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**TENNESSEE OVERSIGHT AGREEMENT
ANNUAL REPORT
MAY 13, 1994 - JUNE 30, 1995**

**SEPTEMBER 1, 1995
GRANT NUMBER DE-FG05-910R21974**

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STATE OF TENNESSEE
DEPARTMENT OF ENVIRONMENT AND CONSERVATION
DOE OVERSIGHT DIVISION
761 EMORY VALLEY ROAD
OAK RIDGE, TENNESSEE 37830-7072

October 6, 1995

Dear Sir/Madam

**Re: Tennessee Oversight Agreement Annual Report May 13, 1994 - June 30, 1995
Errata**

Enclosed, please find a revised title page for the above referenced report. The grant number has been revised to reflect the correct number.

If you have any questions, please call me at (423) 481-0995.

Sincerely

A handwritten signature in cursive script that reads "John Owsley".

John Owsley
Assistant Director

ja0365.99

**TENNESSEE OVERSIGHT AGREEMENT
ANNUAL REPORT
MAY 13, 1994 - JUNE 30, 1995**

**SEPTEMBER 1, 1995
GRANT NUMBER DE-FG05-910R211981**

Tennessee Department
of
Environment and Conservation

DOE Oversight Division
761 Emory Valley Road
Oak Ridge TN 37830-7072
(615) 481-0995
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Annual Report

May 13, 1994 -- June 30, 1995

September 1, 1995

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DOE Oversight Division
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EXECUTIVE SUMMARY

INTRODUCTION

The Tennessee Department of Environment and Conservation's DOE Oversight Division (TDEC/DOE-O) implements the Tennessee Oversight Agreement (TOA) and the Federal Facility Agreement (FFA). TDEC/DOE-O also supports the Tennessee Department of Environment and Conservation (TDEC) in Natural Resource Damage Assessment (NRDA) and Federal Facility Compliance Act (FFCA) activities. This report provides an update of each TDEC/DOE-O program and the status of each TOA commitment assigned to that program. The final chapter of this report provides TDEC/DOE-O's findings and recommendations. All documents, logs, files, etc. supporting this report are available for review during routine business hours at TDEC/DOE-O's office.

ADMINISTRATIVE SECTION

The Administrative Section provides a brief history of the TOA and the responsibilities of the Administrative Services Program. Those TOA Commitments assigned to the Administrative Section are also updated. The TOA will expire in June 1996, and may be mutually extended by the State and DOE. A joint review of the TOA has been initiated to consider its extension and any mutually acceptable modifications.

ENVIRONMENTAL RESTORATION PROGRAM

The Environmental Restoration Program within the DOE Oversight Division has the responsibility for administering the Oak Ridge Federal Facilities Agreement (FFA). The FFA is a Tri-party agreement between the DOE, Region IV EPA and the State of Tennessee that is designed to direct and monitor CERCLA activities on the National Priorities Listed site at the Oak Ridge Federal Reservation. A principle purpose of the FFA is to provide opportunity for the State and EPA to serve an active role in scheduling and prioritization of CERCLA activities and to insure that the decisions from the CERCLA process are consistent with existing State and Federal environmental mandates. This 1995 annual DOE Oversight Division report presents discussion of various issues of concern to the Environmental Restoration Program. Certain of these discussions are updates and/or status on previously presented issues and appear in Section 3 of the report. New issues and/or new considerations to some continuing issues are presented and discussed in Section 7.

Overall the Federal Facilities Agreement and the tri-party coordination and cooperation resulting from the agreement

have worked acceptably well at the Oak Ridge Reservation. Many accomplishments have been realized over the four year span of the agreement as are discussed in this report. However, it is recognized that a long and difficult process lies ahead to complete the environmental restoration process on the Oak Ridge Reservation.

WASTE MANAGEMENT PROGRAM

The Waste Management Staff, through site visits to plant operations, waste treatment facilities, waste disposal facilities, and review of environmental monitoring data, as compared to permit conditions has found that current regulated waste management practices are protective of public health and the environment. Violations that have occurred have been responded to and corrected quickly and effectively.

However in the self regulated area of radioactive waste management, neither past nor present practices comply with DOE's own Orders. The most current revision of the Solid Waste Accumulation Area 6 (SWSA-6) Performance Assessment continues to show that even current radioactive waste disposal practices, i.e., post 1988, result in a situation which will likely require future remediation under CERCLA. Such practice will continue to be a point of contention between the DOE-Oversight Division and the Department of Energy.

RADIOLOGICAL MONITORING and OVERSIGHT PROGRAM

Activities of the Radiological Monitoring and Oversight (RMO) Program have intensified and diversified during the past year. During the reporting period new programs were started while some previously established ones were expanded. New independent monitoring programs include ones in air and ambient gamma radiation monitoring and EPA's Ambient Radiation Environmental Monitoring (ERAMS) Program. Expanded programs were developed in water, biology, soils, and sediment. NPDES reviews have intensified along with the evaluation of surface water. Biological sampling now includes honey, pollen, wild food crops, and vegetation.

ENVIRONMENTAL MONITORING and COMPLIANCE PROGRAM

The Environmental Monitoring and Compliance Program (EMC) facilitated the planning and execution of environmental monitoring efforts. Additionally, quarterly Environmental Monitoring Meetings were initiated in which TDEC, DOE Field and Site Offices, and Lockheed-Martin Energy Systems representatives come together informally to discuss issues and concerns dealing with Environmental Monitoring. This has helped communication. The Program has assisted the

development of a comprehensive groundwater model to detect the migration of contaminated groundwater on and off the ORR. The Program has lead responsibility for public stakeholder participation with such organizations as the Local Oversight Committee, Environmental Quality Advisory Board, and the DOE Site-Specific Advisory Board. Finally, the Program processes National Environmental Policy Act documents through the State's Environmental Policy Office.

ISSUES, FINDINGS and RECOMMENDATIONS

Significant issues, findings, and recommendations developed by TDEC/DOE-O are summarized in this Chapter. Sections 7.B through 7.W were reported in TDEC/DOE-O's 1993 Annual Report. 7.X issues were added in TDEC/DOE-O's 1994 Annual Report. 7.Y through 7.BB are new findings. Many of the early concerns have, while not completely eliminated, been resolved to a level of routine consideration. Each issue is identified as "Resolved", "Progress Made", or "New Issue" to clarify the State's position.

There remains productive dialog between TDEC/DOE-O and DOE. This dialog has resulted in effective communication and coordination between the Tennessee Department of Environment and Conservation, other federal, the DOE, DOE Prime Contractors, and the community. The issues discussed in this report are provided in continuing effort to improve this communication.

LIST OF ACRONYMS

CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
DOE	Department of Energy
EPA	Environmental Protection Agency
FFA	Federal Facilities Compliance Agreement
LMES	Lockheed Marietta Energy Systems
NAREL	National Air and Radiation Environmental Laboratory
NEPA	National Environmental Policy Act
NESHAPS	National Emission Standards for Hazardous Air Pollution Sources
NOAA	National Oceanographic and Atmospheric Administration
NPDES	National Pollutant Discharge Elimination System
NPL	National Priority List
NRC	Nuclear Regulatory Commission
O&M	Operation and Maintenance
ORNL	Oak Ridge National Laboratory
ORR	Oak Ridge Reservation
PCB	Polychlorinated Biphenyls
RCRA	Resource Conservation and Recovery Act
TDEC	Tennessee Department of Environment and Conservation
TDEC/ DOE	Tennessee Department of Environment and Conservation, DOE Oversight Division
TEMA	Tennessee Emergency Management Agency
TOA	Tennessee Oversight Agreement
TVA	Tennessee Valley Authority
TWRA	Tennessee Wildlife Resources Agency
USGS	United States Geologic Survey

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1. INTRODUCTION

The Tennessee Department of Environment and Conservation's DOE Oversight Division (TDEC/DOE-O) is part of the Bureau of Environment. A functional organization chart of the Department is shown in Figure 1. TDEC/DOE-O implements the Tennessee Oversight Agreement (TOA) and the Federal Facility Agreement (FFA). TDEC/DOE-O also supports the Tennessee Department of Environment and Conservation (TDEC) in Natural Resource Damage Assessment (NRDA) and Federal Facility Compliance Act (FFCA) activities. The purpose of the TOA is to assure the citizens of Tennessee that their health, safety and environment in and around the Oak Ridge Reservation (ORR) are being protected by the Department of Energy (DOE) through a program of independent monitoring and oversight by the state. The FFA is an agreement between the Tennessee Department of Environment and Conservation (TDEC), the Environmental Protection Agency (EPA) and the Department of Energy (DOE). The general purpose of the FFA is to ensure that the environmental impacts associated with the past activities on the ORR are thoroughly investigated and the appropriate remedial action is taken to protect public health and the environment. The NRDA is a program to allow for the recovery of the cost for environmental resources lost due to pollution. The FFCA is a federal requirement for the DOE to provide the State with a plan for the treating of its mixed waste inventories. Mixed wastes are those wastes that are both hazardous and radioactive.

TDEC/DOE-O has five program sections that reflect the organizational structure of the TDEC Bureau of Environment Divisions, as well as DOE's Environmental Safety and Health, Waste Management, and Environmental Restoration Programs. The sections are the Administrative, Environmental Restoration, Environmental Monitoring and Compliance, Waste Management, and Radiological Monitoring and Oversight. TDEC/DOE-O has an "Advisory Group" to assist it in the coordination of the multimedia concerns on the Oak Ridge Reservation (ORR). The Advisory Group is made up of the Division Directors from the TDEC Divisions of Solid Waste Management, Air Pollution Control, Radiological Health, Water Pollution Control, Drinking Water Supply, Underground Storage Tanks, Superfund, Groundwater, Ecological Services, and Archeology; as well as the Department of Health's Division of Epidemiology and its Environmental Laboratories. An Organizational Chart for TDEC/DOE-O is shown on Figure 2. Memoranda of Understanding establishing roles and responsibilities have been established with the environmental regulatory divisions of the advisory group divisions.

Figure 1
TENNESSEE DEPARTMENT OF ENVIRONMENT AND CONSERVATION
Functional Organization

Figure 2

TENNESSEE DEPARTMENT OF ENVIRONMENT AND CONSERVATION DOE OVERSIGHT DIVISION

Revised 07/13/95

TDEC/DOE-O's responsibilities are outlined in the TOA. These include assuring DOE is in compliance with all environmental regulations; monitoring surface water and on-site discharges; biomonitoring; public drinking water supply monitoring; fish and wildlife monitoring; groundwater monitoring; air quality monitoring; and radiological surveillance. Monitoring efforts extend both on and off the ORR. An important aspect of the radiological monitoring is that it allows the State to inspect, review, and comment on DOE's activities in this area without regulatory authority. DOE is "self regulating" in radiological materials handling, treatment, and disposal. Additional oversight activities involve coordination with the Tennessee Emergency Management Agency (TEMA) in emergency response and participating in community outreach activities. The TOA provides for numerous commitments throughout its duration. In addition to TDEC/DOE-O Programs, TEMA and the Department of Health's Division of Epidemiology are responsible for part of the TOA commitments. The Division of Epidemiology's role includes the analysis of historical releases of toxic and radioactive materials from the ORR in an attempt to reconstruct the contaminant dosage potentially received by off-site populations.

The TOA is funded through a grant from the DOE. Grant funds are also being used to pay for contracts with other state and local agencies. TDEC/DOE-O acts as a lead agency in each of these contracts. A contract with the Tennessee Wildlife Resources Agency (TWRA) provides for independent monitoring of toxic materials in fish flesh, mussel tissue and in sediments from Melton Hill and Watts Bar Reservoirs. A contract with the Oak Ridge Reservation Local Oversight Committee (LOC) provides a forum to increase public awareness and understanding of the issues involving the DOE ORR operations and impacts on surrounding communities. The committee includes citizens and representatives of local governments from the city of Oak Ridge and the counties surrounding the ORR and the Watts Bar Reservoir. A contract with TEMA provides for the development of an Emergency Response Program. TEMA coordinates the off-site communication system to support the state and local government needs in the event of an actual ORR emergency response.

This report will discuss the activities of TDEC/DOE-O in the areas of coordination with other state agencies concerning environmental restoration, corrective action, and waste management activities on the Oak Ridge Reservation. As well as TDEC/DOE-O's efforts to keep the public informed of those DOE activities that may impact their health and the

environment. Each TDEC/DOE-O Program Section will provide information concerning the status of its activities. A general status of each TOA commitment assigned to that section is included in the report. Reports from organizations outside of TDEC/DOE-O that are responsible for TOA commitments are provided as separate reports. The final portion of this report provides TDEC/DOE-O's findings and recommendations. A discussion of those findings and recommendations provided in TDEC/DOE-O's 1994 annual report and addressed by DOE are included in this report as well. All documents, logs, files, etc. supporting this report are available for review during routine business hours at TDEC/DOE-O's office.

2. ADMINISTRATIVE SECTION

2.A DOE Oversight History

The first negotiation session for the Tennessee Oversight Agreement (TOA) was held December 1989, in Nashville and chaired for the State by Ben Smith of the Governors Planning Office and Robert Sleeman for DOE.

Other negotiators were:

Roger Jump	DOE
Jennifer Fowler	DOE
Wayne Scharber	State Bureau of Environment
Earl C. Leming	State Bureau of Environment
Michael Mobley	State Bureau of Environment
Roy Pruett	City of Oak Ridge
Sara H. Sell	Environmental Epidemiology
Joe Sanders	State Office of General Council

Negotiations on the TOA continued until May 13, 1991, when it was signed by the Governor and the Commissioner of Environment and Conservation. The TOA will expire in June 1996, and may be mutually extended. A joint review of the TOA by the State and DOE has been initiated to consider its extension and any mutually acceptable modifications.

2.B Administrative Section

The Administrative Support Section is responsible for directing fiscal services, personnel management, property procurement, mailing, building maintenance and operation of the office telephone and computer systems. A functional organization chart is shown in Figure 3.

2.C Tennessee Oversight Agreement Commitments

2.C.1 Annual Report; Attachment A.7.2.2

TDEC/DOE-O published an Environmental Monitoring Report on September 1, 1994. The report covered the period of May 10, 1993, through June 1, 1994. An Environmental Monitoring Report covering the period of July 1994 through December 1994 was published on June 1, 1995. This short term report is the results of TDEC/DOE-O modifying its environmental monitoring activities and reporting period to correspond with DOE's environmental monitoring efforts which follow the calendar year January through December. All future TDEC/DOE-O environmental monitoring reports will cover this same calendar year and will be published in April of the following year. The next environmental monitoring report provided by TDEC/DOE-O will be published in April 1996. TDEC/DOE-O's environmental monitoring report provides an

Figure 3

TENNESSEE DEPARTMENT OF ENVIRONMENT AND CONSERVATION
DOE OVERSIGHT DIVISION

ADMINISTRATIVE SERVICES

Revised 07/13/95

assessment of DOE's environmental monitoring activities and results from TDEC/DOE-O's environmental monitoring, surveillance and compliance analysis activities. The report also includes TDEC/DOE-O's findings of the quality and effectiveness of the DOE's environmental monitoring, surveillance and compliance programs. Copies of all of TDEC/DOE-O's environmental monitoring reports are available from this office.

