

**MARTIN MARIETTA**

**RECEIVED**

ORNL/ER-345

MAR 13 1996

**OSTI**

**ENVIRONMENTAL  
RESTORATION  
PROGRAM**

**Annual Summary Report  
on the Surveillance and Maintenance  
Activities for the Oak Ridge National  
Laboratory Environmental Restoration  
Program for Fiscal Year 1995**

MANAGED BY  
MARTIN MARIETTA ENERGY SYSTEMS, INC.  
FOR THE UNITED STATES  
DEPARTMENT OF ENERGY

UCN-17560 (6 7-91)

**MASTER**

ENERGY SYSTEMS



DISTRIBUTION OF THIS DOCUMENT IS UNLIMITED *pic*

**The S. M. Stoller Corporation**

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

This report has been reproduced directly from the best available copy.

Available to DOE and DOE contractors from the Office of Scientific and Technical Information, P.O. Box 62, Oak Ridge, TN 37831; prices available from 615-576-8401 (fax 615-576-2865).

Available to the public from the National Technical Information Service, U.S. Department of Commerce, 5285 Port Royal Rd., Springfield, VA 22161.

Energy Systems Environmental Restoration Program

**Annual Summary Report  
on the Surveillance and Maintenance  
Activities for the Oak Ridge National  
Laboratory Environmental Restoration  
Program for Fiscal Year 1995**

Date Issued—November 1995

Prepared by  
The S. M. Stoller Corporation  
Oak Ridge, Tennessee  
under subcontract 70M-SC914C

Prepared for the  
U.S. Department of Energy  
Office of Environmental Management  
under budget and reporting codes EW 20 and EX 20

Environmental Management Activities at the  
OAK RIDGE NATIONAL LABORATORY  
Oak Ridge, Tennessee 37831  
managed by  
LOCKHEED MARTIN ENERGY SYSTEMS, INC.  
for the  
U.S. DEPARTMENT OF ENERGY  
under contract DE-AC05-84OR21400

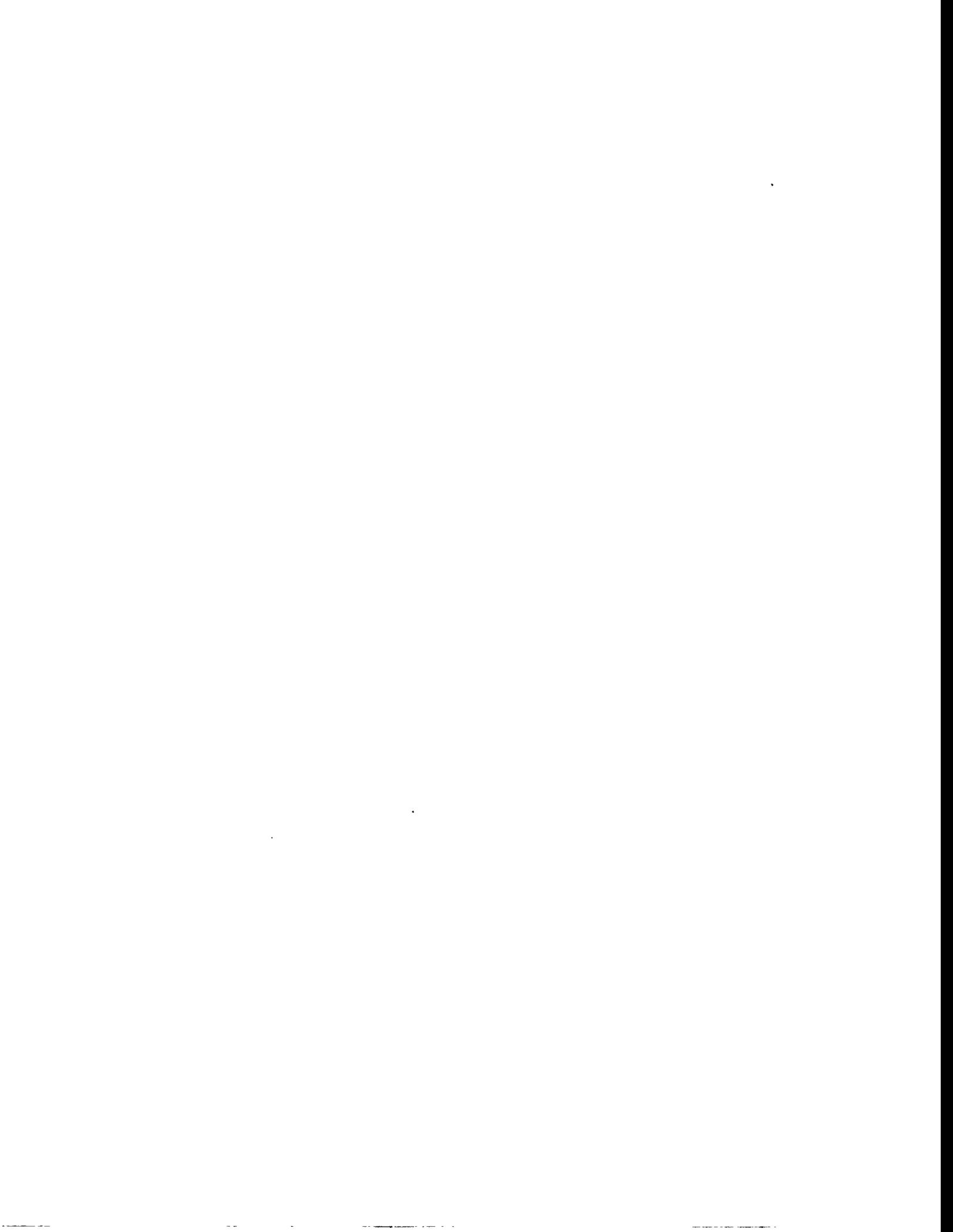
**DISCLAIMER**

This report was prepared as an account of work sponsored by an agency of the United States Government. Neither the United States Government nor any agency thereof, nor any of their employees, makes any warranty, express or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of any information, apparatus, product, or process disclosed, or represents that its use would not infringe privately owned rights. Reference herein to any specific commercial product, process, or service by trade name, trademark, manufacturer, or otherwise does not necessarily constitute or imply its endorsement, recommendation, or favoring by the United States Government or any agency thereof. The views and opinions of authors expressed herein do not necessarily state or reflect those of the United States Government or any agency thereof.

**MASTER**

DISTRIBUTION OF THIS DOCUMENT IS UNLIMITED

DLC



## PREFACE

This *Annual Summary Report on the Surveillance and Maintenance Activities for the Oak Ridge National Laboratory Environmental Restoration Program for Fiscal Year 1995* (ORNL/ER-345) was prepared to communicate the accomplishments of the Program during fiscal year 1995. This work was performed under work breakdown structure element 1.4.12.6.1.14.20 (activity data sheet 3314, "Remedial Action Surveillance and Maintenance"). Publication of this document meets the Life Cycle Baseline milestone date of November 30, 1995. This document provides the accomplishments for both the Remedial Action and Decontamination and Decommissioning Surveillance and Maintenance programs.

## DISCLAIMER

This report was prepared as an account of work sponsored by an agency of the United States Government. Neither the United States Government nor any agency thereof, nor any of their employees, makes any warranty, express or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of any information, apparatus, product, or process disclosed, or represents that its use would not infringe privately owned rights. Reference herein to any specific commercial product, process, or service by trade name, trademark, manufacturer, or otherwise does not necessarily constitute or imply its endorsement, recommendation, or favoring by the United States Government or any agency thereof. The views and opinions of authors expressed herein do not necessarily state or reflect those of the United States Government or any agency thereof.



# CONTENTS

|   |     |
|---|-----|
| FIGURES .....   | vii |
| ACRONYMS, ABBREVIATIONS, AND INITIALISMS .....  | ix  |
| EXECUTIVE SUMMARY .....   | xi  |
| 1. INTRODUCTION .....   | 1   |
| 1.1 THE SURVEILLANCE AND MAINTENANCE PROGRAM .....  | 1   |
| 1.2 SURVEILLANCE AND MAINTENANCE PROGRAM OBJECTIVES .....   | 4   |
| 2. FISCAL YEAR 1995 REMEDIAL ACTION SURVEILLANCE<br>AND MAINTENANCE PROGRAM ACCOMPLISHMENTS .....                   | 6   |
| 2.1 PROGRAM MANAGEMENT .....  | 6   |
| 2.1.1 Audits, Reviews, and Assessments .....  | 6   |
| 2.1.2 Oak Ridge National Laboratory/Environmental Restoration<br>Plans and Reports .....                            | 6   |
| 2.1.3 Safety Documentation Inventory .....  | 7   |
| 2.2 ROUTINE SURVEILLANCE AND MAINTENANCE .....  | 7   |
| 2.2.1 Inspection Procedure .....  | 8   |
| 2.2.2 General Maintenance Activities .....  | 8   |
| 2.2.3 Inactive Tank Monitoring Program .....  | 9   |
| 2.2.4 Vegetation Maintenance .....  | 11  |
| 2.2.5 Inactive Groundwater Wells .....  | 11  |
| 2.3 POST CLOSURE SURVEILLANCE AND MAINTENANCE .....   | 12  |
| 2.3.1 Resource Conservation and Recovery Act Caps .....   | 12  |
| 2.3.2 Seep C Collection and Treatment System .....  | 12  |
| 2.3.3 Seep D Collection and Treatment System .....  | 13  |
| 2.3.4 Tumulus I and II .....  | 13  |
| 2.3.5 Building 3001 Canal Post Closure Surveillance and Maintenance .....   | 13  |
| 2.3.6 Corehole 8 Collection and Treatment System .....  | 13  |
| 2.4 RADIOLOGICAL SURVEYS .....  | 13  |
| 2.4.1 Environmental Restoration Sites .....   | 14  |
| 2.4.2 No Further Investigation Site Surveys .....   | 17  |
| 2.4.3 Radiological Survey Results Data Management .....   | 17  |
| 2.5 DATA MANAGEMENT .....   | 18  |
| 2.6 NO FURTHER INVESTIGATION EVALUATION .....   | 18  |
| 3. FISCAL YEAR 1995 DECONTAMINATION AND DECOMMISSIONING<br>SURVEILLANCE AND MAINTENANCE PROGRAM ACCOMPLISHMENTS ... | 20  |
| 3.1 PROGRAM MANAGEMENT .....  | 20  |
| 3.1.2 Audits, Reviews, and Assessments .....  | 20  |
| 3.1.3 Oak Ridge National Laboratory Environmental Restoration<br>Plans and Reports .....                            | 20  |

|  |    |
|--|----|
| 3.2 ROUTINE SURVEILLANCE AND MAINTENANCE .....                           | 21 |
| 3.2.1 Facility Surveillance .....  | 21 |
| 3.2.2 Facility Maintenance Activities .....                              | 21 |
| 3.2.3 Radiological Surveillance .....                                    | 22 |
| 3.2.4 Safety Inspections .....   | 22 |
| 4. GENERAL SURVEILLANCE AND MAINTENANCE PROGRAM                          |    |
| ACCOMPLISHMENTS .....  | 23 |
| 4.1 CONDUCT OF OPERATIONS .....  | 23 |
| 4.1.1 Conduct of Operations Procedures .....                             | 23 |
| 4.1.2 Conduct of Operations Applicability Matrices .....                 | 23 |
| 4.1.3 Conduct of Operations Implementation Plan and Evidence Files ..... | 24 |
| 4.2 FACILITY EXCELLENCE .....  | 24 |

