALTIES

Tennessee State Landfill Permit IDL-01-103-0083 prohibits disposal of radioactive waste in the Industrial Landfill V at the Y-12 Plant. Thirty-five pCi/g of uranium has been established by TDEC and DOE as the threshold

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Table 2.11. Summary of environmental audits and assessments conducted at the Y-12 Plant, 1997

Date	Reviewer	Subject	Issues
2/5/97	City of Oak Ridge	Sanitary Sewer	0
2/5/97	TDEC	Landfills IV, V, VI, and VII	0
3/29/96–5/21/97	TDEC/DOE-O ^a	Facility Survey of Building 9720-48	0
4/22/96–5/21/97	TDEC/DOE-O	Facility Survey of Building 9722-3	2
5/6/97	TDEC	Landfills IV, V, and VI	0
5/12–13/97	TDEC	RCRA	0
5/20–21/97	TDEC	NPDES CEI	0
7/16–25/97	TDEC	Annual Air Permit Inspection	0
6/24/97	TDEC	Y-12 Centralized Landfill II Post Closure Inspection	0
8/26/97	City of Oak Ridge	Sanitary Sewer	0
7/15/97	TDEC	Drinking Water Survey	2
9/9/97	TDEC	RCRA Groundwater CEI	0
9/15/97	TDEC	Landfills IV, V, VI, and VII	0
9/16/97	FERC	Dam and Water Impoundments Inspection	0
12/11/97	TDEC	Landfills IV, V, and VI	0

^aTennessee Department of Environment and Conservation/DOE Oversight Division.

Table 2.12. Summary of environmental audits and assessments conducted at ORNL, 1997

Date	Reviewer	Subject	Issues
4/23–24	TDEC	Inspection of RCRA generator areas and treatment, storage, and disposal operations	0
5/27	TDEC/DOE-O ^a	Permitted air emission sources	0
5/28	TDEC/DOE-O	Permitted air emission sources	0
6/02	TDEC/DOE-O	Opacity evaluation Paint Shop	0
6/11–12	TDEC/DOE-O	NPDES Compliance Evaluation Inspection	0
6/18	TDEC/DOE-O	Opacity evaluation Steam Plant	0
6/24	TDEC/DOE-O	Opacity evaluation Coal Pile	0
7/16	TDEC/DOE-O	Inspection of Process Waste Treatment Plant Upgrades	0
9/8	TDEC	Inspection of RCRA groundwater wells and operations	0
9/15	TDEC/DOE-O	CYRTF Upgrades final inspection	0
12/3	TDEC/DOE-O	Solid Waste Storage Area 6	0
12/9	TDEC/DOE-O	CWA inspection	1
12/18	TDEC/DOE-O	Waste Area Grouping 5	0
12/29	TDEC/DOE-O	CWA inspection	1

^aTennessee Department of Environment and Conservation/DOE Oversight Division.

Table 2.13. Summary of environmental audits and assessments conducted at the ETPP, 1997

Date	Reviewer	Subject	Issues
2/25	TDEC, TDEC/DOE-O ^a	Solid waste inspection	0
3/4	EPA, TDEC, TDEC/DOE-O	Multi-inspection	0
4/23	TDEC	RCRA inspection	0
5/5	TDEC	SDWA inspection	0
5/14	COE, TVA	CWA inspection	0
6/20	TDEC	RCRA inspection	0
9/15	TDEC	RCRA inspection	0
9/17	Federal Energy Regulatory Commission, TDEC/DOE-O	CWA inspection	0
10/14	TDEC	CAA	0
10/16	TDEC	RCRA inspection	0
10/30	EPA	RCRA inspection	0

^aTennessee Department of Environment and Conservation/DOE Oversight Division.

above which waste will be considered to be radioactively contaminated. During review of waste characterization data from an ongoing disposal activity, it was discovered that 167 B-25 boxes containing waste exceeded that limit. The average uranium activity per gram for waste in the boxes was 256 pCi/g with a maximum of 850 pCi/g of uranium activity. These boxes were disposed of in Industrial Landfill V between April 1996 and discovery of the noncompliance in December 1996.

In a separate but related incident, a waste shipment from the ETPP to the Y-12 Plant's Landfill V between December 20, 1996, and January 27, 1997, was discovered to have been shipped in error. The waste was in fact mixed RCRA waste (incinerator ash from a test burn at the ETPP TSCA incinerator) and not nonhazardous/nonradioactive solid waste as was expected. The documentation and shipping papers for two waste streams had been switched in error. Two notices of violation (NOVs) were received from TDEC related to these incidents. One was received from the Division of Solid Waste in February 1997 and the other from the Division of Hazardous Waste in March 1997. On April 30, 1997, a show-cause hearing was held to discuss the violations. A draft commissioner's order was

subsequently received in November 1997 with a proposed fine. Resolution of these NOVs is expected to continue into 1998.