2.C.2 Specific Oversight Activities; Attachment B.8

This TOA commitment is considered by the state to be dynamic and the use of the TOA Attachment E is a means to assure that DOE and TDEC/DOE-O establish and maintain "a regular program of DOE/TDEC contacts to address the resolution of certain environmental activities." As project activities are refined, consolidated, terminated or completed, they will be tracked in Attachment E as closed or reassigned. Similarly, new activities that cannot be assigned to existing TDEC/DOE-O programs will be tracked in Attachment E.

2.C.3 Security Clearances: Attachment B.9

DOE and the Office of Personnel Management (OPM) continue to provide good effort in processing State requests for security clearances.

2.C.4 Office for the State; Attachment B.10

DOE grant funds enable the State to lease adequate office space in a location that is convenient to the Federal Building and the three plant sites. The address and telephone numbers of the offices are:

Tennessee Department of Environment and Conservation
DOE Oversight Division
761 Emory Valley Road
Oak Ridge TN 37830-7072
(615) 481-0995
Fax: (615) 482-1835

2.C.5 Document Availability; Attachment B.11

This commitment obligates DOE to provide to the state all documents that address safety, the environment and health compliance. The Procedures for document access at Y-12 have reduced the average delivery time from approximately 30 days to approximately 3 working days. ORNL and K-25 personnel have indicated that those sites will attempt to meet this time frame as well. These efforts reflect a commitment on the part of DOE and their contractors to give TDEC/DOE-O personnel the opportunity to become an equal partner in the protection of information that has not been released to the

public. To minimize cost, TDEC/DOE-O personnel, with appropriate clearance, continue to review data and information on-site prior to requesting its review for public release.

2.C.6 Access for State Inspectors; Attachment B.12

Access to the ORR continues to be granted without prior notification in those areas where TDEC/DOE-O's staff have met necessary safety and security requirements. TDEC/DOE-O continues to determine what access requirements are in place on a site-specific basis. The Lockheed Martin Energy Systems (LMES) personnel designated as TOA Coordinators and individual facility managers continue to be helpful in achieving site access.

2.C.7 Need To Know Policy; Attachment B.13

The current DOE NEED-TO-KNOW SECURITY INFORMATION POLICY is included in TDEC/DOE-O's Office Policy Manual.

2.C.8 Site Access Requirements; Attachment B.14

DOE through Lockheed Martin Energy Systems (LMES) Center for Continuing Education has provided TDEC/DOE-O with the required training courses that allow unescorted access to most ORR sites and minimize the time needed to access special operations such as the Material Access Areas (MAAs).

2.C.9 DOE Orders; Attachment B.15

DOE has provided TDEC/DOE-O with access to all DOE Orders. TDEC/DOE-O maintains a library of those DOE Orders that are applicable to its activities in environmental restoration, waste management, and environmental monitoring.

2.C.10 Environmental Monitoring Program; Attachment B.16

DOE has provided resources necessary to support TDEC/DOE-O's environmental monitoring oversight activities. Existing DOE contractor monitoring equipment is used wherever possible. Technical support and equipment is also received from the Environmental Protection Agency. A description and the results of these activities are provided in TDEC/DOE-O's Environmental Monitoring Reports published on September 1, 1994, and June 1, 1995.

2.C.11 Coordination and Public Awareness; Attachment C.1

This section of the TOA requires the State to report annually on its activities in the following areas: Coordination of Oak Ridge Environmental Oversight, (C.1.1); Public Relations (C.1.2); and Analysis of Toxic Releases (C.1.3).

2.C.11.1 Coordinator for Oak Ridge Environmental Oversight; Attachment C.1.1

The Director of TDEC/DOE-O has responsibility for coordinating oversight activities with other agencies, including but not limited to, Bureau of Environment Divisions, TDEC Bureaus, Department of Health, TEMA, TWRA, TVA, Department of the Interior, Corps of Engineers, and the USGS, with regard to Environmental Restoration, Corrective Action and Waste Management activities on the ORR. Memoranda of Understanding (MOUs) establishing roles and responsibilities have been developed with many of these organizations by TDEC/DOE-O. Other agreements coordinating environmental oversight include the Tennessee Oversight Agreement, the Federal Facility Agreement, and the Watts Bar Interagency Working Group. Additional information on TDEC/DOE-O coordination activities is provided within the separate program sections of this report.

2.C.11.2 Public Relations; Attachment C.1.2

The State maintains a contract with the Oak Ridge Reservation Local Oversight Committee. The committee is incorporated as a non-profit organization and is currently composed of the following local officials:

County Executive of Anderson County
County Executive of Roane County
County Executive of Meigs County
County Executive of Rhea County
County Executive of Loudon County
County Executive of Knox County
Mayor of Oak Ridge
Member of the Oak Ridge Environmental Quality Advisory Board (EQAB)
Member of the Roane County Environmental Review Board
Member of the Citizen's Advisory Panel

Dr. Amy S. Fitzgerald is the Executive Director of the committee. The Director's office is located at 136 South Illinois Avenue, Suite 208. The telephone number is (615) 483-1333 and a fax number is (615) 482-6572.

The committee's responsibilities include providing information concerning environmental restoration, waste management, and emergency response planning on the Oak Ridge Reservation to the public. In addition the committee provides the State and DOE with assessments of public opinion on these activities. To better provide this assessment, the committee established a Citizen Advisory Panel. The Executive Director provides an annual report of both the committee and panel's efforts. This report is

available directly from the committee and copies are also available from TDEC/DOE-O's office.

2.C.11.3 Analysis of Toxic Releases; Attachment C.1.3

A Health Studies Agreement and contract are in place with the Tennessee Department of Health's Division of Epidemiology to assess the human health risks to off-site populations potentially exposed to toxic and radioactive materials released from past and present DOE Operations on the ORR. A Copy of the Health Studies Annual Report is maintained in TDEC/DOE-O's office for public review. Additional information concerning the study may be obtained by contacting this office or the Tennessee Department of Health's Division of Epidemiology at 1-800-435-9617.

2.C.12 Federal Facility Agreement Support; Attachment C.4

Funding for the FFA is included in the TOA grant provided by DOE. A discussion of the TDEC/DOE-O's FFA activities is provided in the Environmental Restoration Program Section (3) of this report.

2.C.13 Out-of-State Travel; Attachment C.5

TDEC/DOE-O used its best efforts to obtain authorization for out-of-state travel in accordance with the TOA. Approval was received for all travel necessary to meet the obligations of the TOA.

2.C.14 Statement of Grant Objectives: Attachment D.1

DOE to provides funding in support of the State's independent environmental oversight and monitoring of DOE Operations on the ORR and their impact human health and the environment. As stated above, DOE also provides funding for activities within the scope of the FFA.

2.C.15 Terms and Conditions; Attachment D.2

2.C.15.1 Financial Assistance Rules; Attachment D.2.1

All financial assistance rules applicable to the TOA Grant have been complied with by the State.

2.C.15.2 Stevens Amendment; Attachment D.2.2

All provisions of this act have been adhered to by the State.

2.C.16 Tennessee Oversight Agreement; Attachment E

Specific Administrative Oversight Activities E.1, E.2, E.3, E.4, E.7, E.8, and E.17

E.1, E.2, and E.17 The Tennessee Oversight Agreement Attachment E was established as means to assure that DOE and TDEC/DOE-O maintain "a regular program of DOE/TDEC contacts to address the resolution of certain environmental

activities." Attachment E.1, E.2, and E.17 provide for coordination of DOE's Environmental Restoration and Waste Management Planning activities with TDEC/DOE-O's comments and recommendations on these activities. Routine contact is maintained between the parties to assure the coordination of these planning activities.

E.3 Routine contact is maintained between TDEC/DOE-O and DOE to focus resources on the applied research, development, demonstration, testing and evaluation (RDDT&E) of technology development for Environmental Restoration and Waste Management activities on the ORR. TDEC/DOE-O's position remains that additional effort on site specific technology development for Environmental Restoration and Waste Management is needed to assure completion of environmental restoration projects and waste management needs on the ORR are met in a timely manner. Additional discussion of RDDT&E is provided in the Environmental Restoration and Waste Management Program Sections of this report.

E.4 DOE Environmental Management Programs have provided Activity Data Sheets (ADS) for the ORR activities for the Fiscal Year 1996. TDEC/DOE-O continues to review and comment on ADSs to assist DOE in its prioritization activities.

E.7 Routine contact is maintained between DOE and TDEC/DOE-O coordinate Research, Development, Demonstration, Testing and Evaluation Work planning activities on the Oak Ridge Reservation. Discussions of these activities are provided in the Environmental Restoration and Waste Management Program Sections of this report.

E.8 DOE is required to provide TDEC/DOE-O with a schedule of its Oak Ridge Reservation Waste Management Environmental Impact Statements (EIS) and other National Environmental Policy Act (NEPA) documents. A discussion of TDEC/DOE-O's NEPA document reviews is provided in the Environmental Monitoring and Compliance Section of this report.

3. ENVIRONMENTAL RESTORATION PROGRAM

3.A Introduction

The Environmental Restoration (ER) program of TDEC/DOE-O is charged with the responsibility of administering those State activities involving the RCRA/CERCLA remedial action program for the Oak Ridge Reservation. To coordinate and facilitate these activities, a Federal Facilities Agreement (FFA) was signed in November 1991 in accordance with Section 120 of CERCLA and Sections 3008(h) and 6001 of RCRA between the DOE, the EPA-Region IV and the Tennessee Department of Environment and Conservation. Each Agency to the tri-party FFA is mandated by agreement to fulfill certain responsibilities.

Principal to the FFA is the responsibility of the State of Tennessee to provide coordination, review and approval of each activity phase of the RCRA/CERCLA process, i.e., Remedial Investigation, Feasibility Study, Records of Decision, Remedial Design, Remedial Action and follow-up evaluations to insure success, continued operation and maintenance following completion of the selected remedial actions. The ER program is responsible by assignment to provide comments to the DOE and to meet obligations as outlined in the schedules set forth within the FFA and to cooperate and coordinate in FFA Project Management, dispute resolution, and project prioritization and scheduling.

3.B Environmental Restoration Program Status

Since the signing of the FFA in November 1991 the Environmental Restoration Program has grown from one employee, the Program Manager, to its present size of 9 employees. The program as organized and under full complement includes the Manager, Assistant Manager, three section coordinators (Y-12, X-10 and LOW LEVEL WASTE TANKS, K-25) and six technical staff members. Staff turnover within the ER program has been relatively high over the first four program years with the loss of employees to either other employment or promotions within TDEC/DOE-O.

Environmental restoration activities at the ORR are systematically divided by the DOE into four broad categories, i.e., Y-12, X-10, K-25, and Off-site activities. In order to effectively coordinate ER/FFA program activities TDEC/DOE-O's ER program has organized its primary staff assignments in accordance with the DOE ER organizational alignment. By mimicking this structure the ER program personnel become competent and knowledgeable with respect to site specific remediation activities, a necessity when dealing with numerous projects running concurrently

throughout the ORR. TDEC/DOE-O's management recognizes that organizational structure is dynamic and must maintain the flexibility to adjust to changing responsibilities. Figure 4 provides the present ER program organization structure. The entire ER staff has been involved in training activities necessary to their duties and responsibilities on the ORR. Training for all personnel has included General Employee Training, OSHA 40 Hour training, OSHA 8 Hour Refresher Training, Radiation Worker Training and ORR Security Training. In addition certain staff members have attended specific training sessions on Natural Resource Damage Assessment Procedures, Applicable or Relevant and Appropriate Requirement (ARAR) identification, Risk Assessment Procedures and training on conducting the Data Quality Objectives scoping process necessary to the ORR CERCLA program.

The ER program manager has been actively involved as Chairman of the Watts Bar Interagency Working Group. This working group is formed by interagency agreement between the State of Tennessee, TVA, USCOE, EPA, and DOE to review proposed permit activities within the Watts Bar Reservoir/Clinch River Area that have the potential of mobilizing contaminants through sediment disturbance activities.

The ER Program is further involved with the Natural Resources Damage Assessment (NRDA) for the Oak Ridge NPL site. A trustee council has been formed between the State of Tennessee, U.S. Department of the Interior, Tennessee Valley Authority and U.S. Department of Energy. The council has this past year finalized an interagency agreement to outline trustee responsibility for the Oak Ridge Reservation CERCLA NPL site.

Most recent activities of the Trustee Council have centered on plans to initiate screening of potential resource injuries within the Lower Watts Bar Reservoir CERCLA operable unit. The CERCLA Record of Decision for this operable unit will be completed in Fiscal Year 1995.

3.C Federal Facility Agreement Status

The Federal Facility Agreement for the Oak Ridge Reservation will have been in existence for four years this coming November. Since the inception of this agreement many important CERCLA milestones have been met by the parties to the agreement. Two more very significant milestones are anticipated prior to the end of this fiscal year, i.e., Records of Decision for the East Fork Poplar Creek operable

Figure 4
 TENNESSEE DEPARTMENT OF ENVIRONMENT AND CONSERVATION
 DOE OVERSIGHT DIVISION

ENVIRONMENTAL RESTORATION PROGRAM*

* RMO Program will support radiological component of ER Program
 Revised 07/13/95

unit and the Lower Watts Bar Reservoir operable unit. All-in-all the FFA for the Oak Ridge Reservation has been exceptionally successful in bringing together three separate government agencies, providing them guidance toward cooperative resolutions to many difficult problems and directing them in the coordination of the numerous activities inherent in accomplishing CERCLA on such a large and diverse NPL site.

To briefly recap the past four years of accomplishments, the parties to the FFA have signed and initiated Records of Decision for eight individual operable units and set in place Action Memorandums for six onsite CERCLA removal actions. Remedial actions have now been completed on ten of these CERCLA activities.