Appendix A

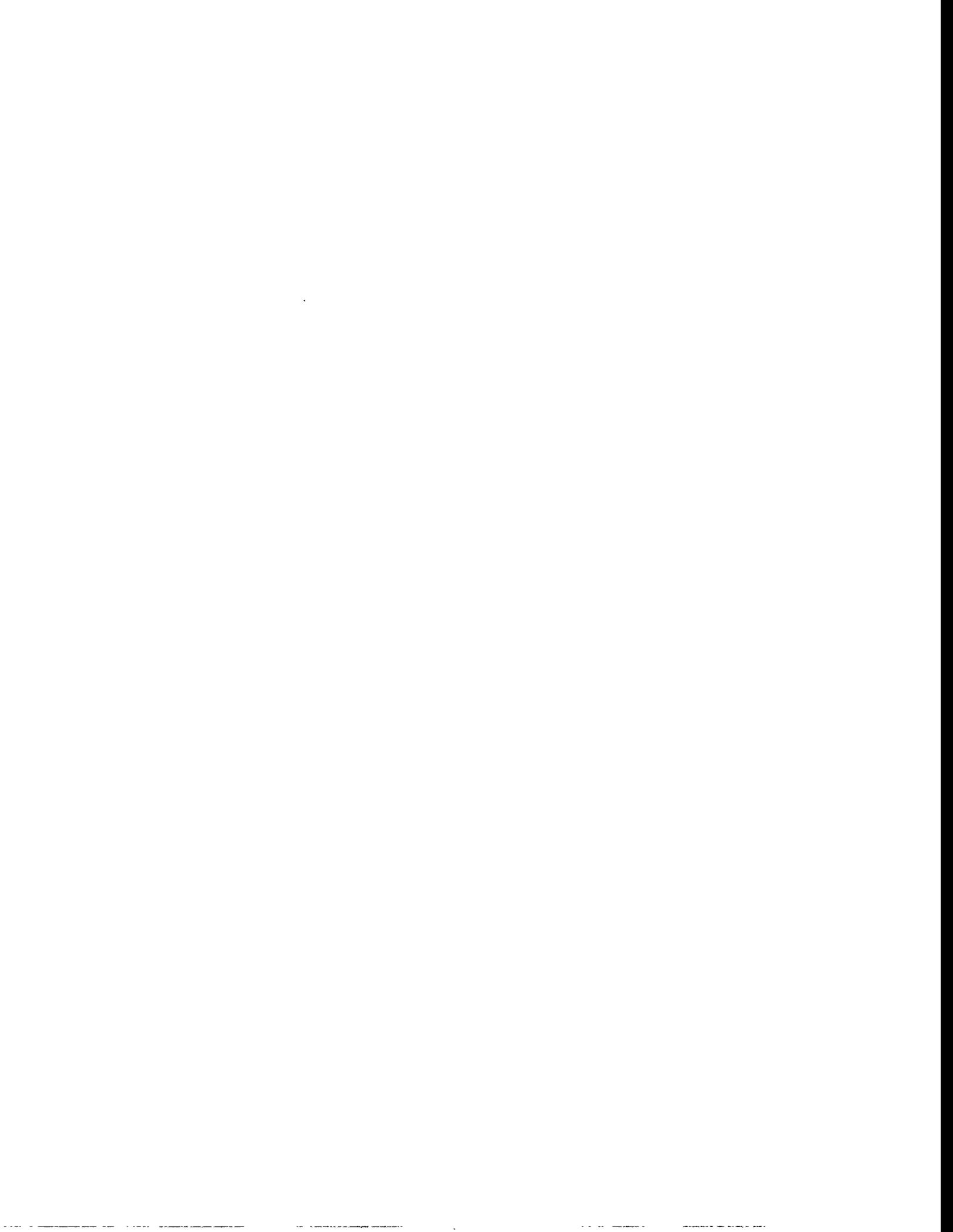
OAK RIDGE NATIONAL LABORATORY SURVEILLANCE AND MAINTENANCE  
PROGRAM FACILITY MANAGEMENT LIST

Appendix B

INACTIVE TANK LEVEL TRENDING

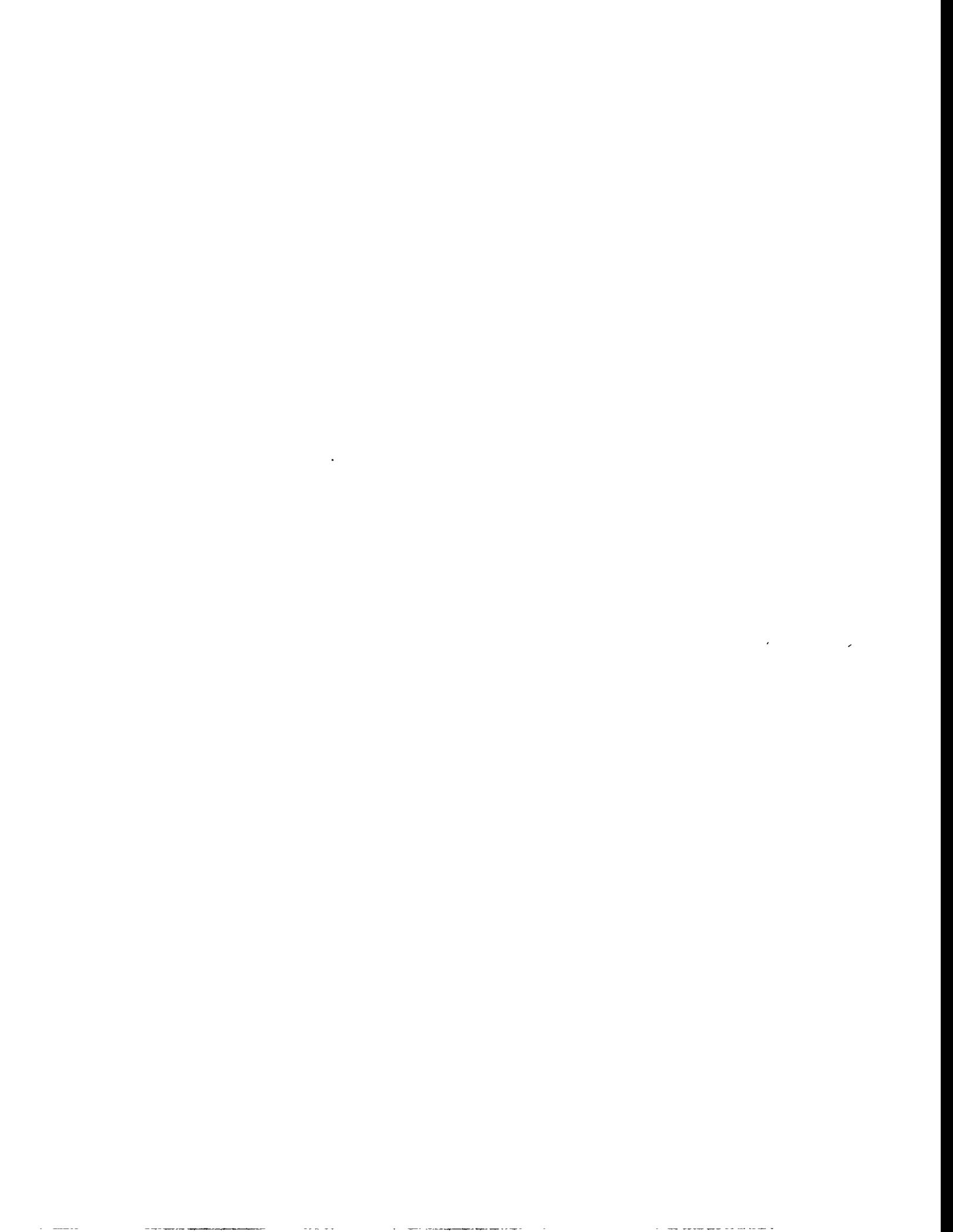
## FIGURES

|    |   |    |
|----|---|----|
| 1  | ORNL S&M sites/facilities located in the main plant area .....          | 2  |
| 2  | ORNL S&M sites/facilities located in Melton Valley .....                | 3  |
| 3  | Tank 3004B after removal .....  | 9  |
| 4  | Tank 3004B vault being filled with grout .....                          | 9  |
| 5  | Tank 3013 being filled with grout .....                                 | 9  |
| 6  | ORNL S&M inactive tanks removed from S&M in FY 1995 .....               | 10 |
| 7  | Vegetation maintenance in SWSA 6 .....                                  | 11 |
| 8  | Aerial view of the SWSA 6 RCRA caps .....                               | 12 |
| 9  | Seep C Collection and Treatment System .....                            | 12 |
| 10 | Seep D Treatment System .....   | 13 |
| 11 | Tumulus I and II .....  | 13 |
| 12 | Results of FY 1995 Facility Excellence Program facility walkdowns ..... | 26 |



## ACRONYMS, ABBREVIATIONS, AND INITIALISMS

|                |  |
|----------------|--|
| CONOPS         | Conduct of Operations                                |
| D&D            | decontamination and decommissioning                  |
| DNFSB          | Defense Nuclear Facilities Safety Board              |
| DOE            | Department of Energy                                 |
| ER             | Environmental Restoration                            |
| ERPSD          | Environmental Restoration Program Support Department |
| ES&H           | environmental, safety, and health                    |
| FFA            | Federal Facilities Agreement                         |
| FS             | feasibility study                                    |
| FY             | fiscal year  |
| GAAT           | gunite and associated tanks                          |
| HFIR           | High Flux Isotope Reactor                            |
| I&C            | Instrumentation and Controls (Division)              |
| LLW            | liquid low-level waste                               |
| Energy Systems | Lockheed Martin Energy Systems, Inc.                 |
| LSS            | laboratory shift superintendent                      |
| MAD            | Measurement Applications and Development (Group)     |
| NFI            | no further investigation                             |
| OHF            | Old Hydrofracture Facility                           |
| ORNL           | Oak Ridge National Laboratory                        |
| ORR            | Oak Ridge Reservation                                |
| PCB            | polychlorinated biphenyl                             |
| R&D            | research and development                             |
| RA             | remedial action                                      |
| RCRA           | Resource Conservation and Recovery Act               |
| RI             | remedial investigation                               |
| S&M            | surveillance and maintenance                         |
| SWSA           | solid waste storage area                             |
| TDEC           | Tennessee Department of Environment and Conservation |
| WAG            | waste area grouping                                  |
| WBS            | work breakdown structure                             |
| WM             | waste management                                     |
| WMRAD          | Waste Management and Remedial Action Division        |



## EXECUTIVE SUMMARY

In fiscal year (FY) 1995, the sites and facilities from both the Remedial Action (RA) and Decontamination and Decommissioning (D&D) programs were combined to form the Oak Ridge National Laboratory (ORNL) Environmental Restoration (ER) Surveillance and Maintenance (S&M) Program. This combined program includes all inactive storage tanks, impoundments, burial grounds, test sites, leak sites, contaminated soil, inactive reactor buildings, cooling towers, pump houses, evaporators, hot cells, and various research and development facilities. The ORNL ER S&M Program was established to better manage and control areas contaminated with radioactive materials and/or hazardous chemicals. The establishment of a unified S&M Program facilitates the management of the applicable areas or facilities following their operating life and until final disposition or site stabilization (whichever is deemed most appropriate based upon environmental regulations and/or best management practices). The ORNL ER S&M Program objectives are to:

- provide routine (or non-routine) S&M of applicable sites or facilities to ensure that sites remain in acceptable condition without undue risks to human health and the environment;
- assist in the planning for the safe and orderly final closure of each site or facility; and
- provide post closure S&M for those facilities that have undergone a Resource Conservation Recovery Act or Comprehensive Environmental Response, Compensation, and Liability Act interim or final action.