In addition, a Commissioner's Order and Assessment of Civil Penalty was received from the TDEC on November 14, 1997, for failure to meet Tennessee State Water Quality Criteria, resulting in a significant fish kill (~24,000) that occurred at the Y-12 Plant on July 24, 1997. Raw water discharge to UEFPC had been stopped after a major flooding event (>100-year flood) that occurred on July 22, 1997. A slug of sodium bisulfite, a chemical used to reduce levels of in-stream residual chlorine, had accumulated in the raw water weir basin and was released when the raw water discharge was returned to UEFPC. The sodium bisulfite caused the dissolved oxygen concentrations in UEFPC to drop (<5 ppm), resulting in a fish kill. There is a \$7,005 fine associated with this order; however, the order is under appeal.

ORNL received three TDEC NOVs in 1997 for NPDES permit limit excursions; NOVs were received in January, June, and September 1997. ORNL provided responses to TDEC as to corrective actions for excursions cited in the NOVs. No fines or penalties were assessed by TDEC in connection with the ORNL NOVs.

Oak Ridge Reservation

Table 2.14. Summary of permits as of December 1997

	Y-12 Plant	ORNL	ETTP
<i>Resource Conservation and Recovery Act</i>			
RCRA operating (Part A and Part B)	4 ^a	4 ^b	4
Part B applications in process	1 ^c	1	0
Postclosure	3 ^d	0	0
Permit-by-rule units	13 ^e	170 ^f	9 ^e
Solid waste landfills	6 ^g	0	0
Annual petroleum UST facility certificate	2	1	1
Transporter permit	1	2 ^h	1
<i>Clean Water Act</i>			
NPDES	1 ⁱ	1	1
Storm water	1 ^j	1 ^j	1 ^j
Aquatic resource alteration/U.S. Army Corps of Engineers 404 permits	3 ^k	6	0
General storm water construction	0	1	1
	2 ^l	0	0
<i>Clean Air Act</i>			
Operating air	40	21	12
Construction	0	0	2
Prevention of significant deterioration	0	0	0
<i>Sanitary Sewer</i>			
Sanitary sewer	1	0	0
Pump-and-haul permit	1	0	0
<i>Toxic Substances Control Act</i>			
TSCA Incinerator	0	0	1
R&D for alternative disposal methods	0	4	0
<i>Safe Drinking Water Act</i>			
Water Treatment Plant and distribution	2	1	1
Class V underground injection control permits	0	2	0

^aFour permits have been issued, representing 17 active units.

^bFour permits have been issued, representing 20 active units and 7 proposed units. One permit covers corrective action (HSWA) only.

^cOne application is under review by TDEC, representing three active units.

^dThree permits have been issued, representing units closed under RCRA in Bear Creek Hydrogeologic Regime, Chestnut Ridge Hydrogeologic Regime, and UEFFPC Regime.

^eNumber of units reported in 3016 Report/Inventory of Federal Hazardous Waste Activities. This report/inventory includes each tank unit (i.e., facility) and does not count individual tanks as a separate unit.

^fThree tanks have been grouted in place since the last reporting cycle.

^gFour landfills are operational: one (Spoil Area 1) is inactive and has an ROD under CERCLA, and one (Landfill II) is in postclosure care and maintenance.

^hOne permit for solid waste and one for hazardous waste.

ⁱIssued 4/28/95 and effective 7/1/95. TDEC has incorporated requirements for storm water into individual NPDES permits.

^jTDEC has incorporated into individual NPDES permits.

^kOne aquatic resource alteration permit is issued in the name of East Tennessee Mechanical.

^lNotice of intent that accesses a general NPDES permit. Two notices of intent remain on file for construction at Landfill V, VII, and for tree maintenance on tributary 7 at the Walk-in Pits closure.

2.7 CURRENT ISSUES

2.7.1 Actions Filed by Friends of the Earth, Inc.

On January 17, 1992, Friends of the Earth, Inc., a nonprofit corporation, filed a lawsuit against Admiral James D. Watkins (then Secretary of Energy) and DOE in the U.S. District Court for the Eastern District of Tennessee, Northern Division. The suit alleges that DOE is violating the terms and conditions of its NPDES permits for the Y-12 Plant, ORNL, and the ETTP. Specifically, the complaint alleges that discharges of certain quantities of various pollutants into tributaries of the Clinch River that have their sources at the Y-12 Plant, ORNL, and the ETTP have exceeded (and are exceeding) the allowable discharge limits established by the NPDES permits. The suit seeks to force DOE to comply in all respects with its NPDES permits, declaratory judgments, and the award of various other costs.