If FFA activities maintain present course, within the next three years there will be major remedial actions occurring on 11 Oak Ridge Reservation operable units that are now in the CERCLA process. These projects are listed as the East Fork Poplar Creek operable unit, the Gunitite and Associated Tanks operable unit, the ORNL Surface Impoundments, ORNL WAG 5, ORNL WAG 4, K-1070C/D burial grounds, K-1070-A burial grounds, K-901-A pond, Molten Salt Reactor Facility, Chestnut Ridge Coal Ash Pond, and the Bear Creek operable unit two. This is a very aggressive work plan and will require significant commitment, cooperation, and coordination on the part of all parties to the FFA, especially the Department of Energy, to insure necessary funding resources and commitment to complete the task.

ER program project activities to meet FFA obligations since May 1994 include the review and comment on 80 individual RCRA\CERCLA documents that represent 20 separate remediation units. Numerous working group meetings have been held between DOE, DOE contractors, EPA and the ER program in support of the project reviews. In addition to the project-specific working meetings, numerous FFA administration meetings were attended by the ER manager and assistant manager. These meetings primarily focused on FFA modifications, Project prioritization, budget issues and FFA Appendix E deliverable schedules. Remediation site visits/inspections in support of the FFA were conducted by all members of the ER section. As remedial actions on the ORR increase, site-specific field activities become a more important and time consuming element of the FFA involvement.

3.D Tennessee Oversight Agreement Actions Status

3.D.1 Fish and Wildlife Monitoring

Contract activities between the Tennessee Wildlife Resources Agency (TWRA) and TDEC have been carried out as planned. The TWRA has conducted collection and sample preparation for fish tissue analysis at selected locations downstream of the ORR. Two years of fish tissue sample data have now been completed and submitted to TDEC/DOE-O by the Tennessee Wildlife Resources Agency. Data packages have been submitted to the DOE and to their M&O contractor Lockheed Martin Energy Systems, Inc. (LMES). The data was reviewed by LMES and has been incorporated, as appropriate, into the Clinch River/Watts Bar Reservoir Remedial Investigation reports.

The most recent biological monitoring activity has been a mussel survey at selected stations in the Clinch River. This data has now been compiled and reported by the TWRA to TDEC/DOE-O. The data is now available to the DOE and the public for use in remedial investigations and as a baseline monitoring tool.

Responsibility for this TOA Commitment has been reassigned to the Environmental Monitoring and Compliance Program. Discussions of all TWRA Data and resulting findings are provided in TDEC/DOE-O's Environmental Monitoring Reports.

3.D.2 East Fork Poplar Creek (EFPC) Schedules and Updates

The EFPC remedial action project activities are continuing on schedule. The Remedial Investigation report and the Feasibility Study report have been reviewed and approved by the EPA and the State of Tennessee. The Proposed Plan of Action was reviewed and approved for release to the public for comments. The draft Record of Decision was submitted by DOE to the EPA and the State for review and comments. A final Record of Decision was signed by the three parties to the FFA in August 1995. In accordance with CERCLA, remedial actions shall commence within 15 months of the finalization of the Record of Decision.

3.D.3 R&D, Testing and Evaluation for the Y-12 Bear Creek Burial Ground Uranium Chip Restoration

This issue essentially remains unchanged from the first annual report. Technology aimed specifically at removal and treatment of buried waste on the Oak Ridge Reservation is for all practical purposes non-existent. However, the position of TDEC/DOE-O remains that DOE is ultimately responsible for eliminating the present and future threats to the public health and environment from their past waste burial practices on the Oak Ridge Reservation. In this

respect the State will continue to urge DOE to expediently move toward the development of adequate, economical and safe methods to accomplish that goal.

3.D.4 R&D, Testing and Evaluation for Strontium 90 and Tritium Releases into environs

Research, at the Oak Ridge Reservation, into practical means of treatment for tritium has not been observed except as a coincidence to treatment of other radionuclides. Tritium is a prevalent contaminant which exits burial grounds more readily than particle reactive nuclides like cesium. Tritium treatment for remediation technology development is not considered on the research and development priority list by DOE at ORR. Treatment of tritium in water is promising and most likely possible if pursued aggressively.

Recent remedial activities at the Oak Ridge Reservation have been successful in capturing and treating strontium 90 discharges to the environment. The WAG 5 seeps to White Oak Creek and the core hole 8 discharge to First Creek at ORNL have demonstrated that strontium contaminated water can effectively be captured and treated at the Oak Ridge Reservation. Future activities to build upon these accomplishments must involve locating and eliminating the sources of strontium contamination within the environment at the Oak Ridge Reservation. The core hole 8 strontium treatment project further demonstrated the use of existing ORNL infrastructure (existing drains and sumps) to facilitate contaminant capture and subsequent treatment. More of this type planning should be incorporated into future CERCLA remedial strategy.

A demonstration of in-situ vitrification (glassification) of a radioactive contaminated waste trench at Oak Ridge National Laboratories' WAG 7 is scheduled for September 1995. This demonstration, if successful, can establish a methodology to immobilize radionuclides in situ and therefore greatly impede the potential for future migration. This office and the EPA have both concurred with the demonstration project to be carried out on a designated CERCLA operable unit.

The DOE has recently initiated a treatability study to explore the feasibility of sludge removal technologies from the Gunitite Tanks CERCLA operable unit at the Oak Ridge National Laboratory. The State of Tennessee and Region IV EPA have agreed to the initiation of the study. A treatability work plan has been prepared by the DOE and has been submitted to the FFA parties for review.

3.D.5 ORR Integration of RCRA/CERCLA Groundwater Monitoring Requirements for Post Closure Permits, Solid Waste Management Units, Waste Area Groupings and CERCLA Operable Units

RCRA groundwater monitoring, as required by the RCRA Post Closure Permits, remains a mandated obligation for DOE. In those cases where RCRA monitoring requirements and CERCLA Records of Decision coincide there will be a planned effort to coordinate the two monitoring activities. In certain cases where RCRA closures did not or will not fully address all the potential CERCLA concerns an attempt at full RCRA/CERCLA coordination will occur. Under the present strategy this will be accomplished by wording the appropriate RCRA permit or Agreed Order in such fashion as to include RCRA monitoring, and in some cases, final closure requirements within the CERCLA Record of Decision. This same strategy will apply to Waste Area Groupings and Solid Waste Management Units where appropriate.

One issue of concern centers around the extensive groundwater monitoring and investigation that has evolved on the Oak Ridge Reservation since 1983. It is very obvious that Oak Ridge Reservation groundwater is contaminated with a variety of contaminants. This fact has been known for many years. The concern however lies in the fact that very little has been done, by either the regulators or the DOE, to determine the appropriate minimum level of groundwater monitoring necessary to comply with legal requirements, detect significant changes and/or to expediently reach corrective action decisions. It appears that measuring (and modeling) has become both the means and the end. To illustrate, and admittedly based on somewhat conflicting information, there appears to be approximately 3500 groundwater wells on the ORR. Of these wells it further appears that there are approximately 650 actively monitored wells with another 1050 in standby or temporary use status. The remainder are either plugged and abandoned or scheduled for plugging and abandonment.

Under the present and increasing concern for fiscal constraint, doing the bare minimum to accomplish the task at hand is necessary. In light of this concern It has recently been requested that this issue be taken under advisement by the DOE, EPA and State senior managers to provide guidance and direction.

3.D.6 ORR Integration of NPDES/FFA Area Source Pollution Assessment and Control Requirements

The ORR is presently regulated under three separate National Pollution Discharge Elimination System (NPDES) permits.

There is therefore a separate permit covering waste-water discharge limits at Y-12, X-10, and K-25. With each permit covering a large number outfalls at each site. Because the ORR is listed on the National Priorities Listing (NPL) in accordance with CERCLA, the NPDES permits cover only active operational discharges. CERCLA activities are exempt by law from all administrative permitting requirements; however, the law requires compliance with requirements in substance. Integration and coordination efforts between TDEC/DOE-O's Waste Management Program (water pollution staff) and ER Program staff insure that CERCLA activities meet all Applicable or Relevant and Appropriate Requirements (ARAR) as required by CERCLA. As a result of this coordination effort, specific emphasis has been placed on certain remediation units to employ CERCLA Removal Actions and/or Interim Actions in order to speed the elimination of active discharges that either do not meet NPDES standards or have a significant potential of exceeding those standards without control or treatment. Examples of this coordination include the SW-31 spring at K-25, the mercury reduction program at Y-12, and the WAG 5 Seeps removal actions at ORNL.

4. WASTE MANAGEMENT PROGRAM

4.A Introduction

The Waste Management Program has responsibilities in the areas of air, water, solid, hazardous and mixed waste. The sections under this program that carry out these commitments are: Air Pollution Control, Engineering Support, Solid Waste Management and Water Pollution Control. A functional organizational chart is shown in Figure 5.

4.B TENNESSEE OVERSIGHT AGREEMENT commitments

4.B.1 - Air Pollution Control - Attachment A, Section A.5, A.5.1 - A.5.5

The majority of the activities performed by the Air Pollution Control (APC) section of the Waste Management program deals with oversight activities related to State air pollution control regulations.

During the calendar year May 1994 through September 1995, the Air Pollution Control section conducted comprehensive audits at K-25, X-10 and Y-12. Other activities conducted during the year included reviewing permit requests, observing asbestos removal projects across the Oak Ridge Reservation (ORR), as well as tracking asbestos removal activities at the K-25 Powerhouse and K-25 Cooling Towers Decontamination and Decommissioning (D&D) projects, observing the Toxic Substances Control Act Incinerator (TSCAI) air permit performance test and the annual TSCAI Volatile Organic Compound (VOC) equipment leak tests. Also, two new oversight program areas were initiated and addressed the areas of fugitive emissions across the ORR and lead based paint (LBP) management activities.

RESULTS

The K-25 site audit was conducted during January 1995. This audit included a review of all operating records, operating permit conditions and air pollution control (APC) equipment. A total of 28 sources were reviewed which included 11 active sources and 17 sources listed as being in standby but whose permits were still listed as active. No deficiencies were noted.

The Oak Ridge National Laboratory (ORNL) was audited during January 1995 through February 1995. The audit included all permitted sources in service (32) and those exempt from permitting requirements (6) for a total of 38 sources reviewed. All operating records, operating permit conditions and air pollution control equipment were reviewed. No deficiencies were noted.

Figure 5
**TENNESSEE DEPARTMENT OF ENVIRONMENT AND CONSERVATION
 DOE OVERSIGHT DIVISION**

WASTE MANAGEMENT PROGRAM

The Y-12 plant was audited from March 1995 through August 1995. A total of 70 permitted sources were reviewed during the audit. Operational records, operating permit conditions and air pollution control equipment were reviewed. No deficiencies were noted.

The asbestos abatement oversight program significantly increased its presence on the ORR during the year. Thirty (30) reviews of asbestos removal projects were conducted, and addressed abatement activities ranging from small, one day removals, and emergency cleanup of asbestos to the ongoing removal activities as part of the K-25 Powerhouse and K-25 Cooling Towers Decontamination and Decommissioning projects.

Permit requests and project proposals continue to be reviewed. Reviews consist of conducting a site visit to verify information supplied (process removed, relocated, modified or new construction) as well as reviewing technical data to ensure accuracy. Appropriate comments or concerns, if any, were formulated and then discussed with the appropriate personnel.

Section staff observed the Toxic Substance Control Act Incinerator air permit performance test. Observations were made regarding the setup and location of sampling equipment and the composition of the waste used during the test. Also, a review of the written test procedure was conducted as was a review of the practice runs conducted.

The annual volatile organic compounds equipment leak test required under Title 40 Code of Federal Regulations Part 265 Subpart CC was observed at the Toxic Substance Control Act Incinerator. Problems and corrective actions were discussed with operations personnel.

A program of reviewing all facilities across the ORR subject to the Subpart BB (VOC Equipment Leak Standards) and Subpart CC (Air Emissions from Tanks, Surface Impoundments and Containers) regulations was initiated.

The Air Pollution Control section is also initiating plans to begin an oversight program addressing lead paint abatement activities across the ORR.

A program to evaluate possible fugitive emission sources at K-25, X-10 and Y-12 has been initiated. This program will mesh with the TOA deliverable A.5.2(1) which requires DOE to develop an emissions inventory including fugitive emissions.

4.B.2 Engineering Support Section - Attachment B,
sections B.6.1, B.6.2, B.7

Scope of Work/Objectives

Engineering Support Section's scope of work includes the following:

Evaluation of solid radiological waste disposal options for the Oak Ridge Reservation (ORR), review current waste disposal activities, and evaluation of DOE's performance assessments.

Oversight of Decontamination and Decommissioning (D&D) activities on the ORR assuring coordination between DOE actions and the State of TN reviews and permitting.

Technical assistance to other DOE-O programs and coordination of technology development activities in support of Federal Facilities Compliance Act (FFCA).

These objectives are being met through engineering reviews, evaluations and site visits to ensure proper construction methods and quality control for hazardous, solid and waste water, treatment, storage and disposal facilities.

Accomplishments

The following results were possible due to the cooperation with the Division of Solid Waste Management, Knoxville Field Office and very good working relations with the personnel from the Federal Department of Energy and its contractors: Lockheed Marietta Energy Systems and MK Ferguson.

Waste Characterization

The objective of this commitment is to develop a plan to ensure proper identification and characterization of the following categories of waste generated on the Oak Ridge Reservation (ORR) and managed by the Energy Systems Waste Management Organization (ESWMO): low-level radioactive waste, transuranic waste, hazardous waste, Toxic Substances Control Act (TSCA) waste, mixed waste, TSCA/radioactive and RCRA/TSCA radioactive waste.

Under the revised Action Plan and upon completion of Milestones 1 and 2 of the approved TOA scope, DOE provided the State with the following documents: 1) Waste Certification program Plan for the Oak Ridge Reservation, ES/EM-6; 2) Waste Acceptance Criteria for the Oak Ridge Reservation, ES/EM-10; and Oak Ridge Reservation Waste Certification Program Implementation Schedule. DOE also provided the State with the waste evaluation criteria.

Engineering Support Section continued review of the Oak Ridge Reservation Waste Acceptance Criteria comparing them

to WAG-6 and Interim Waste Management Facility's (IWMF) waste acceptance and evaluation criteria.

Residue Characterization

The objective of this commitment is to implement a plan to identify and adequately characterize residues on the Oak Ridge Reservation, and to ensure proper management of residue from an environmental, safety, and human health standpoint. DOE is to identify residues, determine whether the residues are adequately characterized, evaluate management of the residues, and to produce a plan for residue characterization. On November 16, 1994, the State provided DOE with the letter describing an agreement reached with the Steering Committee to postpone this deliverable until completion of the scope for TOA Commitment B.6(3) Hazardous Materials. Responsibility to represent the State on the working group for negotiating scopes for Hazardous Materials, B.6(3) and for Residue Characterization Plan, B.6(2) was transferred to DOE-O's Solid Waste Management section.