Routine S&M activities were conducted throughout FY 1995 at the RA facilities. Overall, the RA S&M Program consists of approximately 650 acres that include 14 waste area groupings, with approximately 200 sites. These sites include 56 major facilities, several leak and contaminated soil sites, 54 inactive tanks (38 of which are managed by the ER Program), approximately 50 environmental study areas and approximately 2,100 wells. Site inspections were conducted at established frequencies on appropriate sites in the RA S&M Program in accordance with established S&M Plans; *Surveillance and Maintenance Plan for Waste Area Groupings at Oak Ridge National Laboratory, Oak Ridge, Tennessee, for FY 1993-2002* (ORNL/ER-39) and *Oak Ridge National Laboratory Environmental Restoration Program Surveillance and Maintenance Plan for the Inactive Liquid Low-Level Waste Tanks* (ORNL/ER-275).

Routine S&M activities were conducted throughout FY 1995 at the D&D S&M Program sites in accordance with published S&M plans. The D&D S&M Program maintains 46 facilities (buildings). It provides overall facility management on over 156,000-ft<sup>2</sup> of floor space that includes 15 major facilities consisting of four surplus reactors, radiochemical processing facilities, Waste Management facilities, a hot cell facility, and technology development facilities. In addition to the routine S&M activities, detailed facility inspections were conducted as resources would allow at appropriate facilities in accordance with the *Surveillance and Maintenance Plan for the ORNL Decontamination and Decommissioning Program FY 1993-2003* (ORNL/ER-130).

The ORNL ER S&M Program performed three major activities related to Department of Energy (DOE) Order 5480.19 *Conduct of Operations Requirements for DOE Facilities* during FY 1995. (1) The Environmental Restoration Program Support Department revised and added to existing procedures to come into full compliance with the requirements of this DOE order. (2) The ORNL ER S&M Program supported the ORNL ER Program development of a Conduct of Operations

(CONOPS) Implementation Plan and the gathering of evidence to support the implementation of the requirements of that plan. (3) The ORNL ER S&M Program generated matrices defining the applicability of CONOPS to the activities in the program, as well as supporting the development of matrices for facilities and projects for the rest of the ORNL ER Program.

# 1. INTRODUCTION

During fiscal year (FY) 1990, the Environmental Restoration (ER) Program was formed to conduct remedial investigations (RI) and feasibility studies (FS) and perform remedial actions (RAs) at the Oak Ridge National Laboratory (ORNL). In past years, there have been two distinct Surveillance and Maintenance (S&M) Programs, one for the RA Program sites and facilities, and the other for the Decontamination and Decommissioning (D&D) Program sites and facilities. In FY 1995, the sites and facilities from both programs were combined to form the ORNL ER S&M Program which includes all storage tanks, impoundments, burial grounds, test sites, leak sites, contaminated soil, inactive reactor buildings, cooling towers, pump houses, evaporators, hot cells, and various research and development (R&D) facilities. For the purpose of this report, the accomplishments of the RA S&M Program will be discussed in Section 2 and the accomplishments of the D&D S&M Program will be discussed in Section 3. Accomplishments for activities that span both programs will be discussed in Section 4.

The current ORNL ER S&M Program was established to better manage and control areas contaminated with radioactive materials and/or hazardous chemicals. The establishment of a unified S&M Program facilitates the management of the applicable areas or facilities following their operating life and until final disposition or site stabilization (whichever is deemed most appropriate based upon environmental regulations and/or best management practices). The ORNL ER S&M Program objectives are to:

- provide routine (or non-routine) S&M of applicable sites or facilities to ensure that sites remain in acceptable condition without undue risks to human health and the environment;
- assist in the planning for the safe and orderly final closure of each site or facility; and
- provide post closure S&M for those facilities that have undergone a Resource Conservation Recovery Act (RCRA) or Comprehensive Environmental Response, Compensation, and Liability Act interim or final action.

## 1.1 THE SURVEILLANCE AND MAINTENANCE PROGRAM

The ORNL ER S&M Program provides the essential S&M functions at applicable sites and facilities in an attempt to ensure that they remain in acceptable condition without undue risks to human health or the environment. The inventory of sites and facilities managed by the S&M Program includes a variety of former reactors, hot cells, pilot plants, waste management (WM) areas, environmental research sites, and areas of contamination from past R&D operations. These facilities are all inactive. (A listing of these facilities and their surveillance frequency is contained in Appendix A. A map of the facilities located in Bethel Valley is shown in Fig. 1, and the facilities located in Melton Valley are shown in Fig. 2.)





## 1.2 SURVEILLANCE AND MAINTENANCE PROGRAM OBJECTIVES

The principal objectives of the ORNL ER S&M Program are as follows:

- to ensure adequate containment of the residual radioactive and or hazardous materials remaining at the applicable sites and facilities,
- to provide safety and security boundary controls to minimize the potential hazards to human health and the environment,
- to strategically evaluate and assist in the planning for final closure activities at appropriate sites and facilities, and
- to successfully manage facilities in a cost-effective and efficient manner.

These objectives are met through a structured program of routine S&M actions and through the implementation of special maintenance activities when site-surveillance activities indicate such a need. The scope of activities performed within the ORNL ER S&M Program provides assurance that adequate site control is achieved and maintained during periods of RI and FS until final site decommissioning or closure is accomplished. To assure that the objectives are carried out there are three S&M Plans that identify the activities that need to be completed at each of the facilities to ensure the objectives are met, they are:

- *Surveillance and Maintenance Plan for Waste Area Groupings at Oak Ridge National Laboratory, Oak Ridge, Tennessee, for FY 1993-2002 (ORNL/ER-39);*
- *Surveillance and Maintenance Plan for the ORNL Decontamination and Decommissioning Program FY 1993-2002 (ORNL/ER-130); and*
- *Oak Ridge National Laboratory Environmental Restoration Program Surveillance and Maintenance Plan for the Inactive Liquid Low-Level Waste Tanks (ORNL/ER-275).*

The ORNL ER S&M Program is also responsible for all S&M of a facility during the post-closure period. The ORNL ER S&M Program activities are organized and conducted in the principal areas as described below:

1. **S&M Program Integration.** S&M program integration includes strategic programmatic planning, documentation, and reporting. It ensures that regulatory compliance- and milestone-related issues are incorporated into the development of technical, schedule, and cost baselines. All S&M programmatic documents are written, edited, revised, published, and distributed through this element. This element is designed to ensure that applicable award fee, Federal Facilities Agreement (FFA), and S&M milestones are met. It includes preliminary radiological assessments of potentially contaminated sites and data management activities to provide access to historical solid and liquid waste disposal data for the inactive sites.
2. **Special Projects.** This element supports special maintenance activities that are not routine in nature. It allows for the assessment, development, design, and implementation of special projects. It also allows for project documentation, including National Environmental Policy Act, Health and Safety Plans, and final reports (as required). These activities are non-repetitive, and planning is dictated solely by site conditions. Special projects are planned for and prioritized as far in advance as is possible. Specific actions might include limited site characterization, engineering design, contract procurement, and oversight of all field activities related to the special project.

3. **Routine S&M.** Routine S&M supports all field work and support activities necessary to perform routine S&M of ORNL ER S&M Program sites until final closure documents are approved. Routine S&M actions are necessary to ensure that ORNL ER S&M Program sites are routinely maintained in a manner that protects human health, safety, and the environment. For such protective purposes, this element provides three distinct tasks as follows:
  - routine site inspections, consisting of facility check sheets and logbooks, radiological and industrial hygiene surveillance, and inactive tank level monitoring;
  - non-routine activities that are required as a result of a finding during routine site inspections; and
  - routine maintenance of containment systems and equipment, general facility upkeep, grounds maintenance, and oversight of all field maintenance activities.
4. **Inactive Groundwater Wells.** This activity provides for the S&M of ORNL groundwater monitoring and investigation wells that have been identified as unusable or non-essential. These activities are necessary to prevent potential contaminant migration.
5. **Project Management.** Project management includes oversight of programs, integration of prime contract and subcontract actions, and the interface between various ORNL ER S&M Program elements. It supports the ORNL ER S&M Program elements by directing, staffing, coordinating, developing, and planning for each of the ORNL ER S&M Program's S&M activities. It coordinates, integrates, and furnishes the roles and responsibilities of multiple Department of Energy (DOE) contractors, and Lockheed Martin Energy Systems', Inc., (Energy Systems), and other subcontractors. Also, it provides for the assignment of administrative duties that are required for the ORNL ER S&M Program's financial tracking system.

## 2. FISCAL YEAR 1995 REMEDIAL ACTION SURVEILLANCE AND MAINTENANCE PROGRAM ACCOMPLISHMENTS

The FY 1995 RA S&M Program activities were accomplished within the framework of the program's six work breakdown structure (WBS) elements as defined in Activity Data Sheet 3314 RA S&M. These elements are (1) program management, (2) S&M support, (3) post closure S&M, (4) radiological surveys, (5) data management; and (6) no further investigation (NFI) site evaluations.

### 2.1 PROGRAM MANAGEMENT

The primary purposes of the program management element are to provide strategic planning, develop a defensible and well-documented project baseline, fulfill documentation and reporting requirements, ensure the successful completion of appropriate S&M milestones, provide direction for preliminary radiological assessments of potentially contaminated sites and provide access to waste data for all inactive and active sites.

#### 2.1.1 Audits, Reviews, and Assessments

Three presentations were given in response to information requests from the Defense Nuclear Facilities Safety Board (DNFSB) during FY 1995. The first presentation covered specific areas of concern within ORNL, K-25, Y-12, and Offsite Areas of the Oak Ridge Reservation (ORR). The RA S&M Program was responsible for the information research, production, and distribution of the presentation packages. The second task was the production of a presentation package for the DNFSB tour of several ORNL sites. The third presentation covered the Inactive Reactor Facilities at ORNL Buildings 3001, 3005, 3042, 7500, and 7503.

Several action items resulted from the first DNFSB visit. The RA S&M Program gathered, disseminated, and organized all pertinent information for the response to the DNFSB.

#### 2.1.2 Oak Ridge National Laboratory/Environmental Restoration Plans and Reports

Plans and reports completed during FY 1995 were as follows:

- *Maintenance Action Readiness Assessment Plan for White Oak Creek and Melton Branch Weir Settling Pool Cleanout at Oak Ridge National Laboratory (ORNL/ER-328);*
- *Facility Management Plan for Martin Marietta Energy Systems, Inc., Oak Ridge National Laboratory Site Environmental Restoration Program (ORNL/ER-144);*

- *Surface Radiological Investigations along State Highway 95, Lagoon Road, and Melton Valley Drive, Oak Ridge Reservation, Oak Ridge, Tennessee (ORNL/ER-227);*
- *Maintenance Action Readiness Assessment Plan for Waste Area Grouping 1 Inactive Tanks 3001B, 3004B, T-30, and 3013 at Oak Ridge National Laboratory, Oak Ridge, Tennessee (ORNL/ER-318);*
- *FY 1994 Annual Summary Report of the Surveillance and Maintenance Activities for the Oak Ridge National Laboratory, Environmental Restoration Program (ORNL/ER-282);*
- Task Order Proposal for the FY 1996 ORNL ER Surveillance and Maintenance Program;
- Response to Tennessee Department of Environment and Conservation (TDEC) Query Concerning Building 7819; and
- Response to Tennessee Department of Environment and Conservation (TDEC) Query Concerning Highway 95.