On September 26, 1996, U.S. District Judge Leon Jordan issued an order requiring DOE to install tablet dechlorinator units at the Y-12 Plant at sources of chlorinated water to ensure compliance with the requirements of the facility's NPDES permit and to eliminate all unpermitted outfalls at the Y-12 Plant. The order also required DOE to conduct a comprehensive survey of all pipes, sinks, and other connections to the storm drain systems at the Y-12 Plant, ORNL, and the ETTP by September 26, 1997. A copy of the report summarizing the survey was provided to Friends of the Earth by October 25, 1997, in accordance with the order.

Friends of the Earth asked the court to reconsider the order. The court declined this request, and at the time of this writing, Friends of the Earth and DOE are in settlement negotiations.

2.7.2 Hazardous/Toxic Waste Off-Site Shipment Moratorium

In May 1991, a moratorium on the off-site shipment (to non-DOE sites) of PCB and RCRA hazardous waste was implemented throughout the DOE complex, including the DOE sites located on the ORR. The purpose of the moratorium was twofold: (1) to ensure that hazardous/toxic wastes shipped from DOE facilities to commercial TSD facilities do not have bulk (volume) radioactive contamination as a result of DOE operations and (2) to ensure that the wastes do not have surface contamination exceeding DOE Order 5400.5 criteria unless the receiving facility is specifically licensed to manage radioactive waste.

In October 1993, the ETTP received a partial lifting of the moratorium for wastes composed of solid materials that do not have the potential for bulk contamination. The ETTP moratorium continues to remain in effect for hazardous/toxic wastes that are not solid materials (because of the potential for bulk contamination) until such time as DOE develops generic criteria for bulk contamination release. Off-site shipments of solid, hazardous/toxic wastes resumed at the ETTP following DOE's issuance of the partial lifting.

The moratorium at the Y-12 Plant was fully lifted by DOE in January 1994. The Y-12 Plant resumed off-site shipment activities for hazardous/toxic wastes following the lifting of the site moratorium.

In November 1994, ORNL received a partial lifting of the moratorium for wastes composed of solid materials that do not have the potential for bulk contamination. The ORNL moratorium continues to remain in effect for hazardous/toxic wastes that are not solid materials (because of the potential for bulk contamination) until such time

as ORNL develops criteria for evaluating bulk contamination and obtains DOE approval of the criteria. The ban on shipping wastes to off-site commercial facilities was partially lifted in 1996 following DOE approval of ORNL's program to make "no-rad added" determinations. During 1997, wastes with suitable generator process knowledge for no-rad added were shipped to commercial vendors, while mixed wastes were shipped to the ETTP. Wastes requiring sampling and analysis for no-rad added determinations are still banned for shipment to off-site commercial facilities.

2.7.3 Tennessee Oversight Agreement

On May 13, 1991, the state of Tennessee and DOE entered into a 5-year monitoring and oversight agreement in which DOE agreed to provide the state with financial and technical support for "independent monitoring and oversight" of DOE activities on the ORR. In June 1996, the state and DOE signed a 5-year extension of the agreement that will expire in June 2001. The agreement provides the state of Tennessee \$26.15 million over the 5-year period. Activities that are conducted under the agreement include oversight of DOE's environmental monitoring, waste management, ER, and emergency management programs. The agreement is intended to assure Tennessee citizens that their health, safety, and environment are being protected by DOE through existing programs and substantial new commitments.

TDEC is the lead Tennessee state agency for implementation of the agreement. TDEC has established the Tennessee Department of Environment and Conservation/DOE Oversight Division

(TDEC/DOE-O), located in the city of Oak Ridge. TDEC has entered into contracts with various state and local agencies to support oversight activities. Contracts have been signed with TWRA for fish and wildlife monitoring activities, TEMA for emergency management support, and the ORR Local Oversight Committee for assistance in achieving a better public understanding of the issues and activities on the ORR.

A DOE-Tennessee Oversight Agreement (TOA) steering committee composed of site and major program representatives has been established to coordinate implementation of the TOA and to promote consistency in its implementation across the ORR. LMES, LMER, and other selected DOE prime contractors have established internal organizations, including the designation of TOA coordinators, to facilitate implementation of the agreement.

To date, a variety of activities have been conducted under the agreement. DOE has provided security clearances and training necessary for state employees to gain access to the sites. Environmental data and documents pertaining to the environmental management, ER, and emergency management programs are provided or made available to the state for its review. TDEC/DOE-O routinely visits the three DOE sites to attend formal meetings and briefings, conduct walk-throughs of buildings and grounds, and conduct observations of site operations to assess compliance with environmental regulations.

In October 1997, TDEC/DOE-O published a "Status Report to the Public" (DOE 1997b), which presents TDEC/DOE-O's activities for the year and explains the complex issues surrounding DOE's storage, treatment, and disposal of mixed and radioactive waste and its handling of contaminated sites and buildings.