Accelerated Decontamination & Decommissioning

The objective of this DOE commitment is to assure accelerated disposition of surplus buildings and structures on the Oak Ridge Reservation (ORR), thereby reducing the need for surveillance and maintenance of these structures which represents a significant drain on DOE funding resources.

Under the B.7 Action Plan DOE provided the State with the following documents: 1) FY 1996 and 1997 annual project prioritization list for the Oak Ridge Reservation; 2) Copy of the appropriate sections of the FY 1994 year-end review presentation package for the Oak Ridge Reservation D&D program; 3) K-25 ORNL and Y-12 Site Surveillance and Maintenance (S&M) annual reports for fiscal year 1994. The State continues review of these documents in support of its role to oversee Decontamination and Decommissioning (D&D) activities on the Oak Ridge Reservation.

Staff continued oversight of the K-25 Decontamination and Decommissioning Environmental Program Management Integrating Contractor projects. These projects are the K-25 Powerhouse complex and several cooling towers located north and east of the K-31 and K-33 buildings. TDEC/DOE-O's role included assisting DOE in planning, inspections of project sites, coordinating sister TDEC division inspections and streamlining the regulatory review process. Other activities conducted in support of this program included:

Staff participation in 29 project's working group planning meetings and 13 site inspections
Review and formulation of comments on the Protocol for Radiological Release of Facilities for Recycle/Disposal
Reviews of documents, plans and specifications.
Review of Special Waste Requests for landfill disposal of cooling towers wood and asbestos containing material
Review of the K-25 Powerhouse Facility Survey and Characterization monthly reports, engineering inspections of K-701 and 702 and the Powerhouse Area Demolition Project partial proposal
Inspection of the planned fill area
Review of the Site Characterization for Building X-3506

Technological Support and Review

Waste Management activities include solid waste disposal evaluation, construction and engineering reviews for treatment, storage and disposal facilities and reviews/evaluations of radioactive waste disposal practices. This section routinely performs technical reviews and participates in site visits in support of other DOE-O sections.

Oversight of Construction Sites

Staff conducted audits of the following projects:

K-25: Central Neutralization Facility Pipeline Extension, K-1251 Barge Terminal, K-1515F Replacement Lagoon, K-705 Pumping Station, 901 Pond and 901A Monitoring Station
Y-12: West End Treatment Facility
X-10: Interim Waste Management Facility

Evaluation of Radioactive Waste Disposal Practices

Reviewed and commented on radiological performance assessment for the continued disposal operations at Solid Waste Storage Area 6. This performance assessment did not meet objectives of the Department of Energy Order 5820.2
Continued evaluation of the Waste Evaluation Criteria for the Interim Waste Management Facility
Continued evaluation of Tumulus I & II pads at Solid Waste Storage Facility 6

Technology Development

Staff continued representing TDEC/DOE-O in the DOE Site technology coordination group meetings, and continued review of the technology development and radioactive waste disposal documents including review of the technology development monthly reports. Staff attended emerging technology demonstrations and participated in technology needs meetings.

4.B.3 Solid Waste Management Attachment B, Sections B.4, B.5, B.6.1, B.6.3, B.6.4, B.6.5

Significant oversight activities have revolved around RCRA concerns on the ORR and around other projects as assigned by management. Examples of some of these projects include: 1) waste and residue characterization 2) waste minimization 3) the ongoing discussions for the WAG 6 closure permit 4) K-25 Cooling Tower visits 5) K-25 UF6 cylinder yards 6) waste tracking system status and updates 7) the transportable vitrification permit proposal 8) Pond Waste shipment tracking 9) NEPA document reviews 10) ground water strategy for the ORR and 11) assisting sister divisions with permit reviews for facilities at all three plants.

Waste /Residue Characterization

The Waste/Residue Characterization tasks were transferred from the Engineering Support Section to the Solid Waste Management Section in November 1994. The transfer of information and schedules began immediately and Solid Waste Management assumed all the duties associated with this project. Two milestones under the Tennessee Oversight Agreement (TOA) B.6(1) commitment (waste characterization plan) were submitted to TDEC-DOE-O on May 22, 1995. These submittals complete milestones 3 and 4 under the action plan for the TOA update. Also in May, TDEC and DOE began discussions to satisfy commitment B.6(3), detailed information on hazardous materials. When complete, DOE will be providing a list of sources that contain detailed information on hazardous materials on the ORR. Completion of this scope is expected by the end of CY 1995.

Additional projects assigned to this section are: 1) review of facility survey data and 2) decontamination of perchlorate and perchloric acid residuals on laboratory hoods.

With TDEC/DOE-O's facility survey project under way, the Solid Waste Management section has reviewed the data to determine if waste management issues are uncovered during surveys. A table of pertinent data is being compiled and will be kept on record for review.

Due to a build-up of perchlorate and perchloric acid residues, lab hoods at the X-10 and K-25 sites are in the process of decontamination. Solid Waste Management has been monitoring the projects at both sites and providing assistance when necessary.

Waste Minimization/Source Reduction

The scopes concerning waste minimization and source reduction (B.4 and B.5) were revised and agreed upon by the Working Group at DOE/DOE-O. Nine Pollution Prevention Opportunity Assessments (PPOA) were completed in 1994 and DOE-O is currently reviewing five. Eighteen waste streams were prioritized for PPOA in 1995.

DOE-O reviews annual Hazardous Waste Reduction Progress reports for each site and has met monthly with pollution prevention program managers from each site for activity updates. A 1995 Landfill Inventory was compiled for landfills II, V, and VI which contain logs of waste received on a daily basis. This log is updated on a bi-monthly schedule.

Central Waste Tracking System (CWTS)

The October 31 deadline for uploading information (Phase I, historical waste) at all three sites was met. Close examination of the system revealed that the time frame set for the upload had caused quality control to be compromised. The problem has been identified and accepted by DOE and Lockheed Martin Energy Systems (LMES). The TOA scope for waste tracking (B6.5) has need of changes to remedy the lack of quality control and to improve the current software program. The final version of the TOA deliverable was prepared in November 1994. The first quarterly assessment report on the CWTS, ending October 31, 1995, is due by November 15, 1995. During the second phase of uploading the CWTS, integration of the pollution prevention assessments, RCRA and FFCA reports are being considered.

Pond Waste Management Project

The transfer of raw sludge from the old containers to Twenty-first Century containers was completed in January 1995. The new containers are currently stored in building K-1065 A, B, C and D. These buildings are permitted by the state as storage facilities. The empty drums were crushed and shipped to Scientific Ecology Group (SEG) to be processed. The next phase of the project is the removal of the equipment from K-1417 and K-1419 facilities. A closure plan has been submitted to the state for review.

Uranium Fluoride (UF6) Cylinders at K-25

A review of the UF6 cylinder management plan has been completed. The installation of a new storage pad for the UF6 cylinders is currently on hold pending further investigation.

The RCRA semi-annual audit was completed at Y-12 and K-25. A follow-up audit was conducted at K-25.

Toxic Substance Control Act/Polychlorinated Biphenyls (TSCA/PCB)

The Solid Waste Management section staff has visited the three plants on the ORR to evaluate the TSCA/PCB programs in operation. LMES is attempting to downgrade the classification of unlabeled transformers with a sampling and analysis plan/program. The Toxic Substance Control Act (TSCA) programs on the ORR are more stringent than the requirements listed by federal regulations.

RCRA Ground Water

Solid Waste Management staff members have oversight responsibilities for ground water monitoring under RCRA on the ORR. Following is a list of activities in this category:

- 1) Preparation of a comprehensive report on the ground water hydrogeology and the storage/disposal trenches and other facilities for transuranic wastes at Waste Area Grouping (WAG) 5 at X-10.
- 2) Attendance at monthly meetings concerned with oversight of the WAG 6 closure process, the WAG 6 post closure permit application, and the WAG 6 Environmental Monitoring Plan (EMP), especially the ground water monitoring and reporting aspects.
- 3) Observed the Melton Valley coring activities at WAG 5.
- 4) Reviewed the RCRA driven Ground Water Quality Assessment Reports.
- 5) Conducted monthly audits of Y-12 landfills and assisted the Knoxville Field Office (KFO) with their inspections.
- 6) Participated as liaison for meetings with DOE/LMES on the Hill Cut Test Facility, Ground Water Strategy, ORNL geophysical data mapping, and monthly ground water meetings at all three sites on the ORR.

4.B.4 Water Pollution Control - Attachment A, sections A.2, A.2.1

The Water Pollution Control Section is responsible for most issues that involve surface waters with major emphasis on monitoring activities related to the National Pollutant Discharge Elimination System (NPDES) permits held by the three sites on the Oak Ridge Reservation (ORR). Many of the tasks the section undertakes are conducted on a routine basis, such as review of the monthly Discharge Monitoring Reports (DMR), NPDES compliance inspections, and Monthly

Operating Reports (MOR); whereas other activities are dealt with as the need arises. The range of unscheduled activities includes fish kill and spill response, wetland identification, aquatic resource alteration issues, storm water evaluations, and other ongoing or new projects that require the sections' input. During the May 1994 to June 1995 time frame, the Water Pollution Control staff were involved in the following activities that are not reported in the Environmental Monitoring Plan or Environmental Monitoring Report.

Results

Permit modifications were made to K-25 NPDES permit. Storm drains 702 (category I) and 712 (category II) were eliminated from the permit. Personnel visited the outfalls and verified that storm drains 702, and 712 combined with outfall 710 prior to mixing with waters of the state. As a result storm drains 702 and 712 were removed from the permit via a permit modification.

PCBs were identified in the sludge from the K-1206-E and the K-1206-F firewater tanks at the K-25 site. An analysis of the firewater storage tanks revealed PCB levels of 200-300 ppm in the tank sludge. Plans to collect and analyze water samples from randomly selected fire hydrants were implemented. The water from the K-1206-E tank was drained and treated as PCB waste. The tank water was filtered through carbon filter units prior to discharge through an NPDES discharge point (in accordance with the Toxic Substances Control Act Compliance program).

Personnel met with LMES personnel on July 15, 1994, at the K-25 site Powerhouse. TDEC/DOE-O personnel verified the locations of proposed groupings of storm drain outfalls at the site. The outfalls were confirmed to be grouped as to their natural flow pattern.

In February 1995, personnel visited three storm drains (SD-170, SD-180, and SD-190) at the K-25 site. The purpose of the visit was to determine where "Waters of the State" begin and end in relationship to the storm drain outfall in order for K-25 personnel to install oil booms at the storm drains. These outfalls discharge parking lot runoff; therefore, the potential for oil sheen exists. The oil booms would be used to collect the oil. The placement of the oil booms is also a benefit during an emergency situation such as a spill.

TDEC/DOE-O personnel determined that 'Waters of the State' begin where the discharge mixes with the receiving stream. Oil booms have been installed at the outfalls.

In March 1995, personnel visited several NPDES permitted outfalls at the Oak Ridge National Laboratory. The outfalls in question were determined to be eliminated from the new permit due to the fact that the outfalls are no longer discharging. Several of the outfalls had been eliminated due to construction activities or were permanently plugged. Some of the outfalls were associated with cooling tower water discharges. All have been eliminated by the abandonment of the cooling towers by switching to air cooled systems. The outfalls will be eliminated in the Oak Ridge National Laboratory NPDES permit.

In April 1995, a Notice of Non Compliance was issued to the Oak Ridge National Laboratory for exceedances of NPDES permit limits for total suspended solids and iron. The Oak Ridge National Laboratory plans to continue Best Management Practices efforts in order to minimize residual total suspended solids in storm water runoff. The iron exceedance was thought to be caused by iron accumulation in algae that was present in the analytical sample. The sample intake was relocated to allow for more representative sampling. In addition, upgrades to the Coal Yard runoff treatment Facility included an effluent filtration unit that is expected to reduce the potential for future iron exceedances.

Personnel were involved in Y-12 Permit negotiations. The United States Department of Energy Y-12 site is authorized to discharge process wastewater and other wastes that have been accepted for treatment via waste acceptance procedures, cooling tower blowdown, cooling waters, condensate, sump waters, storm water runoff and ground water. The receiving waters are East Fork Poplar Creek, Bear Creek, McCoy Branch, an unnamed tributary to Bear Creek and unnamed tributaries to the Clinch River. The Y-12 Site NPDES Permit was issued August 28, 1995. The NPDES permit is effective July 1, 1995, and will expire on April 27, 2000.

Several Meetings for the Oak Ridge National Laboratory draft NPDES permit were held during the 1994-1995 time frame. Issues such as radiological monitoring, chlorine concentrations, CERCLA integration, Biological Monitoring and Abatement activities and the radiological monitoring plan were discussed. Oak Ridge National Laboratory NPDES permit is currently drafted and in negotiations with the Tennessee Department of Environment and Conservation.

5. RADIOLOGICAL MONITORING and OVERSIGHT PROGRAM

5.A Program Organization

The Radiological Monitoring and Oversight Program is comprised of five sections (figure 6). The sections support all TDEC/DOE-O Programs.

Sections Within Radiological Monitoring

Materials Management

Site and Facility Evaluation

Soil and Air Monitoring

Water Monitoring

Environmental Restoration Support

Staff within each section specialize to have adequate technical expertise. Particular functions of each section are outlined with some concerns presented.

Environmental Restoration Support

Assist in CERCLA and NEPA review process

Evaluate risk now vs. risk later

Track radioactive decay over time, formation of daughters

Transuranic wastes, uranium, coal ash, mussels, spent

nuclear fuel, plutonium, cesium, strontium, fission

products, soil, water, biological

Site surveys to assess impact of reservation

processes/activities

Water Monitoring

Includes discharges and ambient waters

Offsite releases have been emphasized

Residential wells, other offsite wells, water supplies

Soil and Air Monitoring

Soils not in operable units (sludge landfarming)

Ambient and effluent air (trends and unplanned releases)

Biological indicators (bees, deer, vegetation)

Public health and environmental impacts

Site and Facilities Evaluation

Independently evaluate facilities on the Oak Ridge Reservation

Rank facilities as to relative hazard

Recommend action, if necessary, to the Department of Energy

TDEC/DOE-O emergency response

Tennessee Emergency Management Agency coordination

Figure 6

TENNESSEE DEPARTMENT OF ENVIRONMENT AND CONSERVATION DOE OVERSIGHT DIVISION

RADIOLOGICAL MONITORING AND OVERSIGHT PROGRAM

* This section will support radiological component of ER Program

** This section will support WM for their radiological component

Revised 07/13/95

Materials Management

Radioactive materials handling

Reactors and associated activities

National Environmental Policy Act document reviews

5.A.1 Interactions With Other State Agencies

RMO acts as the lead program area within TDEC/DOE-O for coordination with TEMA, the Division of Radiological Health, EPA ERAMS and NESHAPs.