An effort to update the Contaminated Site Summary Sheets (originally developed in 1990 as a part of the RCRA Facilities Assessment) was initiated in FY 1995, and is expected to be completed by the end of FY 1996. The new format and additional information will better serve users by supplying them with updated information concerning each of the contaminated sites under the control of the ORNL ER S&M Program.

### **2.1.3 Safety Documentation Inventory**

An effort was undertaken in FY 1995 to identify each facility within the purview of the RA S&M Program to locate all existing safety documentation, and initiate the generation of any additional necessary documentation. Along with this effort, the current hazard classification of each facility was reviewed and requests for the reduction to a lower hazard classification was initiated when required. This effort is expected to be completed in FY 1996.

## **2.2 ROUTINE SURVEILLANCE AND MAINTENANCE**

Routine S&M activities were conducted as resources allowed throughout FY 1995 at the RA S&M Program sites in accordance with the S&M Plans. Overall, the RA S&M Program consists of approximately 650 acres that include 14 waste area groupings (WAGs), approximately 200 facilities. These facilities include 56 major facilities, several leak and contaminated soil sites, 54 inactive tanks (38 of which are owned by the ER Program), approximately 50 environmental study areas and approximately 2,100 wells. Site inspections were conducted at established frequencies on appropriate sites in the RA S&M Program in accordance with established procedures. The inspections typically focused on perimeter fences, barrier chains, vegetation, diversion systems, warning signs, access roads, asphalt caps, housekeeping, and general site conditions and appearance. Because of potential vulnerabilities (safety hazards to grounds maintenance personnel and equipment, the spread of contamination, or direct radiation exposure), thorough attention was given to the solid waste storage area (SWSA) surface areas for the presence of subsided trenches. Results of these inspections were documented on checklists, and the data were archived for future reference.

### 2.2.1 Inspection Procedure

During FY 1995 the new surveillance procedure ER/X-P1202 (IAD) Site Inspection Procedure was developed and approved for the inspection of ORNL ER S&M facilities. This procedure provides direction for, and documentation of, routine inspections to ensure that the condition and integrity of the S&M Program sites are being preserved and that maintenance needs are being satisfied in a timely manner.

### 2.2.2 General Maintenance Activities

Many general maintenance activities were performed throughout the past FY under the control of the ORNL ER S&M Program. The following are representative activities that were completed:

- replaced a rusted and broken grating on a storm drain near 2016;
- filled a mudhole near Trench 6 in WAG 7 to correct a drainage problem;
- conducted minor housekeeping at WAG 6 in response to a facility walkdown;
- removed sediment from Well Drilling Steam Cleaning Area sedimentation basins near WAG 5;
- installed diked area using sandbags to prevent sump from filling with surface water;
- modified the WAG 8 boundary to allow the installation of the contractors' laydown area;
- assisted TDEC in locating zones of potentially high exposure to contaminants for general plant personnel and deer hunters;
- installed thermoluminescence dosimeters at 17 sites within the boundaries of ORNL in support of the quarterly monitoring effort;
- provided gravel walkways from the access road to facilitate access to the operations tent inside SWSA 5 North;
- insulated a valve and associated piping at the South Tank Farm;
- installed a chain and post to designate the contamination area at the contractors' staging lot at the west end of the plant;
- performed routine maintenance and repaired structural damage at Post 24;
- provided a graveled area around wells 942, 943, and 944 in Melton Valley to accommodate well monitoring activities;
- upgraded signage in Melton Valley;
- updated hazardous material inventory sheets for the hazardous material area at SWSA 6;
- remediated two hot spots detected during hazard pre-screening outside the boundaries of waste oil storage tank 7002W;
- repaired the Melton Valley access control fence;
- repaired the access control fence at building 7819;
- corrected deficiencies pertinent to storage of <sup>90</sup>Sr generators;
- graded and graveled approximately 3 miles of Melton Valley Access roads;
- removed 35 or more trees from across roads after storms;
- repaired damaged fence at WAG 11; and
- calibrated the monitor at the 3001 well.

### 2.2.3 Inactive Tank Monitoring Program

During FY 1995, a variety of tank-related activities were performed including the removal of four tanks. Although the tank removal effort was funded by the Inactive Tank Program, the ORNL ER S&M Program provided personnel to enhance project planning and field support:



Fig. 3. Tank 3004B after removal.

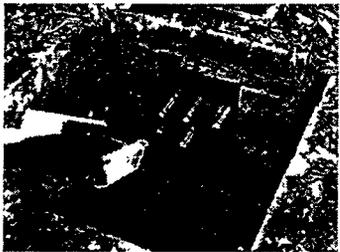


Fig. 4. Tank 3004B vault being filled with grout.



Fig. 5. Tank 3013 being filled with grout.

- implementing a Fast Track Schedule for Inactive Tanks Removal that resulted in a maintenance action that removed tanks 3001B and 3004B from the ground and removing Tanks 3013 and T-30 from the LLLW system (see Fig. 6 for the location of the inactive tanks removed from S&M);
- removing Tanks 3001B and 3004B, which will be smelted by Scientific Ecology Group, Inc., (see Fig. 3 for a picture of Tank 3004B). The vault that contained the tank was filled with controlled low-strength material (see Fig. 4), and the vault lid was replaced;
- isolating Tank 3013 from the LLLW system and filling with controlled low-strength material (see Fig. 5) All pipelines leading to and from the tank were cut and capped. The site was then backfilled with clean soil;
- decontaminating the vault for Tank T-30 prior to isolating the tank from the LLLW system. All pipelines leading to and from the tank were cut and capped;
- performing routine level instrumentation repairs;
- assisted in the performance of a sonar survey of the sludge in Tank W-9;
- rezoning the North and South Tank Farms in accordance with the new Radiological Contamination Manual requirements;
- assisted in the sludge sampling for Gunite Tanks W-2 through W- 11 and Tank TH-4;
- assisted in the readiness assessment of the Gunite and Associated Tanks (GAAT) Treatability Studies Project Sampling Activities and a readiness assessment for construction of platforms at the North Tank Farms;
- removing the steam line to enable sampling and camera access at Tank W-3 for GAAT Treatability Studies Project activities;
- processing the few problems with inactive tanks level trending data. Most level trends indicated either a response to level with increased rainfall or a very slow filling of the tanks. The majority of serious upsets in the level data resulted from instrumentation malfunction or from system outages. After resolution of the upsetting event, the level data would return to nearly the same level as previously indicated prior to the failure or downtime. These readings indicated equipment failure, rather than any real change in level;
- assisted in the completion of the Field Readiness Assessment for the Inactive Tank Removal Project;

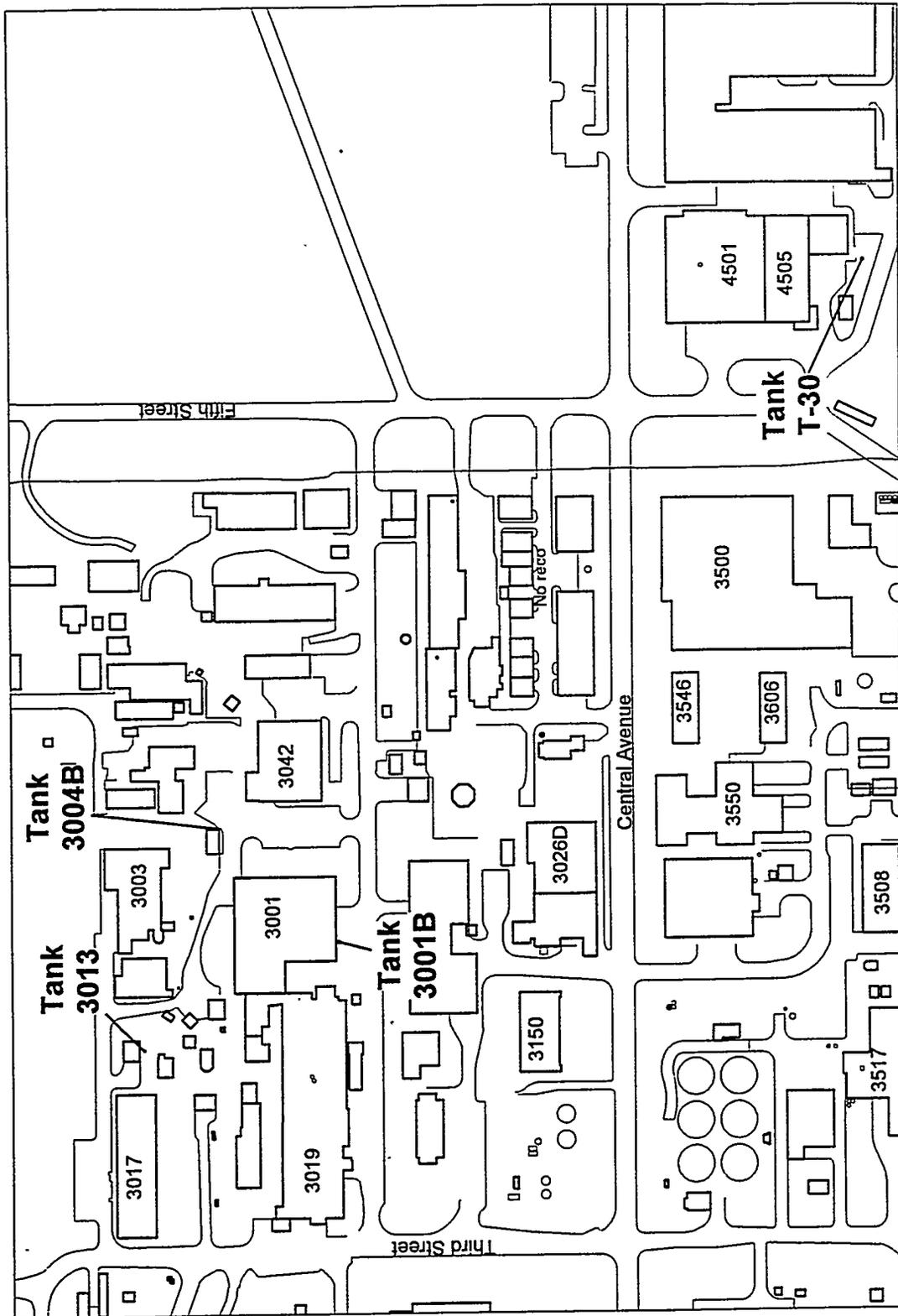


Fig. 6. ORNL S&M inactive tanks removed from S&M in FY 1995.

- issuing ORNL/ER-297, *Inactive Tanks Remediation Strategy and Plan for Oak Ridge National Laboratory*; and
- compiling monthly level trend data reports. The data were collected for tanks T-1, T-2, T-3, T-4, T-9, TH-4, W-1, W-21, W-3, W-4, W-5, W-6, W-7, W-8, W-9, W-10, W-11, W-1A, WC-15, and WC-17. Some tank levels were very sensitive to rainfall. Tank W-1A levels are continuously reported to the Waste Operations Control Center; the levels tripped alarms throughout the year which would lead to Waste Operations emptying some of the tank contents. Further details about the inactive liquid low-level waste (LLLW) tank-related activities are presented in Appendix B.

#### 2.2.4 Vegetation Maintenance



Fig. 7. Vegetation maintenance in SWSA 6.

Vegetation maintenance is continuously required for a variety of purposes including mowing and trimming grass (see Fig. 7), and removing downed trees and vegetation resulting from an abnormal storm event. Other purposes might include upgrading the appearance of a site or facility, permitting access for field activities, or enhancing the inspection processes. During FY 1995, vegetation maintenance was routinely performed at numerous areas that include the White Oak Creek Sediment Retention Embayment, the hydrofracture facilities, and various SWSAs, ponds, tank farms, fence lines, deer fences, trenches, and pits.

#### 2.2.5 Inactive Groundwater Wells

Over the years, groundwater monitoring and investigation wells were installed to support various environmental studies, R&D activities, and groundwater monitoring activities. There are more than 6,000 active and inactive wells at the ORNL site. In the last two years new caps and locks have been installed at 332 wells to prevent the possibility of down-hole contamination. In addition 1,280 wells have been inspected for sediment level vs. open interval to determine whether to place the well on the surplus list or to develop it further.

In FY 1995, approximately 71 wells were capped and locked, essentially completing the number of wells currently scheduled for such activities. Since March 1994, S&M activities that include general and down-hole condition inspections have been performed on over 255 inactive or nonessential wells.

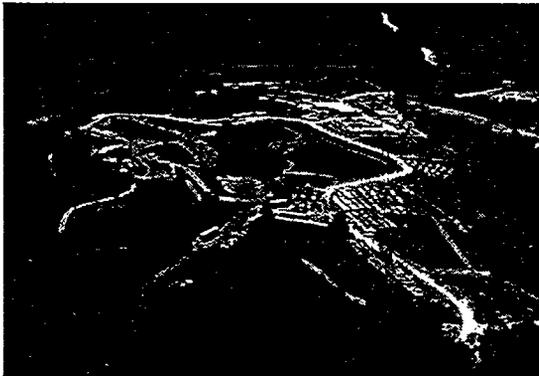
Ten tilt-meter holes were closed by plugging them with concrete. These holes were frequently mistaken for monitoring wells, therefore they provided a continual concern for external and internal auditors. The holes were immediately adjacent to the roads, and the guard casings and caps on the holes had sustained damage over the years by inadvertent contact with mowers and/or road graders.

## 2.3 POST CLOSURE SURVEILLANCE AND MAINTENANCE

One of the major purposes of the ORNL ER S&M Program is to provide Post Closure or Post-Remediation S&M. The ORNL ER S&M Program is currently managing six facilities that include SWSA 6 RCRA Caps, Seep C Collection and Treatment System, Seep D Collection and Treatment System, Corehole 8 Collection and Treatment System, and Tumulus I and II storage facilities.

### 2.3.1 Resource Conservation and Recovery Act Caps

The routine RCRA cap inspections and repairs were performed on schedule by internal Energy Systems personnel and off-site contractors S&ME and Geotek, these subcontractors fulfill the SWSA 6 closure agreement requirement for an independent repair and inspection subcontractor (Fig. 8 is a picture of the SWSA 6 RCRA caps). The inspections consisted of the following activities:



- inspection of all high-density polyethylene panels,
- collection of the "sacrificial" liner samples,
- inspection of all anchor trenches and pillows,
- inspection of all penetrations to ensure cap integrity,
- inspection of panel seams, and
- laboratory testing of three 2-ft by 4-ft sacrificial samples.

Fig. 8. Aerial view of the SWSA 6 RCRA caps.

Geotek repaired all noted deficiencies of the RCRA caps. Additional activities performed in association with the RCRA caps were (1) the review and approval of a RCRA Caps Training Lesson Plan according to procedure WMRA-RA302-S, (2) the timely submittal of appropriate documentation to Environmental Compliance, (3) the submittal of check sheets and weekly site inspection sheets to the document management center for the purpose of archiving the information, and (4) a corporate audit of the RCRA Closure Plan.

Two corporate audit findings identified in the FY 1994 audit that were associated with the S&M of the RCRA Caps at WAG 6 were closed-out.

### 2.3.2 Seep C Collection and Treatment System

The ORNL ER S&M Program successfully completed the transition of the Seep C Collection and Treatment System and is now responsible for all S&M of this system (Fig. 9 is a picture of the Seep C Collection and Treatment System).



Fig. 9. Seep C Collection and Treatment System.

### 2.3.3 Seep D Collection and Treatment System

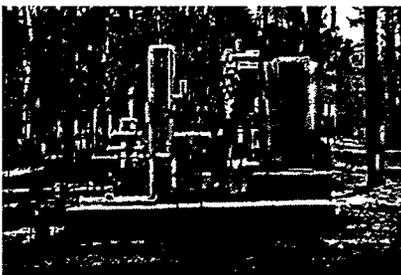


Fig. 10. Seep D treatment system.

The ORNL ER S&M Program successfully completed the transition of the Seep D Collection and Treatment System and is now responsible for all S&M of this system (Fig. 10. Is a picture of the Seep D treatment system).

### 2.3.4 Tumulus I and II



Fig. 11. Tumulus I and II.

The Tumulus I and Tumulus II storage facilities were completed in late FY 1994 (see Fig. 6) and turned over to the ORNL ER S&M Program for post closure S&M. The scope of the S&M effort essentially covers routine inspections and vegetation maintenance (Fig. 11. Is a picture of the completed Tumulus I and II storage facilities).

### 2.3.5 Building 3001 Canal Post Closure Surveillance and Maintenance

The ORNL ER S&M Program completed the weekly check sheet for Building 3001 Canal in accordance with the Waste Management and Remedial Action Division (WMRAD) Procedure WMRA-RA-402-S. The resulting check sheets were filed in the WMRAD document control center. The water quality data from the Building 3001 Canal for the past year was reviewed for changes in the overall quality of the water, trending of contaminants showed that over an extended period of time the concentration were not changing. Subsequently, a request to modify the sampling frequency from weekly to monthly was approved by DOE and implemented, thereby resulting in an estimated cost savings of more than \$25,000 per year.

### 2.3.6 Corehole 8 Collection and Treatment System

The ORNL ER S&M Program successfully completed the transition of the Corehole 8 Collection and Treatment System and is now responsible for all S&M of this system.

## 2.4 RADIOLOGICAL SURVEYS

In FY 1995, a number of sites were surveyed by the Measurement Applications and Development (MAD) Group of ORNL's Health Sciences Research Division. Areas identified by the ORNL ER S&M Program were surveyed to determine the presence, nature, and extent of radiological contamination at each site. Results of the surveys were used to update and better identify site-specific conditions. This information was also used to determine the need (if any) for immediate special actions necessary to correct potential hazards to human health or the environment. The FY 1995 scoping survey accomplishments are described individually in the following subsections.

## 2.4.1 Environmental Restoration Sites

In FY 1995, there were a number of sites that required radiological surveys. The following sections describe the results of those surveys.

### 2.4.1.1 The Cesium Plots (Facility 0816)

The site radiological survey of the Cesium Plots (Facility 0816) and report *Surface Radiological Investigations at the 0816 Site, Waste Area Grouping 13, Oak Ridge National Laboratory, Oak Ridge, Tennessee* (ORNL/ER-291) were completed in FY 1995. The purpose of this survey was to determine whether any residual surface soil contamination in excess of 120 pCi/g of  $^{137}\text{Cs}$  remained at the site. Spotty contamination was found up to the edge of the former contaminated enclosures where excavation and soil replacement had taken place. Numerous hot spots were scattered, (generally toward the north side of the site). Several large areas of elevated gamma exposure rates were found north of the former contaminated enclosures. A marshy, drainage area paralleling the north fence for approximately 850 feet also exhibited elevated surface gamma levels.

Correlation of surface gamma exposure rates with  $^{137}\text{Cs}$  concentration in soil samples analyzed from the site demonstrated that at locations where gamma exposure rates were greater than 40 mR/h that the concentrations of  $^{137}\text{Cs}$  is greater than 120 pCi/g. Because the surface-gamma exposure rates at all six of the large areas and 75% of the discrete spots equaled or exceeded 40 mR/h,  $^{137}\text{Cs}$  concentrations greater than 120 pCi/g can be assumed to be prevalent at this site.

### 2.4.1.2 Melton Valley Drive, Lagoon Road, and Highway 95 Survey Report

A surface radiological investigation was conducted for portions of Melton Valley Drive, Lagoon Road, and Highway 95 in FY 1993 and FY 1994. The subsequent report *Surface Radiological Investigations along State Highway 95, Lagoon Road, and Melton Valley Drive, Oak Ridge Reservation, Oak Ridge, Tennessee* (ORNL/ER-327) was generated during FY 1995 presented the detail surface-gamma radiation levels including gamma anomalies; surface-beta radiation levels including beta anomalies; results of analysis of soil, water, vegetation, and smear samples collected from paved surfaces; remediation activities conducted as a result of the survey; and recommendations for further corrective measures. The following sections summarize the results of the survey.

**Highway 95.** No elevated gamma exposure rates or beta-gamma dose rates were detected in the east emergency lane of State Highway 95 between the Lagoon Road and White Oak Dam. Immediately north of the intersection of State Highway 95 with Lagoon Road, approximately 15 spots with elevated-gamma exposure rates and elevated beta-gamma dose rates were identified 6- to 8- ft from the east side of the road. One spot with elevated gamma activity was detected on the west side of State Highway 95, and another spot was detected approximately 450 ft north of the intersection on the east side. The primary contaminant was  $^{137}\text{Cs}$ , however one sample also contained  $^{90}\text{Sr}$ . Approximately 72 ft<sup>3</sup> of contaminated soil was removed and disposed in SWSA 6.

**TVA Right-of-Way.** A roped radiological area extending approximately 500 ft south of State Highway 95 in the cleared area beneath the transmission lines contained numerous scattered spots with elevated surface-gamma exposure rates and beta-gamma dose rates. Two spots were detected outside the magenta and yellow contamination control rope near State Highway 95. The primary contaminant was  $^{137}\text{Cs}$  both inside and outside of the contamination control boundary.

**Lagoon Road.** At the western end of Lagoon Road, between State Highway 95 and the ORNL security gate, numerous spots with elevated beta-gamma dose rates were identified north of the road. Two of the spots contained hot particles measuring 23 and 24 mrad/h; beta emitters were  $^{137}\text{Cs}$  and  $^{90}\text{Sr}$ . All contaminated spots in this area were removed and disposed.

East of the security gate, numerous spots and areas of elevated gamma and beta-gamma radiation levels were identified both north and south of Lagoon Road on the road surface. No transferable radioactivity was found on the road surface. The primary contaminant was  $^{137}\text{Cs}$  in sampled soil along Lagoon Road, and one sample contained  $^{60}\text{Co}$ .

Highlights of this survey include the following:

- an area of approximately 12,000 ft<sup>2</sup> area west of Building 7819 contained approximately 25 trees with elevated beta-gamma dose rates;
- an area along a drainage east of Building 7819 contained approximately 40 trees with elevated beta-gamma dose rates;
- radiation emanating from SWSA 4 enhanced the surface and 1-meter gamma exposure rates, therefore masking low-level gamma anomalies that might be present in the area;
- near the intersection of Lagoon Road and Melton Valley Drive three wide-spread areas of contamination were detected that apparently extend all the way to White Oak Creek; and
- animal and plant life offer further evidence that the environment along Lagoon Road is contaminated. Examples include the beta-gamma dose rate noted in a turtle shell, a caterpillar crushed on the road, three snails beside the road, a root, numerous leaves and twigs scattered along the roadside, and two stands of trees.