5.A.2 Public Participation

TDEC/DOE-O regularly sends personnel to attend public meetings on a variety of subjects. Public meetings attended by RMO personnel are: Interim Storage of Highly Enriched Uranium, Spent Nuclear Fuel, Molten Salt Reactor, Union Valley Interim Study, East Fork Poplar Creek Remediation, Tritium Supply and Recycling Program, as well as other meetings on Decontamination and Decommissioning (D&D) efforts and Common Ground Initiative issues. In addition to the above meetings, RMO personnel also participate in TDEC/DOE-O monthly after-hours public discussion. Although not actually a primary function of TDEC/DOE-O, RMO personnel also worked with members of the public on complaints concerning a wide range of issues relating to DOE.

5.A.3. Off-Site Activities

Contamination or pollution problems occurring outside the boundaries of the Oak Ridge Reservation (ORR) are not normally addressed by TDEC/DOE-O unless a direct link exists between the ORR or DOE and the contamination. RMO continues to be the program with primary responsibility for TDEC/DOE-O off-site activities. RMO personnel continue to be involved in on-going off-site activities such as the Atomic City Auto Parts clean-up. In addition, TDEC/DOE-O has been requested to conduct surveys of former and currently owned DOE property that is under consideration or has been released to the public for development. An example of this is the former Clinch River Breeder Reactor site. The following sections address off-site activities which involved actions by RMO personnel.

5.A.3.1. Atomic City Auto Parts (Oak Ridge)

As noted in the last DOE-O annual report, Phase I of the clean-up at this site has been completed. Phase II of the clean-up has begun and has included securing the site, characterization of site contamination, and further removal of contaminated debris. Site security involved the erection of an 8 foot perimeter fence and marking off areas of identified radiological contamination with radiological hazard signs and ropes. Site characterization work has

included surface soil sampling, soil core sampling, surface water sampling and emplacement of 7 groundwater wells. Additionally, a further collection and removal of approximately 60 pounds of contaminated metal were accomplished. Detailed analysis of sampling data has not yet been accomplished. When the analysis is completed and full characterization of the site is accomplished, a scope of operation for Phase III will be determined and Phase III operations will be initiated. TDEC/DOE-O will continue to follow progress on this site and coordination with Division of Superfund.

5.A.3.2. CSX Railroad Site (Oak Ridge)

All work at this site has been completed. RMO personnel have conducted walk-over surveys of other CSX sites and have not identified any areas of concern. TDEC/DOE-O considers this action closed and will not provide further reports.

5.A.3.3. Remotec (Oak Ridge)

Actions at this site have been completed. Although the State Division of Superfund had requested more extensive site characterization, review of data and investigation of the site revealed that further site characterization would not be cost effective. TDEC/DOE-O considers this action closed and that any concerns about this site or any others in Union Valley will be covered in the on-going Union Valley Studies.

5.A.3.4. Witherspoon (Knoxville)

The State Division of Superfund has lead responsibility of this site and continues to conduct monitoring activities. TDEC/DOE-O considers that its involvement with this site is completed unless the Division of Superfund requests assistance.

5.A.3.5. Quadrex-Contaminated Oil (Oak Ridge)

All Coordination problems with this action have been resolved and actions taken to remove the oil and decontaminate the machines. TDEC/DOE-O also considers this action to be completed unless further assistance is requested by the State Division of Radiological Health.

5.A.3.6. Solway Site-Rosco Fields (Oak Ridge)

Clean-up of this site has been accomplished. Limited monitoring/sampling activities are still conducted by Division of Superfund. TDEC/DOE-O considers its involvement in this action completed.

5.A.3.7. Clinch River Breeder Reactor Site (Oak Ridge)
RMO personnel have completed a grid survey of this site for radiological contamination. The survey did not indicate any areas of radiological contamination significantly above levels of concern. This action has been completed.

5.B RMO Activities

Activities of the program have diversified during the past year. New employees were trained and acclimated to their jobs. During the reporting period, several new programs were started while some old ones were expanded. RMO's support to the Environmental Restoration Program has intensified with some projects such as the Molten Salt Reactor Remediation review, for example, being assigned to RMO. EPA and DOE have opined the advantage of using the facility survey program as an authority for economically identifying facilities needing no further Comprehensive Environmental Restoration Compensation Liability Act (CERCLA) investigation. The Local Oversight Committee, with the same motivation, has requested State surveys on some K-25 facilities being considered by the East Tennessee Economic Council (ETEC) for future use. Similarly, the RMO program is evaluating the presence or absence of contamination on Oak Ridge Reservation acreage being released for private use.

5.B.1 RMO Environmental Restoration Section

This section assists in the radiological aspects of CERCLA cleanup project review. In particular, the assessment of present and future risk in relation to radionuclide half-lives and daughters is a concern and is considered in selected remedial alternatives. The mobility and radiotoxicity of radionuclides present in operable units are assessed. The recent acquisition of specialized field survey equipment has facilitated the location of radiological contamination in the field. This section recently gridded and surveyed the Clinch River Breeder Reactor site in order to verify the absence of contamination. In participation with DOE, a 1000 acre tract (ED-1) next to K-25 is being assessed for contaminants as it is proposed to be leased out for industrial use. This winter, after draw-down, a field survey of the exposed flats on the Watt's Bar Reservoir shore will assess gamma dose rates in relation to public risk. The DOE removal of six 328 curie Co-60 sources from the Variable Dose Rate Facility at Freels Bend was monitored. As Freels Bend is a likely land tract for future public use, a selective survey of the area for radiological and other contaminants is being done. The DOE and the State have worked cooperatively to assess contamination in the

field with the strengths of each organization being used in a complementary fashion.

5.B.2 RMO Site and Facility Evaluation Section

Routine support activities for TDEC/DOE-O include dosimetry administration, bioassay administration, and the vehicle survey program. The Facility Survey Program and Emergency Response (Tennessee Emergency Management Agency, or TEMA) coordination requires the most time. Technical support is also given to other programs with activities in decontamination and decommissioning, transportation, recently declassified information, audits, and public relations.

5.B.2.1 Facility Survey Program

The Facility Survey Program surveyed and finished reports on 28 Oak Ridge Reservation facilities during this reporting period. An Environmental Release Hazard Index was devised to separate facilities with high risk from those with low risk. The index uses ten categories in order to separate release hazard by type and pathway. The Environmental Restoration Benefit Assessment Matrix (ERBAM), a DOE index, was also explored as a tool and found to be lacking in certain needed details. Of 28 facilities indexed, 9 were rated to have a potential to spread contamination which would harm human health and/or the environment. Facility descriptions and details of hazards are reported in TDEC/DOE-O's annual Environmental Monitoring Report. Interim draft results are available for review at the TDEC-DOE-O office.

The Facility Survey Program is being considered for use in the Environmental Restoration program in order to determine if facilities can be eliminated from further CERCLA investigation. The State with DOE and Environmental Protection Agency (EPA) concurrence could clear facilities from the Federal Facilities Agreement CERCLA investigation list saving money and time. DOE's new Facility Transition Program may also use the State's surveys to clear facilities entering and leaving the program. The Local Oversight Committee has expressed interest in the future use of certain K-25 facilities. The State has added the facilities to the survey schedule. The Facility Survey Program modifies the facility survey schedule continuously in order to optimize the usefulness of the program considering potential future use of facilities and the needs of stakeholders. At the same time, however, the State's search for problem facilities will continue.

5.B.2.2 Emergency Response Coordination

Over the past year, with the development of TEMA's "Oak Ridge K-25 Site Multi-Jurisdictional Plan", TDEC/DOE-O emergency response was emphasized. TDEC/DOE-O participated in the development of the K-25 plan and has participated in preliminary emergency response exercises for the K-25 site. In September 1995, TDEC/DOE-O will participate along with other agencies in a full participation exercise for the K-25 Site. Lessons learned will provide refinement of emergency preparedness. Public safety around DOE facilities will be enhanced in case of accidental releases of hazardous and radioactive materials.

5.B.3 Radioactive Materials Management Section

As facilitated by the National Environmental Policy Act (NEPA), Materials Management has commented on a variety of projects dealing with radioactive materials and facility siting. Coordination with the Defense Nuclear Facilities Safety Board (DNFSB) insures that redundant review and oversight does not occur on projects in which they also have an interest. Movement of radioactive materials on and off the reservation is monitored in order to insure equity between states and a net improvement in environmental quality and risk in Tennessee. Reactor operations are monitored in order to provide knowledgeable assurance of safety to the public. Recently, Materials Management was assigned the lead in the CERCLA review of the Molten Salt Reactor Experiment cleanup. This section also developed and helps implement TDEC/DOE-O's Reproductive Health Policy.

5.B.3.1 Materials Management

The namesake activity for the section dealt with a diversity of radioactive materials. Notable reviews included the Environmental Assessment (EA) for the storage of enriched uranium at Y-12 beyond historic levels (DOE/EA-0929). In the Finding of No Significant Impact (FONSI), DOE was agreeable to limit the storage of Low Enriched Uranium to 6 metric tons and Highly Enriched Uranium to 500 metric tons. Following up on the EA review, staff visited uranium storage facilities at Y-12, initiating a continuing program of periodic field work and constructive feedback to DOE. A major concern voiced by the public was the old age and subsequent deterioration of the storage buildings. Reports and recommendation from the DNFSB to DOE are considered in the evaluations.

A NEPA Record of Decision (June 1, 1995) by DOE selected the preferred alternative, "regionalization by fuel type", for the management of spent nuclear fuel. This will result in a significant amount of spent fuel being sent from Oak Ridge

to Hanford, Idaho National Engineering Laboratory, and the Savannah River Site. TDEC/DOE-O has already received shipment notices for aluminum clad High Flux Isotope Reactor (HFIR) elements to be sent to Savannah River for product recovery. These fuel elements have traditionally been sent to the Savannah River Site. The State is optimistic that old spent fuel and certain other fission wastes can be removed from ORR storage progressively eliminating a hazard to public health and the environment.

Uranium hexafluoride cylinder storage at K-25 has been reviewed through documentation and field visits in coordination with the DNFSB. Deterioration of the cylinders with possible subsequent leaking of radioactive material is a universal concern. The problem is manageable, however, the State questioned excessive expenditures in the long term management of the cylinders in their present location. In a reasonable approach (Report 95-1), the DNFSB recommended systematic repainting and selective re-emplacement of problem cylinders which will be protective until the final management scheme is decided through NEPA review. Alternatives will consider both uranium hexafluoride and the steel cylinders as potential resource materials.

A notable project was the shipping of Russian bomb grade uranium to Y-12. Project "Sapphire" was directed secretly because of security concerns. The DOE communicated with the Governor and the DOE Oversight Division Director before the material arrived in Tennessee. After security was relaxed, line staff became involved and reviewed transportation and management of the material. An EA on the transportation of "Sapphire" material to Y-12 was completed by DOE but it was classified for too long and, therefore, did not benefit the public. Even the classified version was unavailable in Oak Ridge until too late to be of benefit, so the State did not review it. An EA on "Sapphire" blending (DOE/EA-1063) examined alternatives including privatizing "down blending" of the uranium. The public and DNFSB had questions regarding the characterization of the material. As a result, State officials reviewed classified documents concerning the characterization of "Sapphire" material.

Radioactive materials management will remain a section priority both on a local and national scale. NEPA facilitates the reviews of national issues which impact Tennessee, such as foreign research reactor spent fuel disposition, highly enriched uranium disposition, weapons fissile material management, and nuclear stockpile stewardship issues. Other issues are addressed on a local

scale by active involvement with DOE-ORO, LMES, and other State agencies and TDEC Divisions.

5.B.3.2 Reactors

Close communication is maintained with the operating staff at the High Flux Isotope Reactor (HFIR) located at ORNL. A fuel element re-racking was done in order to provide pool space until spent fuel shipments to Savannah River Site could be resumed. TDEC/DOE-O observed the fabrication and use of the racks. The re-racking was necessary to assure the continued production of industrial and medical radionuclides by HFIR.

The Molten Salt Reactor Experiment (MSRE) facility located at ORNL was included into CERCLA at the request of EPA. Even though the project is being handled under the FFA, the Radiological Monitoring Program will still lead the review of MSRE remediation. Using a streamlined approach to cut red tape, documentation will hopefully exactly fit the requirements of CERCLA while allowing cleanup to progress smoothly. Priority actions include the removal of a criticality hazard. Eventually, the fuel salt will be dispositioned under State, EPA, DOE, and public guidance as facilitated by CERCLA. The decontamination and decommissioning may be privatized and opened up for bids.

Other reactors on the reservation are not considered as high hazards relatively speaking. The Bulk Shielding Reactor and Oak Ridge Reactor, for example, will eventually be decontaminated and decommissioned. The reactor pool stores some spent fuel elements, which are slated to be removed.

5.B.4 Soil and Air Monitoring Section

Details of monitoring results are found in TDEC/DOE-O's annual Environmental Monitoring Reports which are available in the spring. The public may also come in the office and review data with appropriate staff. New programs are briefly discussed in order to acquaint the public to our activities.

5.B.4.1 Air

The State has in past years observed DOE's activities in stack and ambient air monitoring and provided feedback on plans, quality control, interpretation of data, and compliance. These activities have lacked the element of an independent check, however, which the Tennessee Oversight Agreement emphasizes. Two new programs have been initiated.

In cooperation with the DOE, the State is being provided sample filters every two weeks from existing calibrated low

volume sampler equipment used as pre-filters for DOE tritium analysis. The State supplies spare filter heads, expendables, and analysis from the State laboratory. Both parties and the public get the benefit of the data. For gross alpha, beta, and gamma counts, trending is possible using the two week sampling period. Isotopic analysis will require compositing over a longer period of time yet to be optimized. The samplers are strategically located around the Oak Ridge Reservation. The program was started in December 1994.

The State will also independently operate five ambient air stations on the ORR as part of EPA's Environmental Ambient Radiation Monitoring System (ERAMS). ERAMS emphasizes consistent procedure for analyses of radionuclides nationwide. The information from ERAMS will tell how the ORR compares with the rest of the country. Since the samplers will be on DOE property, estimates on installation costs were provided by Lockheed Martin Energy Systems. DOE will fund site preparation through the TOA grant. EPA will provide the sample equipment and analysis. The State will provide sampler operation, sample collection, and sample shipping. The data will be published in EPA's quarterly Environmental Radiation Data Reports out of the National Air and Radiation Environmental Laboratory (NAREL) in Montgomery, Alabama.

As mentioned above, the air section provides feedback on air sampling plans. Notable efforts in this area include input on proposed changes to the Y-12 and K-25 perimeter ambient air sampling programs. As a result of recommendations by the State, the Y-12 system was down graded rather than totally eliminated. The most heavily impacted of the Y-12 stations are still operated. The State continues to work with K-25 on proposed changes to its perimeter air stations. The air section also closely follows the activities of the TSCA incinerator via participation in the monthly TSCA Thermal Release Valve (TRV) exercises.

5.B.4.2 Soil

With the procurement of sodium iodide gamma radiation detectors, TDEC/DOE-O now has the capability to locate radiological contamination in the field without expensive sampling. Radiological surveys of potentially contaminated areas in or near public accesses are being completed with interesting results. For example, a survey of ORNL access roads and associated drainages revealed spots of contamination. The risk to the public, with intermittent use, is insignificant. The hypothesis that soil was

historically contaminated along access roads through spills or deposition, however, was proven.

The feasibility of correlating air data with soil data is being examined. The usefulness of DOE's soil plot sampling program is being evaluated in general.

A TDEC/DOE-O Walkover Survey Work Plan was drafted. The Plan includes public areas as well as government areas such as DOE's sludge landfarms.

5.B.4.3 Biological

With the encouragement of the State, DOE is reinstating a honey sampling program. TDEC/DOE-O has identified the honey data from a human health standpoint and the pollen data from a human health, ecological, and trend monitoring perspective. If contaminants are present in pollen or honey, significant risk pathways may be identified and managed, and the success of clean-up efforts monitored over time. DOE will analyze the honey and the State will analyze the pollen.

Sampling of mast (nuts and berries) at selected areas on the ORR will be initiated in order to determine if wild food crops are contaminated. Sampling of watercress from a radionuclide contaminated stream at ORNL revealed no detectable levels, a good sign. Data collected by LMES from the annual TWRA deer hunts is reviewed in order to determine patterns, if any, in kill locations of contaminated deer. A noteworthy accomplishment would be to prevent deer from accumulating radionuclides instead of having to confiscate animals at the deer check station.

5.B.4.4 Ambient Gamma

An Environmental Thermoluminescent Dosimeter (TLD) program was initiated by the DOE Oversight Division which evaluates the gamma exposure rates on and around the ORR quarterly. Areas accessible to the public are emphasized along with operable units in various stages of the cleanup process. As examples, stations are located; near the uranium hexafluoride storage yards at K-25 on the bank of Poplar Creek, near a contaminated mud flat on the Clinch River, in the Oak Ridge Community, and proximate to a contaminated scrap yard at the Tower Shielding Facility where hunters can access. TLDs are placed at 40 to 50 stations around the reservation. The information will be used to assess public risk in relation to operations, clean-up, and institutional controls. The Division of Radiological Health conducts the same type of program at radiological facilities in the private sector.

5.B.5 Water Monitoring Section

With the significance of the possible migration of radiological contaminants off the ORR, this Section in collaboration with other Division Programs has attempted to focus its activities on: developing an understanding of the hydrogeology of the ORR; assessment of the effectiveness of DOE radiological monitoring programs; the development of information relative to areas most vulnerable to contaminant migration; appropriate locations for radiological monitoring activities; and the review of DOE's exit pathway and off-site monitoring programs.

5.B.5.1 Groundwater

Review of DOE/LMES groundwater monitoring programs began with the assumption that the presence of radionuclides above levels which could be attributed to natural background or global fallout would be indicative of contaminant migration and its source. While investigation revealed that backgrounds for these constituents have not been determined, radionuclides remain the most conspicuous indicator of contaminant migration off the ORR.

Problematic in the assessment of DOE/LMES radiological water monitoring programs and investigation of potential migratory routes has been the lack of radionuclide specific analysis and relatively large counting errors associated with much of the data. In the Division's review of LMES' Offsite Residential Drinking Water Program and the investigation of contaminant migration into Union Valley from the Y-12 Facility, ambiguous data has made a confident assessment of contaminant migration difficult. Findings have been relayed to DOE/LMES in meetings, comments on DOE/LMES produced documents (e.g., the *Union Valley Interim Study*), and Division reports.

5.B.5.2 Offsite Drinking Water Program

Assessment of DOE/LMES' Offsite Residential Drinking Water Program has been complicated by: the perception of the program as a Best Management Practice (not required under DOE Orders); an agreement between LMES and property owners participating in the program prohibiting the public disclosure of specific information relative to the program; the lack of established background levels for natural and man-made radionuclides; and the inability to extensively investigate the appropriateness of sampling locations and to validate data (co-sample). Concerns generated by review of data summaries (e.g., the presence of fission products and elevated gross activities) were expressed to DOE/LMES in meetings and Division comments on DOE's Environmental Monitoring Plan. Consequently, DOE tasked LMES's Groundwater Protection Program Office to review the program and report on their findings.

In accordance with TOA requirements, staff have been developing information relative to areas which appear more susceptible to contaminant migration and initiated monitoring of wells and springs surrounding the ORR. While hydrogeological investigations indicate the potential for offsite migration of radiological contaminants particularly at Y-12 and K-25, the State's results to date have remained below drinking water standards.

5.B.5.3 Surface Water Monitoring

With the addition of staff, surface water monitoring efforts have expanded to including NPDES, CERCLA, and NEPA review and related field work. Data generated by the State at White Oak Dam has been trended with the intent of monitoring the effects from upstream remediation and waste management activities. Additionally, the Division intends to implement the ERAMS surface and drinking water programs at a yet to be determined set of monitoring stations.

5.C. TOA Deliverables

Descriptions of activities pertaining to TOA items are discussed. Concerns are also noted.

5.C.1 Radioactive Surveillance, TOA A.6

5.C.1.1. System Review, TOA A.6.1.

The RMO program continues to oversight the various surveillance systems on the ORR and it's environs. This oversight program involves direct observation of in the field activities, review of surveillance plans, appropriateness of methodologies, and review evaluation of surveillance data. It is the intent of the RMO program to ensure compliance with both the letter and spirit of the applicable regulations. RMO has provided comments and recommendations on various aspects of surveillance systems to include proposed changes. This is an on-going program and will continue to be an area of primary oversight for RMO.

5.C.2. Transportation Of Radioactive Materials, TOA B.2

DOE is required by the TOA to notify TEMA and TDEC/DOE-O prior to transporting radioactive materials. Notification of shipments continues to improve. Advance notification is almost always provided. The exceptions are Special Nuclear Materials and Department of Defense related shipments. These shipments are subject to national security concerns and modifications of notification requirements within reason are expected. Although modifications may be accepted in special cases, this should not be seen as relief from the requirement that notification of shipments must still be made.

5.C.3. Operations Notification, TOA B.3.

Some improvements have been made in the requirement that DOE provide the State with a listing of current activities involving radiation. The requirement states that the listing will provide an appropriate level of detail so that an effective radiological oversight program can be developed. The main problem areas are that the lists are not updated as timely as they could be and lack of detail for some activities remains a problem. This is a continuing effort and will remain so as long as operations are conducted on the ORR.

5.C.4 Radiological Oversight, TOA C.3

RMO has instituted several radiological oversight programs in the last year. These include a TLD based environmental monitoring program, an ambient air sampling program, an off-site survey program, and in conjunction with other TDEC/DOE-O programs, a groundwater and surface water monitoring programs. Programs for vegetation, wildlife, and soils have also been investigated and sampling programs will be developed for selected media. The State has been accepted for involvement in the Environmental Radiation Ambient Monitoring System (ERAMS) sponsored by EPA. Routine oversight of ORR radiological compliance monitoring systems and programs continues.

5.C.4.1 Trends Of Review

RMO reviews on a continuing basis the radiological programs of DOE and its contractors. These reviews cover a wide spectrum of programs and have produced significant comments and recommendations. A better understanding for the scope of these activities can be gained in the sections of this report that address RMO section activities.

6. ENVIRONMENTAL MONITORING AND COMPLIANCE PROGRAM

6.A Environmental Monitoring and Compliance Program Organization

The Environmental Monitoring and Compliance (EMC) Program, formerly the Corrective Action and Compliance Section, is comprised of the following sections: Environmental Monitoring, Groundwater, and NEPA/Audits. An organizational chart of the Environmental Monitoring and Compliance Program is shown in Figure 7. The Program is involved in many aspects of monitoring, ensuring compliance, and oversight of activities as called for in the Tennessee Oversight Agreement. EMC is developing sampling plans, oversight schedules, operating procedures for present and future fiscal years, and coordination of NEPA document review for TDEC/DOE-O. Expanding roles include coordinating the observation of environmental audits on the ORR, and follow-up on corrective actions, and research and investigation into ecological indicators and environmental equity issues. Additionally, EMC is continuing to integrate biological fish and wildlife program efforts with other State and Federal Agency projects that deal with or support ORR environmental monitoring, and is reviewing options for developing a project tracking system that will capture environmental monitoring actions for reporting in a complete, precise, and timely manner.

6.B TOA Deliverables

The EMC Program is responsible for commitments in the TOA concerning Air Quality Monitoring, Environmental Monitoring Program and Report, Groundwater Monitoring, Public Drinking Water, and Auditing of the ORR Facilities. Program objectives are to monitor all media (air, water, soil), to document and monitor emissions (hazardous, toxic, chemical, radiological) from known sources, potential new sources, or random suspect locations on a general or site by site basis and to coordinate TDEC/DOE-O's role as observer of environmental audits that are assuring compliance with environmental laws and regulations.

Additionally, the EMC Program is tasked with review and comment on the DOE ORR Environmental Monitoring Report as well as the generation and coordination of TDEC/DOE-O's Environmental Monitoring Plan and Annual Environmental Monitoring Report.

TDEC/DOE-O's monitoring effort is extremely conservative in comparison with ongoing compliance, ambient, and additional monitoring on the Oak Ridge Reservation (ORR) by DOE, DOE

Figure 7
 TENNESSEE DEPARTMENT OF ENVIRONMENT AND CONSERVATION
 DOE OVERSIGHT DIVISION

contractor programs, and other state and federal agencies. These programs provide valuable information which must be reviewed and critically evaluated in order to focus TDEC/DOE-O's sampling efforts. TDEC/DOE-O's environmental monitoring is essential in order to provide quality control, to ensure compliance, and to assure protection of public health and the environment. Monitoring efforts include surface water quality, potable water quality, biological/fish/wildlife evaluation, groundwater quality, and air quality on and around the Oak Ridge Reservation.

6.B.1 Monitoring Program; Attachment A.1

The EMC section coordinated an annual review of the plan developed for the Oak Ridge Reservation (ORR) DOE environmental monitoring program. Controlled copies of the Environmental Monitoring Plan were issued to TDEC/DOE-O in May of 1995 and will be updated as changes are proposed, reviewed, and approved.

6.B.2 Air Quality Monitoring Program; Attachment A.5

During the past year, DOE has not reported any violations of the National Ambient Air Quality Standards for the Criteria Pollutants or any violations of the radiological NESHAPs standards. The data which has been reviewed from the ambient air monitoring systems on the Oak Ridge Reservation verify that the criteria pollutants which were monitored were well within the limits specified for the criteria pollutants in ambient air.

During the past year, EMC air quality personnel have been involved in reviewing data generated by the various ambient air systems on the ORR as well as reviewing the actual systems. These reviews are considered to be continuous. The air quality personnel have been involved with public and professional/technical meetings concerning the proposal to discontinue the majority of the ambient air monitoring system operated by Y-12. TDEC/DOE-O personnel have performed a technical review of data and information concerning this proposal and have responded accordingly. EMC air quality personnel have also participated in air permit inspections at all three plant sites in order to better understand and aid in evaluating ambient air quality and how it may be affected by DOE activities. EMC air quality personnel have corresponded with EPA and TDEC/APC (Air Pollution Control) personnel concerning important technical issues.

6.B.3 Public Drinking Water; Attachment A.2

During the past year, DOE did not report any releases that would impact public drinking water systems (PWS). There have been two locations where raw water samples have been taken

with plans for expanded review and sampling as needed. These locations are on the Clinch river at the Anderson County Water Treatment Plant Intake and K-25 Water Treatment Plant as part of the Ambient Surface Water Monitoring Program. To date four samples have been taken, all of which have met surface water source criteria under the Safe Drinking Water Act. Eventually, samples of downstream PWS intakes will be taken. This data will then be used in the Ambient Surface Water Monitoring Program as well as the Groundwater Monitoring Program. After further analysis, finished water at each of the PWS may be monitored.

During the past year, the Memorandum of Understanding (MOU) with TDEC Division of Water Supply (DWS) has been signed. The Drinking Water personnel have gathered information and participated in various training exercises. The information gathered largely consisted of the Sanitary Survey, current sampling requirements, current sample data and current sampling exemptions on each of the PWS that could possibly be adversely affected by DOE activities on the ORR. This information is still being gathered with the goal of comparing it to contaminants known to be found in the source water. The Drinking water personnel also participated in the review of the DOE Annual Report and the draft of the DOE Environmental Monitoring Plan.

6.B.4 Groundwater Monitoring; Attachment A.4

6.B.4.1 Program Review; Attachment A.4.1

"The State will review DOE's current on-site and off-site groundwater monitoring programs and will recommend improvements, if needed. The State will continually review DOE-generated data." Sampling of wells east of Y-12 in Union Valley has verified a carbon tetrachloride plume well beyond DOE's border. This plume is located in the Maynardville Limestone, which by nature exhibits large dissolution cavities. Sinkholes and underground drainage are characteristic of this formation and the adjoining Knox Group which together comprise the Knox Aquifer, which is characteristically karstic. Karst considerations are significant due to the potential for flow paths miles long and short travel times for contaminants (on the order of days rather than years). Monitoring in karstic regimes requires specialized methods, which to some extent are becoming a part of DOE programs and a considerable part of TDEC/DOE-O's programs. As stated in TOA A.1, "A joint assessment of the current monitoring program shall be conducted to determine future needs for a comprehensive and integrated monitoring program." It is apparent that DOE and TDEC/DOE-O are moving toward a comprehensive monitoring program by incorporating karst investigations and

integrating TDEC/DOE-O's findings with that of DOE. In June 1995 TDEC/DOE-O successfully completed a dye trace from the Chestnut Ridge East Borrow Area (CREBA) to an offsite spring located on the University of Tennessee Arboretum. As a result, future dye traces and monitoring of offsite springs will be recommended to DOE to further determine the impact on groundwater from Oak Ridge Operations.