**Melton Valley Drive.** Many spots and areas of elevated gamma and beta-gamma radiation levels were identified both north and south of Melton Valley Drive and on the road surface. No transferable radioactivity was found on the road surface. The following represents the highlights of the Melton Valley Drive survey:

- a 12- by 43-ft area south of Melton Valley Drive and west of SWSA 5 access road that contained numerous beta-gamma anomalies;
- a spot north of Melton Valley Drive (near the SWSA 5 access road) that measured 11.4 mrad/h;
- animal and plant life that reflected the state of the environment along Melton Valley Drive. Examples include deer droppings, an animal bone, a sweet-gum tree, a willow tree, a caterpillar, and a large area of trees that exhibit elevated beta-gamma activity; and
- a large group of trees growing at the site of a previously remediated waste line leak site that showed high levels of beta activity.

#### **2.4.1.3 Outside of Building 7819**

A surface radiological study of the grounds outside Building 7819 was completed. It identified numerous spots with elevated beta-gamma and gamma radiation levels that were located behind the building and outside of the contamination rope. This survey was a brief cursory effort that was designed to locate the areas of contamination. It should not be considered as a complete characterization survey.

#### **2.4.1.4 Building 7819 Survey and Drain Closure**

A radiological survey was conducted on the drains inside Building 7819. Of the eight possible drains and water lines that were visible, four were already sealed. Smears were taken in all the accessible drains to determine transferable contamination levels. All but one of the drains were below transferable guidelines. After the drains were surveyed, all open drains were sealed using a foam sealant and pictures were taken.

#### **2.4.1.5 Building 7819 Septic Tank Survey**

A surface radiological survey of the abandoned septic tank outside Building 7819 was completed. During this survey, samples were taken from the surrounding soil and the sludge inside the tank and analyzed for radionuclides, metals, volatile organics, and polychlorinated biphenyl's (PCBs). Beta-gamma dose rates at the soil surface averaged 0.34 mrad/h. Three soil samples collected in the vicinity of the septic tank were analyzed for several radionuclides. Analysis results revealed the presence of no elevated levels of radionuclides. Sludge samples collected from the bottom of the septic tank were analyzed, and none of the analytes were present. Gamma and beta-gamma surface radiation measurements taken in the area after replacement of the septic tank lid and the soil that covered it showed no increased radiation levels.

#### **2.4.1.6 Solid Waste Storage Area 2 Study**

A literature search was conducted to investigate the history of SWSA 2. This site was operated between 1944 and 1946, and received solid waste contaminated with beta or gamma-emitting radionuclides. Plutonium-contaminated liquid waste and alpha-contaminated material from off-site were also deposited at the site. The result of this literature search found that there is a possibility for the continuing existence of buried waste in SWSA 2.

#### **2.4.1.7 Evaluation of Radioactively Contaminated Trees**

A characterization and evaluation of radioactively-contaminated trees on the ORNL site, particularly the ones located in the vicinity of Building 7819, was conducted during the course of FY 1995. Additionally, three areas that were characterized in the "cesium forest area" of WAG 16 were roped off and posted as contamination areas in response to a concern the TDEC oversight group had regarding this area.

#### **2.4.1.8 Waste Area Grouping 2 Weirs 13 and 14 Radiological Survey**

In support of the weir clean-out activities, a radiological survey of Weir X-13 (the primary flow device from Melton Branch), Weir X-14 (the primary flow device for White Oak Creek) and the nearby area was conducted. Several soil samples were collected and analyzed. Elevated gamma exposure rates were detected on the banks of both White Oak Creek and Melton Branch and on the parcel of land designated to receive sediment removed from the stream beds. Analysis of soil samples showed the major contaminants to be  $^{137}\text{Cs}$  and  $^{90}\text{Sr}$ .

#### 2.4.2 No Further Investigation Site Surveys

Many of the NFI candidate sites located throughout the ORR are areas of past ecological research that employed a variety of radionuclides. Some of the radionuclides used in these experiments had short half-lives and have since decayed. It is possible, however, for longer-lived radionuclides to remain as residual material at some of the locations. There is a compelling need to determine the current baseline radiological status of each of these sites. As a result of this need, ten NFI sites were surveyed for radiological contamination in FY 1995. The various site identification numbers and descriptions are as follows:

- Waste Oil Storage Tank 7002W (FFA 17.02). No evidence of radioactive contamination was discovered on the site, although two spots with elevated gamma exposure rates were identified at the periphery of the site;
- <sup>197</sup>Hg Tagged Stream (FFA ER.05). An investigation indicated that there is no radiological contamination above background levels in the area where the study was conducted;
- <sup>203</sup>Hg Tagged Stream (FFA ER.09). An investigation identified no areas of elevated radiation levels;
- <sup>14</sup>C Maintenance-Respiration Study (FFA ER.29). An investigation identified no areas of elevated gamma or beta-gamma radiation levels;
- <sup>14</sup>C Sucrose Inoculation of Oak & Pine Trees (FFA ER.30). An investigation identified no areas of elevated beta-gamma radiation levels were detected and two regions were identified with elevated gamma exposure rates in an area south of the study area;
- <sup>14</sup>C Allocation in White Oak Trees (FFA ER.31). An investigation identified no detectable residual <sup>14</sup>C at the site;
- <sup>14</sup>C Allocation in White Pine Trees (FFA ER.32). An investigation identified no areas of elevated gamma or beta-gamma radiation levels;
- <sup>14</sup>C Efflux in Yellow Poplar Stand (FFA ER.33). An investigation identified no areas of elevated gamma radiation levels; and
- <sup>14</sup>C Allocation in Woody Biomass Plantation Species (FFA ER.34). An investigation within the boundaries of the plantation were found to be within the usual background range with the exception of a small region located along the southeastern portion of the plantation where slightly elevated gamma exposure rates were detected. Further investigation has identified a larger area of contamination to the east of the plantation area. The Office of Radiation Protection was notified, and the area was identified as a contamination area.

#### 2.4.3 Radiological Survey Results Data Management

During FY 1995, an effort was initiated to transfer the information that has been generated during radiological surveys throughout the last nine years into MapInfo, and ultimately distributed through the Shared Data Initiative. This data consists of gamma exposure rate measurements at various locations on the ORR. It includes the physical location and the isotope(s) exposure rate at each location.

## 2.5 DATA MANAGEMENT

A search of Laboratory Records for historical waste management data, procedures, memos, and pictures was completed in FY 1995. Over 10,000 documents were reviewed, and approximately 2,000 documents were subsequently cataloged for use in preparing the comprehensive waste inventory.

Integration of MAD group survey data into the Shared Data Initiative was initiated. This survey data had been available only in hardcopy to this point. Initially the most recent radiological survey results are being transferred, with older results to follow. This data can be used with the MapInfo software and used by subscribers to the Shared Data Initiative at ORNL.

WAG 4 logbooks that depict the waste management disposals at the burial ground were located. A map showing the trench numbers was not included. This information will be converted to a database format and subsequently made available to users of the ORNL Shared Data Initiative. This discovery had almost immediate applicability to the engineers determining the criticality safety status of the burial ground. Given this additional information contained in the logbooks, initial indications are that a full criticality safety analysis will not be necessary.

Development of the DataTracker, a Foxpro based, stand-alone index of data sets that may be applicable to ER projects, was completed. The effort to populate the tool with additional information concerning applicable datasets is ongoing and will be a continual process. Continued support the Shared Data Initiative by providing ER data layers for general distribution was provided. We provide and maintain over 43 megabytes of information in 309 separate data files for use by the subscribers to ORNL's Shared Data Initiative. The feasibility and usefulness of creating the database of the archived burial authorizations which are currently in hardcopy only was evaluated. This effort will commence in the first quarter of FY 1996. Work on a ORNL ER S&M World-Wide Web homepage was initiated.

## 2.6 NO FURTHER INVESTIGATION EVALUATION

In early FY 1995, the ORNL ER Program committed to complete at least four NFI petitions during FY 1995. During FY 1995, seven NFI petitions on former environmental research areas were completed and transmitted to DOE for submittal to the FFA managers. All are awaiting approval. They include the following:

- <sup>45</sup>Ca Tagged Forest (FFA ER.07),
- <sup>95</sup>Tc-m Soil and Plants (FFA ER.19),
- <sup>95</sup>Tc-m Update Studies (FFA ER.20),
- <sup>14</sup>C Maintenance-Respiration Study (FFA ER.29),
- <sup>14</sup>C Sucrose Inoculation of Oak and Pine Trees (FFA ER.30),
- <sup>14</sup>C Allocation in White Pine Trees (FFA ER.32), and
- <sup>14</sup>C Efflux in Yellow Poplar Stand (FFA ER.33).

Seven additional sites have been surveyed. Petitions have been written, however, they have not been submitted. They include the following:

- $^{197}\text{Hg}$  Tagged Stream (FFA ER.05),
- $^{203}\text{Hg}$  Tagged Stream (FFA ER.09),
- $^3\text{H}$  Contaminated Trees (FFA ER.10),
- $^{65}\text{Zn}$  Tagged Red Oak Seedlings (FFA ER.13),
- $^{134}\text{Cs}$  Contaminated Persimmon Tree (FFA ER.27),
- $^{60}\text{Co}$  and  $^{54}\text{Mn}$  Animal Study (FFA ER.28), and
- $^{14}\text{C}$  Allocation in White Oak Trees (FFA ER.31).

### **3. FISCAL YEAR 1995 DECONTAMINATION AND DECOMMISSIONING SURVEILLANCE AND MAINTENANCE PROGRAM ACCOMPLISHMENTS**

The FY 1995 D&D S&M Program activities were accomplished primarily in the program management and routine S&M WBS elements as defined in Activity Data Sheet 3701 ORNL Facilities D&D.

#### **3.1 PROGRAM MANAGEMENT**

The primary purposes of the program management element were to provide strategic planning, develop a defensible and well-documented project baseline, fulfill documentation and reporting requirements, ensure the successful completion of appropriate S&M milestones.

##### **3.1.2 Audits, Reviews, and Assessments**

The following audits were supported in FY 1995:

- a corporate audit of Buildings 3001 and 7500;
- a TDEC audit of Building 3001 and 3085; and
- a DOE audit of Buildings 3001, 3005, 3042, and 7500.

In FY 1995, ORNL was visited by the DNFSB. The purpose was to inspect the ORNL inactive reactor facilities. Prior to this visit, a major building housekeeping effort was undertaken at all the inactive reactor facilities with a special emphasis on Building 7500. After touring the inactive reactor facilities, the DNFSB identified no issues of concern. The board had no findings upon its exit from ORNL.