Included in TDEC/DOE-O's groundwater program is a subsection on Underground Storage Tanks (USTs). There are approximately 100 petroleum regulated USTs on the Oak Ridge Reservation (ORR). Of these tanks, 53 are at ORNL, 22 at Y-12, 17 at K-25 and the remaining at other ORR locations. The majority of these USTs have been closed following the Division of Underground Storage Tanks' procedure on closure. The majority of USTs at the Y-12 and K-25 sites were removed prior to the Division of UST regulations as part of the Energy Systems Best Management Practice. UST inventory is currently being closed out and replaced with above ground storage tanks at ORNL. Particular progress in regard to Underground Storage Tanks (UST) can be attributed to the interface oversight has accomplished between the Division of UST and DOE. UST and CERCLA integration is being attained in cases where overlapping contamination exist. This integration should alleviate problems that occur with overlapping regulatory drivers.

There are 12 leaking underground storage tank (LUST) sites on the ORR. Five sites are at ORNL, 6 at the Y-12 plant, and one at K-25. Each of these sites are at some phase of the Assessment and Corrective Action process, governed by the State of Tennessee Division of UST regulations. As part of these processes, groundwater monitoring is conducted to delineate the extent of contamination and determine if contamination will decline below the established actions level. TDEC/DOE-O participates in this monitoring to provide oversight and to closely review the analytical results submitted from each monitoring event in relation to the UST program and ongoing RCRA/CERCLA actions at these sites. Two of these have been integrated into the CERCLA Program due to co-mingled plumes in the groundwater at these sites.

6.B.4.2 Program Development; Attachment A.4.2

This is a DOE action that can be influenced by the State's recommendations as specified in TOA A.4.1. A comprehensive groundwater program is evolving. Meetings discussing issues such as the off-site monitoring program are contributing to DOE's continued development as described in the TOA. Technical information exchange meetings involving both the

State and DOE supply ideas that foster a comprehensive program. There will be areas to improve upon but at present fundamentals are being defined as a foundation for future programmatic changes.

**6.B.5 Environmental Monitoring Program & Report;
Attachment A.7**

6.B.5.1 DOE Actions; Attachment A.7.1

**6.B.5.1.1 Environmental Monitoring Implementation Plan;
Attachment A.7.1.1**

In December 1993, a draft DOE environmental monitoring plan was provided to TDEC/DOE-O. Review comments from TDEC/DOE-O were submitted to DOE in March of 1994. It is proposed that the DOE environmental monitoring plan become a controlled document that will be updated as changes are incorporated. This is considered a favorable move by TDEC/DOE-O in that changes intended within the plan will be reviewed in draft form, before inclusion, by TDEC/DOE-O. Additionally, the plan will reflect current monitoring activities making it a more useful tool to DOE and TDEC/DOE-O. After meeting extensively with DOE and LMES counterparts, TOA Attachment A.7.1.1 was delivered to DOE on June 2, 1995, in what TDEC/DOE-O considered an acceptable format.

6.B.5.1.2 Monitoring Data; Attachment A.7.1.2

DOE is presently working towards a comprehensive data base to assist with this TOA item. Until completed, TDEC/DOE-O and DOE/Contractors agree to provide reports, data, and sample analysis upon request and within time frames set out in the draft attachment. Received reports are thoroughly reviewed and, if necessary, formal comments are provided to the responsible party(s). TOA attachment A.7.1.2 was delivered to DOE in a format acceptable to TDEC/DOE-O. At present, final editions of attachment A.7.1.2 have not been signed.

6.B.5.1.3 Data Base; Attachment A.7.1.3

The consolidated data base of monitoring information (TOA A.7.1.3.) and (FFA XXVIII.C) is under development in the Oak Ridge Environmental Information System (OREIS). Interim methods are being sought to retrieve data while the consolidated data base is under development. An OREIS Workstation has been installed at TDEC/DOE-O facility. This station is not networked and will periodically receive updated data tapes. Plans to network are ongoing.. Personnel from this office have received introductory training on the OREIS including SAS Assist, View Manager, Browser, and Macro Manager. TDEC/DOE-O will use this system to perform data analysis and integrate it with our own data to include in all TOA deliverables. Currently there is

limited data on the system and traditional methods of data gathering are being utilized.

6.B.5.2 State Actions; Attachment A.7.2

6.B.5.2.1 Environmental Monitoring Plan

TDEC/DOE-O's environmental monitoring will operate under a plan specified in the Tennessee Oversight Agreement (TOA) Attachment A.7.2.1 "The State will prepare a plan for the State's environmental monitoring and analysis of chemical and radiological materials that may be present in the air, water, and soil on the Oak Ridge Reservation and environs." This TOA attachment includes provision for DOE review and consultation, for DOE opportunity to split samples, and for monitoring and analysis under applicable state and federal standards.

Through combined resources, staff developed an environmental monitoring plan. The plan includes sections on surface water monitoring, fish and wildlife monitoring, groundwater monitoring, air quality monitoring, radioactivity surveillance, and laboratory procedures. The main objectives of TDEC/DOE-O's environmental monitoring program are to provide quality control and verification, to ensure compliance, to assure protection of public health and the environment, and to locate and target data gaps existing within the DOE monitoring program.

6.B.5.2.2 Annual Report

Attachment A.7.2.2 of the TOA specifies that the State will provide annual reports to DOE and the public on the results of the State's monitoring and analysis activities. These reports will also describe the quality and effectiveness of the DOE environmental monitoring and surveillance programs as derived through reviews of DOE technical reports and split sampling by TDEC/DOE-O. The Reports cover the calendar year January through December and are published in the following April. Environmental Monitoring Reports through December 1994 are available for review. The 1995 report will be available in April 1996.

TDEC/DOE-O's "Environmental Monitoring Annual Report" represents an overview of the Division's developing environmental monitoring program. It is anticipated that future reports will contain more data, continue in growth and will more completely address the programs described in the Environmental Monitoring Plan.

6.B.6 Auditing of ORR Facilities; Attachment B.1

TDEC/DOE-O staff members conduct, participate in, or observe selected environmental audits/appraisals on a regular basis. During the last reporting period, these included: EPA's NPDES Compliance evaluations at K-25, Y-12, and X-10; TDEC RCRA site-wide TSD Inspections; TDEC Solid Waste Division Compliance Inspections; DOE's ESH & QA management and functional appraisals; Plutonium Vulnerability Assessment; and TDEC/DOE-O Facility/Building Surveys, LMES Corporate audit at ORNL, Air Pollution Control active source audits, Above Grade Storage Facility, Pond Waste Management Project drum yard, and Tumulus pad inspections, among others.

6.B.6.1 Audit Coordination

In the expanding EMC role of audit coordination, its scope has recently been changed to focus on establishing a mechanism whereby this office is notified of and given an opportunity to observe all DOE funded environmental audits/appraisals conducted on the ORR. The section would work to coordinate and/or assist the appropriate office program involvement in scheduled environmental audits/appraisals. The section is responsible for obtaining copies of audit reports and detailing findings and corrective action plans for review and follow-up. Furthermore, this section will attempt to compare the DOE audit findings and TDEC audit findings on comparable audits to draw conclusions on auditing effectiveness.

6.C EMC Program Coordination

EMC has worked with The Tennessee Agriculture Department on some preliminary planning with regard to possible ambient milk sampling. EMC coordinates public participation activities with the Oak Ridge Reservation Local Oversight Committee (LOC) and the DOE Site Specific Advisory Board (SSAB).

6.C.1 National Environmental Protection Act Coordination (NEPA)

The EMC role of NEPA coordination is developing in conjunction with the Environmental Policy Office in Nashville. TDEC/DOE-O acted in the interim to process NEPA documents as a result of the State Clearinghouse abolishment until the development of the Environmental Policy Office. The new process establishes a means whereby DOE NEPA documents are processed in accordance with the Council on Environmental Quality Regulations, and DOE NEPA implementing regulations. The developing system has two primary State of Tennessee points of contact for NEPA reviews; the TDEC Commissioner, and the TDEC/DOE-O Director. The section is responsible for the coordination of document processing with

the Environmental Policy Office. Also, the section is responsible for the coordination of document technical review with regulations. The section consolidates technical comments and drafts response letters for transmission to the Environmental Policy Office or directly to DOE. The section, on request of office programs, conducts audits for NEPA documentation on ORO ongoing projects. Also, the section interacts with DOE and stakeholders on proposed NEPA projects by attending specific project public scoping meetings, and meeting monthly with the DOE ORO NEPA Compliance Officer. NEPA review comments are available upon request.

6.D EMC Public Participation

Within the EMC program staff members have participated in a number of efforts that both seek to inform the public as well as to obtain citizen and stakeholder input into programs and actions. EMC has worked with local government and citizen interface groups such as the LOC, The Steering Committee of the Site Specific Advisory Board (SCSSAB), and with The City of Oak Ridge Environmental Quality Advisory Board (EQAB). Staff members from EMC have attended and participated in meetings of the above groups. DOE created an Oak Ridge Reservation Site Specific Advisory Board (SSAB) this year. An EMC staff member was appointed to act as an ex-officio member of this board.

EMC staff members have worked with The City of Oak Ridge EQAB on issues with regard to Oak Ridge Housing with asbestos, and encouraged EQAB and the LOC to look at long term land use issues as this relates to the ORR, which is about two thirds of the land space inside the city limits. EMC has attended local cable TV station initial training and has assisted with media contacts.

EMC staff has attended and participated in LOC meetings based in counties around Oak Ridge, primarily downstream from Oak Ridge. The EMC group has responded to some citizen requests, complaints, and questions, or made referrals as needed.

7. ISSUES, FINDINGS AND RECOMMENDATIONS

7.A Introduction

Significant issues, findings, and recommendations developed by TDEC/DOE-O for this report are summarized in the sections below. Sections 7.B through 7.W were reported in TDEC/DOE-O's 1993 Annual Report. 7.X issues were added in TDEC/DOE-O's 1994 Annual Report. 7.Y through 7.BB are new findings. DOE continues to address TDEC/DOE-O concerns. Many of the early concerns have, while not completely eliminated, been resolved to a level of routine consideration. Each issue is identified as "Resolved", "Progress Made", or "New Issue" to clarify the State's position.

A productive dialog exists between DOE and the State. This dialog has resulted in more effective communication and coordination between the Tennessee Department of Environment and Conservation, other state agencies, the DOE Field Office, Site Offices, DOE Prime Contractors, and the community. The issues discussed in this report are continuing efforts to improve this communication.

7.B Site Access (Resolved)

Access to the Oak Ridge Reservation (ORR) is dependent upon the appropriate security clearance and safety and security training. DOE committed through the TOA to provide the necessary security clearances and training to allow TDEC/DOE-O staff un-escorted access to a major portion of the ORR and to minimize the time needed to access special operations such as the Material Access Areas (MAAs). The difficulties encountered by TDEC/DOE-O in obtaining the committed clearances and training and the difficulties encountered by DOE to provide the committed clearances and training have been resolved to TDEC/DOE-O's satisfaction at this time.

7.C Project Costs (Progress Made)

The TDEC Oversight concern of 1994 about project costs does continue into 1995 in spite of some good DOE efforts to improve in this aspect of project management. This specific identification of actual excessive project cost causes, such as duplication, excess emphasis on zero risk, layers of cost due to classification of information that no longer need be classified, excessive DOE orders, contractor RFP improvement needs, weak field contract management inspections or actions/penalties, or related potential issues appear to be very important.

7.D Patentable Information (Resolved)

TDEC/DOE-O has agreed that any information identified by DOE or its contractors as patentable or proprietary will be protected according to State Policy. This issue is closed.

7.E Stream Flow and Rainfall Gaging Activities (Resolved) Closed 1994

7.F Declassification of Classified Information (Progress Made)

DOE has increased its effort to declassify appropriate environmental, safety, and health information to make it available to the public. Numerous documents have been provided for public review. While the majority of this information has focused on human health data it is expected that, as resources allow, environmental data included in classified documents will also be released. TDEC/DOE-O considers this effort critical. The information is necessary for the public to be able to make informed decisions on environmental restoration and waste management activities that impact their and future generations public and environmental health.

7.G FFA Schedules and Prioritization (Progress Made)

The issues surrounding scheduling and prioritizing FFA milestones have now been addressed and significant improvements have been realized. However, because of the dynamic nature of these activities the resolution of issues will be an ongoing process among the FFA parties and the concerned public.

7.H Data Validation (Resolved) Closed 1994

7.I Data Availability (Progress Made)

The DOE Field Office and its Contractors continue to assure that data, including both documents and general information, are readily available to TDEC/DOE-O. TDEC/DOE-O staff continue to review data and information on-site prior to requesting its review for public release. Data requested for public release continues to be cleared through contractor procedures. This has, in most cases, not created an unnecessary delay in obtaining the information.

7.J Technology Development (Progress Made)

During the past year, as technology development Focus Areas have been developed and topics for investigation established, it has become apparent that Oak Ridge needs have been largely ignored. Of particular significance are the problems associated with Oak Ridge buried waste. The

Reservation has been used as a disposal site for large quantities of transuranics and nearly all other radionuclides generated in the DOE System. Due to the complex geology, geohydrology, and high annual precipitation, it is imperative that site specific funding to deal with unique Oak Ridge buried waste problems be developed.

7.K Land Use/Institutional Control Issues (Progress Made)

There are land use impacts within the CERCLA process and land use issues and impacts outside the regulatory CERCLA process. For the CERCLA process TDEC/DOE-O staff members have expressed an approach that future land use should be determined by the level of remedial action attainable with existing technology and resources. TDEC/DOE-O has also previously expressed the expectation that any long term determination of land use/ institutional controls must also be supported by a DOE commitment to progressively move toward a less restrictive land use over time, through future site remediation. Whatever the eventual regulatory decision on land use, the impacted communities (Oak Ridge and surrounding cities and counties) must recognize this issue up front because the local communities will live with the consequences of these CERCLA actions not just for decades, but for centuries.

7.L CERCLA Accelerated Clean-up Strategy (Progress Made)

Some improvements to the acceleration of the CERCLA activities on the ORR have been accomplished over the past 12 months since the last Annual Report. However, see section 7.X.3 for discussion of related issues.

7.M Natural Resources Damage Assessment (NRDA) Process (Progress Made)

Natural Resources Damage Assessment activity for the Oak Ridge Reservation is an ongoing process and will continue along with the CERCLA process. A Trustee council has now been formed between the DOE, TDEC/DOE-O, the Tennessee Valley Authority, and the Department of Interior. Progress toward completion of assessment activities will be reported in future annual reports.