##### **3.1.3 Oak Ridge National Laboratory/Environmental Restoration Plans and Reports**

Key D&D documents completed for the ORNL S&M Program included the following:

- completing a draft Strategy to Optimize Surveillance and Maintenance Activities at the Oak Ridge Research Reactor that will include a strategy to optimize all S&M activities at the ORR. Four cases will be analyzed that include a base S&M case and three cases with varying degrees of reduction of S&M activities. The major applicable laws and DOE orders were reviewed as a starting point to assessing which S&M activities are required and which can be discontinued;
- supporting the development of the FY 1996 Task Work Proposal for the ORNL S&M Program. This document outlines the scope and resource requirements to complete all FY 1996 activities;
- completing and submitting a "turnover" package to transfer responsibility of four ORNL facilities located at the Oak Ridge Y-12 Plant from the ORNL ER Program to the Y-12 ER Program;
- revising the local emergency manual for Building 3042, submitting it to the Laboratory Shift Superintendent (LSS) for approval, and placing it in the building. The Emergency Squad roster was updated and training conducted for squad members;
- revising and combining the emergency manuals for Buildings 3001 and 3005 to promote efficiency. The revised manual was approved by the LSS and placed in the buildings. Conducted training for Emergency Squad members for Buildings 3001 and 3005;

- revising, approving, and submitting the emergency manual for Building 7503 to the LSS. (however, training was not conducted due to pending changes in occupancy); and
- reviewing the emergency manual for Building 7500 and it was found to be adequate.

### **3.2 ROUTINE SURVEILLANCE AND MAINTENANCE**

Routine S&M activities were conducted at the D&D S&M Program sites as resources allowed, per the published S&M plans throughout FY 1995. The D&D S&M Program maintains 46 facilities. It provides overall building management on over 156,000-ft<sup>2</sup> of floor space that includes 15 major facilities consisting of surplus reactors, radiochemical processing facilities, WM facilities, a hot cell facility, and technology development facilities. In addition to the routine S&M activities, detailed facility inspections were conducted at established frequencies on appropriate facilities in the S&M Program. The inspections typically focused on building condition, warning signs, housekeeping, and general facility conditions and appearance. Results of these inspections were documented on checklists and archived for future reference.

#### **3.2.1 Facility Surveillance**

Facility surveillance was conducted on a daily basis in accordance with WMRAD Procedures WMRA-RA-R402-S and WMRA-RA-403-S. Any findings resulting from the surveillance were processed on a priority basis as resources permitted.

Several facility stabilization projects were identified that potentially could reduce S&M costs for several facilities in the future. Conceptual planning has been completed, and the projects have been included in the FY 1996 budget for further risk evaluation.

#### **3.2.2 Facility Maintenance Activities**

Facility maintenance activities were performed throughout FY 1995 that included many activities, such as the following:

- relamping Buildings 3001, 3005, 3042, and 7500;
- drain labeling;
- capping of numerous open pipes;
- deactivation of non-essential electrical lines;
- completing a major lead consolidation effort;
- installing and connecting a temporary above-ground diesel tank for the emergency generator at Building 3042;
- replacing the flow meter and tubing on the radiation monitor at the cell-vent filter pit for Building 3042;
- changing out the high efficiency particulate air filters at the Old Hydrofracture Facility (OHF) injection cell and pumphouse off-gas systems;
- cleaning up a PCB leak from a gasket in the vent system in Building 3042;
- completing miscellaneous safety action items;
- pumping the pool at Building 7500 in response to a level alarm;
- changing out a cell vent pre-filter to eliminate the low-pressure condition in the cell;
- conducting an isotopic characterization of solid low-level waste from Building 7503;
- performing vegetation maintenance at approximately ten D&D facilities that are not included in the RA S&M Program;
- supporting the installation of a smoke detector system in Building 3001;

- performing radiator repair of the Building 3042 emergency generator;
- replacing 2 Nash Hydro pumps at Building 3042;
- repairing the ventilation panel at Building 3042;
- supporting the sprinkler system upgrade effort in Building 3042;
- backwashing demineralizers;
- supporting the disposition of the contaminated ion exchange resins;
- repairing all deficiencies noted during the annual fire inspection;
- repairing the air compressor at the OHF; and
- completing a major asbestos stabilization activities in Buildings 3001, 3005, and 3042.

In addition, the D&D S&M Program conducted major clean-up efforts at Buildings 3001, 3005, 3042 and 7500 that included the following activities:

- segregating waste, characterizing, and storing waste in accordance with Energy Systems procedures,
- shipping surplus equipment to salvage,
- labeling electrical junction boxes,
- inspecting all exposed wiring to see if it was energized,
- capping and plugging all inactive pipe lines that were readily accessible, and
- conducting a general clean-up of the facilities.

In response to the discovery of radiological contamination inside the visitor center and common areas in Building 3001, the entire area was surveyed, and any contaminated spots were either removed or fixed in-place. In addition, several improvements were initiated to reduce the likelihood of inadvertent contact with any potentially contaminated areas.

### **3.2.3 Radiological Surveillance**

Radiological surveillance activities included the following:

- completion of radiological characterization activities (floor to 7-ft. high) of Buildings 3001 and 3005 and a floor characterization of 7500; and
- completion of a radiological characterization of the top floor of Building 3005.

### **3.2.4 Safety Inspections**

The WMRAD Safety Group performed routine safety inspections for each of the D&D S&M Program facilities at prescribed intervals throughout FY 1995. All findings were tracked and addressed as resources permitted.

## 4. GENERAL SURVEILLANCE AND MAINTENANCE PROGRAM ACCOMPLISHMENTS

### 4.1 CONDUCT OF OPERATIONS

The ORNL ER S&M Program performed three major activities related to DOE Order 5480.19 *Conduct of Operations Requirements for DOE Facilities* during FY 1995. (1) The Environmental Restoration Program Support Department (ERPSD) revised and added to existing procedures to come into full compliance with all the requirements of this DOE order. (2) The ORNL ER S&M Program supported the ORNL ER Program in the development of a Conduct of Operations (CONOPS) Implementation Plan and the gathering of evidence to support the implementation of the requirements of that plan. (3) The ORNL ER S&M Program also generated matrices defining the applicability of CONOPS to the activities in the program, as well as supporting the development of matrices for facilities and projects that are a part of the ORNL ER Program.

#### 4.1.1 Conduct of Operations Procedures

The ERPSD CONOPS Procedures were revised and updated. The original procedures had not included requirements from all 18 chapters of the DOE Order 5480.19. The ORNL ER Program determined that all 18 chapters applied to some portion of the program activities. In addition, there were updates required to incorporate recent changes in the DOE order. There are now 18 procedures in place.

#### 4.1.2 Conduct of Operations Applicability Matrices

DOE Order 5480.19 requires that the requirements of its 18 chapters be evaluated and documented for applicability to facilities and activities performed in the DOE complex. The ORNL ER Program performed this evaluation and produced applicability matrices for a number of facilities, activities, and projects.

The following applicability matrices were produced and submitted to DOE for the following ongoing S&M activities:

- D&D S&M (approved),
- D&D S&M for Building 4507 (approved),
- Inactive Tanks S&M (approved),
- Inactive Tanks Sampling and Analysis (approved), and
- RA S&M (approved).

The ORNL ER S&M Program was given additional scope and funding in early FY 1995 to produce CONOPS applicability matrices for other ORNL ER facilities and projects that were not necessarily related to S&M. The following matrices were submitted to DOE:

- Main Plant Surface Impoundments Sampling,
- WAG 7 In-situ Vitrification (approved),
- Corehole 8,
- Gunitite Tanks Phase II Sampling (approved),
- Isotope Facility Deactivation Project (approved),
- Inactive Tanks Removal (approved),
- Molten Salt Reactor Experiment S&M Activities (approved),

- Old Hydrofracture Wells Plugging and Abandonment Sampling,
- ORNL Groundwater (approved),
- Surface Water Program,
- WAG 1 Groundwater (approved),
- WAG 2 RI Project,
- WAG 4 Seeps Site Investigation,
- WAG 5 Seeps,
- WAG 6 Monitoring,
- WAG 10 New Hydrofracture Facility Characterization (approved), and
- Waste Evaporator Facility Demolition.

#### **4.1.3 Conduct of Operations Implementation Plan and Evidence Files**

A CONOPS Implementation Plan was developed as an ERWM requirement and was initiated at both the ER Central and ORNL ER Program levels. The ORNL ER S&M Program was given additional scope and funding to support the development of an implementation plan for the ORNL ER S&M Program and for all other ORNL ER facilities, projects, and activities.

The CONOPS Implementation Plan for the ORNL ER S&M Program required the establishment of evidence files. Evidence files were established for the following activities:

- D&D S&M activities,
- Isotopes Facilities Deactivation Project S&M activities,
- Molten Salt Reactor Experiment S&M activities, and
- RA S&M activities.

## **4.2 FACILITY EXCELLENCE**

The Energy Systems Environmental Management and Enrichment Facilities Business Unit has demonstrated that facility management, operations, and conditions will improve with a structured management self-assessment program. Such a program has been developed and implemented at K-25, it is called the Facility Excellence Program. A Facility Excellence Program was initiated in FY 1995 for the ORNL ER Program, the program objectives include the following:

- preparing the ORNL ER Program facilities for any unannounced verbatim compliance audits;
- providing ER Facility Managers with a list of outstanding actions to be performed to assure that their facilities will successfully withstand an audit; and
- identifying any systemic facility problems that require management actions to enable resolution.

The process uses a walkdown team that includes the Facility Manager of the facility being evaluated, an Environmental, Safety, and Health (ES&H) specialist, a Health Physics Technician (if required for facility access), a WM and compliance expert, and a facilitator. The team is lead by an ORNL ER Program Manager. The team looks for deficiencies in applicable regulations in ES&H, CONOPS, Conduct of Maintenance, and housekeeping. The process does not address detailed line-by-line compliance for all applicable regulations, but it does look for obvious and visible deficiencies observable in a thorough walkdown. A rating system from 1 (poor) to 10 (excellent) is used to rate each facility. Observations are documented and provided to the Facility Manager for corrective action.

In FY 1995 a two-phase strategy was implemented. In Phase 1:

- the WBS was developed,
- a brief description of each task in the WBS was written, and
- a schedule for each phase of the program was developed.

Phase 1 has been completed with the exception of the task descriptions and the baseline for some of the planned facilities. In Phase 2:

- the compilation of the results into a database was initiated;
- criteria and a process have been developed for prioritizing the facilities for walkdown scheduling; and
- facilities have been inspected, baselined, and ratings given.

The Phase 2 prototype has been completed with the exception of developing the generation of the management reports from the database.