7.N Toxic Substance Control Act Incinerator Burn Plan (Progress Made)

The original issue of the TSCA Burn Plan submittal was closed in 1994. Additional information concerning this plan is provided in the 7.P Federal Facility Compliance Act Issue.

7.O Toxic Substance Control Act (TSCA) Incinerator Ash Disposal Plan (Progress Made)

The original issue of the TSCA Ash Disposal Plan was closed in 1994. Additional information concerning future TSCA Residual disposal is provided in the 7.P Federal Facility Compliance Act Issue.

7.P Federal Facilities Compliance Act (Progress Made)

In accordance with the schedule published in the Federal Register, the Department of Energy (DOE) submitted the Proposed Site Treatment Plan (PSTP) for the Oak Ridge Reservation (ORR) on April 4 of this year to fulfill a requirement of the Federal Facility Compliance Act of 1992. It contains treatment methods and schedules for the ORR's mixed waste inventory. Since the submission of the ORR PSTP, the State of Tennessee (State) has been engaged in an intensive, thorough review of the document. Additionally, a series of meetings has been held to negotiate and modify the time frame that has been proposed for the treatment of the waste mentioned above. These negotiations are expected to continue and culminate in the State issuing a Commissioner's Order by October 4, 1995.

In a related matter, discussions have been proceeding with the DOE Sites and host States with PSTPs intending to ship waste to the ORR for treatment. The State has conveyed its policy regarding the management of residuals generated as a result of treatment. The State has opposed the use of the Oak Ridge Reservation as a major regional treatment, storage, or disposal facility for wastes generated in other states. However, the State is willing to accept treatment of some offsite waste, if the residuals are disposed at an approved offsite facility, or if the residuals are returned to the generator. Eleven (11) DOE sites in other states propose to ship mixed waste to the Oak Ridge Reservation or commercial facilities in the Oak Ridge area (CA, CO, HA, IA, KY, MO, NM, NY, OH, & WA). Issues relating to the TSCA Burn Plan and Residuals Management Plan remain unresolved. Since the entire inventory of mixed waste on the ORR will not be treated in the near future, the interaction between the State and the DOE will continue until compliance is achieved.

7.Q Low Level Radioactive Waste Disposal (Progress Made)

During the year, progress in the area of radioactive waste disposal was made, in that all disposal other than above grade disposal of short half life radionuclides in the Interim Waste Management Facility (IWMF) ceased. Additionally, after the latest version of the Performance Assessment indicated another failure to meet the DOE

Performance Objectives, removal of long half-life radionuclides from the IWMF was a positive action.

However, the State continues to maintain the position that the Interim Waste Management Facility should be operated in such a manner that its presence will not result in a future CERCLA remediation action. Continued below-grade "retrievable" storage of high-activity low-level waste also causes significant environmental concern.

7.R Variable Dose Irradiation Facility (VDIRF) (Resolved)
DOE, through a private contractor, removed the six large Co-60 sources from VDIRF. The sources were recycled for beneficial reuse, a positive action. These sources represented a hazard because of their proximity to public areas. With a radiation survey of the facility, this issue will be considered CLOSED.

7.S Policy of No Radiation Added (Progress Made)
DOE made significant headway during the year in a Waste Certification Program which will, through technical and administrative controls, reduce the quantity of waste which will be managed as mixed waste. However, it is imperative to develop a policy which will allow the free release for treatment, reuse, or recycling of minimally contaminated historical waste and materials.

7.T Waste Management and Radiological Performance Assessment (Progress Made)
The DOE Radiological Performance Assessment continues to be a topic of debate as applied to radiological waste disposal on the Oak Ridge Reservation. The methodology can lead to siting facilities that would be inconsistent with other federal and state regulations for siting similar facilities.

7.U Ambient Surveillance Monitoring (Progress Made)
The Oversight of off-site environmental monitoring by split sampling of wells demonstrated the possibility of off site migration of Y-12 contamination into Union Valley, an area east from Y-12, and previously thought to not be impacted by the prior waste handling or disposal on the Y-12 site. After detailed reviews of groundwater sampling data, DOE did confirm and issue public news release information about this specific Union Valley off site finding. In addition, a dye trace from the Chestnut Ridge East Borrow Area to springs just off South Illinois Avenue showed water flow from Chestnut Ridge to off-site East of the Y-12 Plant. It is significant to consider the size of the reservation and to demonstrate off site pathways regarding the movement of pollutants. Remediation, intervention, mitigated actions,

and future land use/GW recorded restriction consideration, etc., are some of the issues for consideration. Investigation of public water systems, individual well status, and non-community small water systems is an ongoing effort in the 1995 Environmental Monitoring Plan (EMP) and will continue in the 1996 EMP.

7.V Availability of Environmental Monitoring Data (Progress Made)

The TDEC/DOE-O continues its efforts to make environmental monitoring data available to the public on a "real time" basis.

7.W UST/Other than Petroleum (Resolved) Closed 1994

7.X Environmental Restoration Program 1995 Issues, Findings and Recommendations (Progress Made)

7.X.1 Introduction

The Federal Facilities Agreement was signed in November 1991. Since that time there has been significant movement toward it's implementation through coordination of the three involved agencies. A systematic, yet dynamic, approach has evolved through the establishment of an ORR-wide Operable Unit strategy that should lead to the investigation and remediation of this extremely large (38,000 acres) and problematically diverse NPL site. In addition to the adoption of an operable unit strategy the three parties have successfully developed schedules for primary activity milestones, as listed within Appendix E of the FFA, for the 1992 through 1995 fiscal years and proposed schedules for FY 96 and FY 97. With few exceptions, all planned deliverable and review/comment milestones have been met in accordance with the originally established schedules. In those situations where it became obvious that for various reasons original schedules could not be met the three parties have effectively, without initiating formal dispute resolution, agreed to alternate dates and have modified Appendix E of the FFA accordingly. Throughout these processes TDEC/DOE-O has been an active part of the decision making process, attesting to the success and importance of the Tennessee Oversight Agreement and the Federal Facilities Agreement in ensuring that the interests and concerns of the Tennessee public are being duly represented within the ORR RCRA/CERCLA corrective action process.

The FFA-guided CERCLA process at the ORR has made great strides toward interagency coordination and overall project objectives in the past four years. Many issues discussed in the first annual report have been resolved to the

satisfaction of the FFA parties. These issues included: concerns for document consistency, data validation issues, and site access issues. As is to be expected in any oversight program, certain other issues have now been recognized and must be resolved in the year to come.

The following is a discussion of present issues of concern.

7.X.2 FFA Program Funding Concerns

Much of the following discussion is as presented in the previous annual report and as such reflects a continuing concern over Oak Ridge Reservation remedial action funding issues.

As the DOE Environmental Restoration program for the Oak Ridge Reservation expands its areas of financial obligation the FFA related portion of the budget, i.e., RCRA/CERCLA remedial activities, continue to experience more and more competition for available dollars. ER dollars are being utilized to fund landlord activities, sites surveillance and maintenance activities, numerous program management activities, reservation wide D&D activities, broad ranging environmental monitoring activities, along with some activities (funded primarily through overhead charges) that could be defined as active program environmental compliance. Certainly, the DOE has the prerogative and responsibility to allocate its budgeted dollars to cover all of the necessary reservation wide activities. However, care must be taken to insure that those dollars designated by Congress to accomplish remedial clean-up actions on Federally funded NPL sites are clearly dedicated to that use and are expended in the most prudent and efficient manner possible to achieve that goal.

TDEC/DOE-O's concern lies in the difficulty of accurately projecting available funds specifically earmarked for RCRA/CERCLA remedial activities and being able to depend on the stability of those funds over the term necessary to initiate and complete remedial actions. Competition with many of the before mentioned activities can divert funding at almost any point. Prioritization of FFA task and therefore available funds become an unnecessarily complex endeavor when prioritization must include a ranking of activities not clearly driven by the FFA process and in some cases only loosely related to remedial activities.

TDEC/DOE-O has suggested that the DOE clearly define the funds dedicated to compliance with the CERCLA/FFA mandates separately from those funds used by the DOE to carry out internally driven activities. These funds would be those

requested and dedicated to the task of accomplishing FFA mandates such as RCRA/CERCLA/LLLW activities to include the Remedial Investigation/Feasibility Study/Remedial Action process.

It is recognized that this is not the same as DOE programmatic environmental restoration funding (EM-40) which covers a broad range of activities other than FFA driven activities, some of which were mentioned above. However, this breakdown will allow the FFA parties to effectively and efficiently schedule activities based on CERCLA priority in accordance with the FFA without having to negotiate with the DOE on all reservation wide projects presently being funded under the environmental restoration (EM-40) allocation. Under this format, when and if, the FFA parties see short falls in the FFA-specific budget to accomplish priority RCRA/CERCLA objectives the parties will direct the DOE to make the appropriate budget request necessary to adequately fund the target objectives. In this case the DOE would have the choice to either make additional budget request or rearrange funds within their existing programmatic ER budget.

To illustrate the point, the 1994 prioritization process (ERBAM) which was mandated by the FFA to prioritize CERCLA projects, reported 145 Oak Ridge environmental restoration funded projects with only 77 (53 percent) of the projects listed as FFA driven activities.

7.X.3 Land Use Designation and the CERCLA Process

The first annual report from TDEC/DOE-O listed at Section 7.K land use/institutional control as an issue of concern. Much national and local discussion has occurred on this issue over the past year with very little definitive accomplishments toward a consensus of when and how land use related institutional controls are to be applied in the CERCLA process at DOE facilities.

One school of thought is that pre-designated land use, even pre-designated future land use, should drive the scope of the CERCLA risk assessment process. A second opinion exists whereby a range of site risk scenarios should be determined and then allow risk management decisions, and therefore the extent of remedial actions, to determine suitable future land uses.

Under the first scenario, a predetermined land use will dictate risk pathways and receptors, thereby, restricting remedial action objectives (clean up levels) to those accommodating the chosen land use. In the second case,

future land use is determined by the level of remedial action attainable with existing technology and resources. The State of Tennessee prefers the second approach. Thereby, leaving options open to achieve as clean a site as possible using reasonable resources and available technical capabilities. Risk management decisions and subsequent clean-up activities will then determine future land use suitability.

7.X.4 Expediting Remedial Actions Under the CERCLA Program

The CERCLA process, by its very nature, can be complex and lengthy. The process was designed by congress to encompass a series of methodical activities that would occur in a step wise fashion to culminate in a remedial decision and potential remedial action. Partly due to the unique nature and complexity of remedial decisions on DOE facilities, it is not uncommon or unexpected that the process can extend beyond the time and resource requirements for CERCLA processes elsewhere. However, even given this expectation, it is not uncommon for the CERCLA process on DOE facilities to consume an inordinate amount of time and resources. Several observations as to potential causes were presented in the past years annual report and included discussions on multiple contractors, redundant internal documentation, reviews, and oversight, as well as a tendency to over design and re-engineer existing technologies. Tighter project management and contracting control by the DOE in order to eliminate as much duplication and tiering as possible was suggested.

The past year has seen some improvement in many of the issues listed. There now seems to be a growing recognition of the problems inherent in the DOE weapons complex/cold war establishment that was automatically inherited by the environmental restoration programs. It is not yet clear if this direction is being driven by a greater awareness and desire to accomplish with less, or if it is largely driven by the mandates of a steadily tightening budget. Either reason can result in improvements and appears at this juncture to be doing so.

All is not yet accomplished in this trend. There are still significant improvements needed in order to bring DOE's cost of doing business in line with other agencies and businesses doing similar activities. DOE must diligently pursue reducing the burdens of internal requirements that have grown from a zero risk perspective. In doing so, DOE must exhibit the situation control necessary to insure that an honest attempt at simplification does not actually provide

opportunity for growth of the problem or encourage status quo.

If the cost of doing business is not changed significantly, the effective completion of remedial actions in the future will not be realized.

7.Y Environmental Assessment on the Transportation of "Sapphire" Material (New Issue)

An EA on the transportation of "Sapphire" material to Y-12 was completed by DOE, but it was classified for an extended period of time and; therefore, did not benefit the public. Even the classified version was unavailable in Oak Ridge until too late to be of benefit, so the State did not review it.

The use of NEPA in the case of project "Sapphire" transportation was weak, as the spirit of the law was not met. Classified and NEPA are mutually exclusive terms. The Environmental Assessment was available to the public only after the project was done.

DOE needs to work out a solution to use in future secret operations which can impact the public welfare. Stakeholder involvement will help insure public acceptance.

7.Z Offsite Groundwater Data Quality (New Issue)

Problematic in the assessment of DOE radiological water monitoring programs and potential contaminant migration off the ORR via groundwater has been the lack of backgrounds for radiological parameters, insufficient radionuclide specific analysis, and the quality of the data. In the Division's review of LMES' Offsite Residential Drinking Water Program and the investigation of contaminant migration into Union Valley from the Y-12 Facility, ambiguous data has made a confident assessment difficult. Also, LMES has advised historical groundwater data generated for Y-12 was insufficient to support risk assessment for the Bear Creek Valley Remedial Investigation/Feasibility Study. It is the State's understanding that LMES has formed a team to assess overall data quality and is evaluating radiological data quality objectives to determine minimum detectable activities and accuracy needed for future radiological measurements. New data requirements are to be incorporated into the radiological monitoring programs to address multiple customer requirements.

7.AA ORR Conceptual Groundwater Model (New Issue)

Groundwater models for the Oak Ridge Reservation continue to be a subject of comments by the State. In particular, the

conceptual model referenced as The Hydrologic Framework for the Oak Ridge Reservation by Solomon et. al., has been used as the basis in decisions concerning DOE groundwater activities. The State finds the conceptual model biased by studies that focused on slow flow aspects in shallow flow regimes. Many of these studies were conducted on hill slopes of undisturbed areas. The State finds this as a weakness considering waste disposal and operational contamination are in areas of highly disturbed soils and over fractured bedrock or disollutioned bedrock. The continued use of this model in this way is not productive for DOE groundwater activities. DOE has shown a favorable response in that the conceptual model is being revised with input from a broad base of concerned individuals including the State. This issue will likely be redressed as new documents are reviewed.

7.BB Central Waste Tracking System (New Issue)

TDEC/DOE-O use of the DOE Oak Ridge Operations Central Waste Tracking System has revealed that there are significant deficiencies in data quality in submittals of information from the three ORR sites. Review of system use by TDEC/DOE-O staff indicates that Waste Summary Report lack weight, volume, EPA and transporter identification numbers. A user's guide and user friendly menus must be developed for more efficient use of the waste tracking system.

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