Data from the self-assessment audits conducted in early FY 1995 is being used for background information in preparation for Facility Excellence Program walkdowns. Priority has been given to occupied facilities and possess a nuclear/radiological rating of radiological or higher. Fig. 12 shows the results of the walkdowns that have been completed.

| Rating       | Jan      | Feb      | Mar      | Apr      | May       | Jun      | Jul      | Aug      | Sep      | Oct      | Nov      | Dec      | TOTAL     |
|--------------|----------|----------|----------|----------|-----------|----------|----------|----------|----------|----------|----------|----------|-----------|
| 1-4          | 0        | 0        | 3        | 3        | 10        | 0        | 0        | 0        | 0        | 0        |          |          | 16        |
| 5-7          | 0        | 0        | 0        | 0        | 5         | 1        | 0        | 0        | 0        | 0        |          |          | 6         |
| 8-10         | 0        | 0        | 0        | 0        | 0         | 0        | 0        | 0        | 0        | 0        |          |          | 0         |
| <b>TOTAL</b> | <b>0</b> | <b>0</b> | <b>3</b> | <b>3</b> | <b>15</b> | <b>1</b> | <b>0</b> | <b>0</b> | <b>0</b> | <b>0</b> | <b>0</b> | <b>0</b> | <b>22</b> |

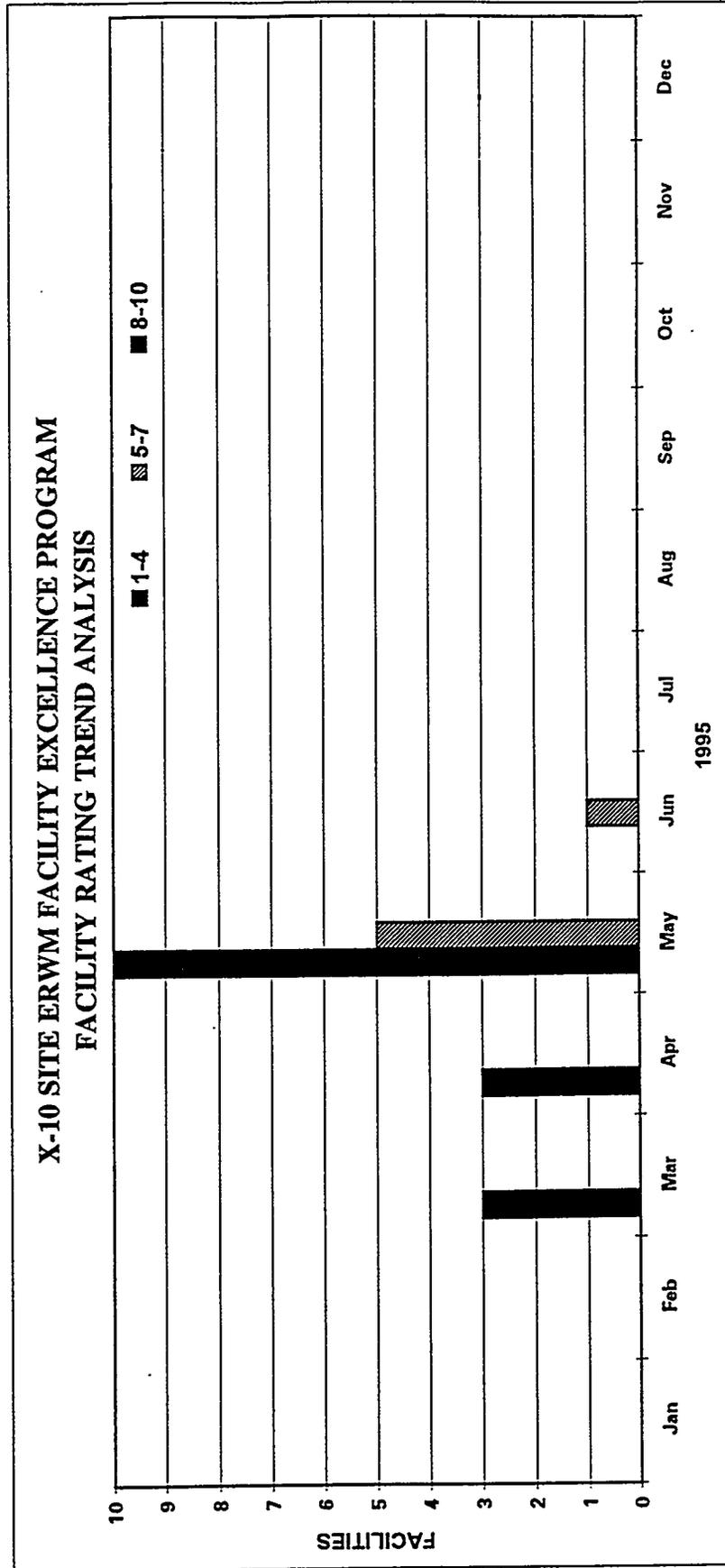
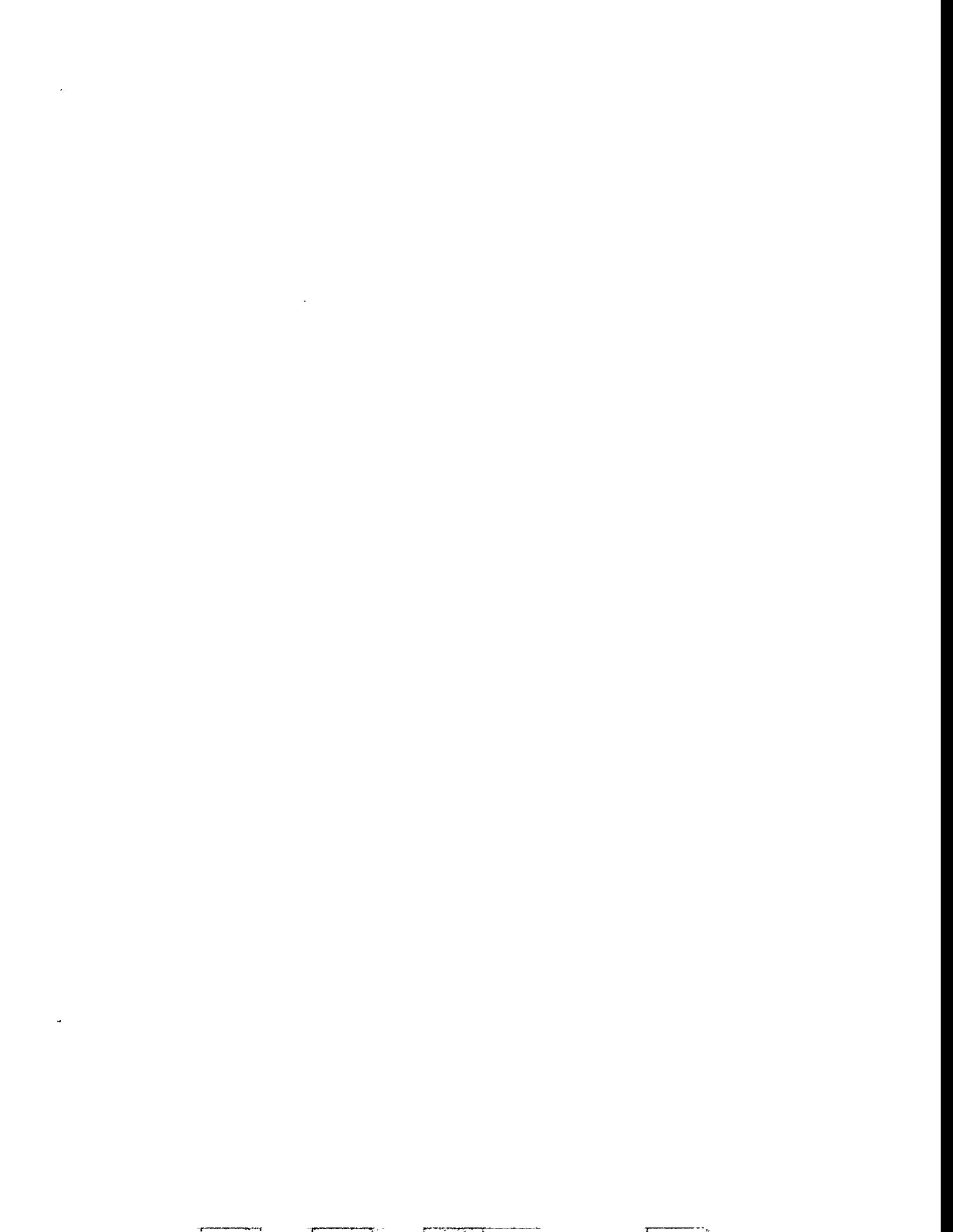


Fig. 12. Results of FY 1995 Facility Excellence Program facility walkdowns.

**Appendix A**

**OAK RIDGE NATIONAL LABORATORY ENVIRONMENTAL  
RESTORATION SURVEILLANCE AND MAINTENANCE PROGRAM  
FACILITY MANAGEMENT LIST**



Appendix A  
ORNL ER Surveillance and Maintenance Program Facility Management List

| FAC. NO.      | FFA     | FACILITY NAME                                       | FAC. TYPE | PROGRAM | Surveillance Frequency | Number of Surveillance Activities |
|---------------|---------|---|-----------|---------|------------------------|-----------------------------------|
| 0807          | 13.02   | Cs-137 Erosion/Runoff Study Area                    | Area      | RA      | Weekly                 | 3                                 |
| 0814          |         | Trailer   | Bldg.     | RA      | Quarterly              | 18                                |
| 0816          | 13.01   | Experimental Study Area (Cs-137 Plots)              | Area      | RA      | Quarterly              | 16                                |
| 0830          |         | White Oak Creek Embayment Sediment Control Facility | Area      | Oper    | Weekly                 | 12                                |
| 0857          |         | Goat Building                                       | Bldg.     | RA      | Quarterly              | 18                                |
| 1001          | 03.01   | SWSA 3 Burial Grounds                               | Area      | RA      | Weekly                 | 8                                 |
| 1554          | 03.03   | Contractors' Landfill (West of SWSA 3)              | Area      | RA      | Weekly                 | 9                                 |
| 1562          | 03.02   | Scrap Metal Area                                    | Area      | RA      | Weekly                 | 8                                 |
| 2624          | 01.46   | SWSA 1 Burial Grounds                               | Area      | RA      | Weekly                 | 8                                 |
| 3001          | 01.79   | Storage Canal                                       | Area      | RA      | Weekly                 | 8                                 |
| 3001          | 01A.01A | Oak Ridge Graphite Reactor                          | Bldg.     | RA/D/D  | Weekly/Daily           | 8/22                              |
| 3001/<br>3019 | 01.08   | Graphite Reactor Storage Canal Contaminated Soil    | Area      | RA      |                        |                                   |
| 3001-3003     | 01A.01E | Underground Exhaust Ducts Soil Contamination        | Area      | RA      |                        |                                   |
| 3001B         | 01.73   | Inactive LLLW Collection Tank 3001B                 | Tank      | RA      | Semi-Monthly           | 1                                 |
| 3002          | 01A.01C | OGR Filter House & Canal                            | Bldg.     | RA/D/D  | Weekly/Daily           | 8/3                               |
| 3002A         | 01.68   | Drain Tank South of 3002                            | Tank      | RA      |                        |                                   |
| 3003          | 01A.01B | OGR Fan House                                       | Bldg.     | D/D     | Daily                  | 1                                 |
| 3003A         | 01.74   | Drain Tank South of 3003                            | Tank      | RA      | Weekly                 | 5                                 |
| 3004B         | 01.75   | Inactive LLLW Collection Tank 3004B                 | Tank      | RA      | Semi-Monthly           | 1                                 |
| 3005          | 01A.02A | Low-Intensity Test Reactor                          | Bldg.     | RA/D/D  | Weekly/Daily           | 8/4                               |
| 3013          | 01.76   | Inactive LLLW Collection Tank 3013                  | Tank      | RA      | Semi-Monthly           | 1                                 |
| 3018          | 01A.01D | OGR Stack   | Bldg.     | D/D     |                        |                                   |
| 3023          | 01.23A  | Inactive LLLW Collection/Storage Tank W-1           | Tank      | RA      | Weekly                 | 3                                 |
| 3023          | 01.23B  | Inactive LLLW Collection/Storage Tank W-2           | Tank      | RA      | Weekly                 | 3                                 |

Appendix A  
ORNL ER Surveillance and Maintenance Program Facility Management List

| FAC. NO. | FFA     | FACILITY NAME                              | FAC. TYPE | PROGRAM | Surveillance Frequency | Number of Surveillance Activities |
|----------|---------|--|-----------|---------|------------------------|-----------------------------------|
| 3023     | 01.24A  | Inactive LLLW Collection/Storage Tank W-3  | Tank      | RA      | Weekly                 | 3                                 |
| 3023     | 01.24B  | Inactive LLLW Collection/Storage Tank W-4  | Tank      | RA      | Weekly                 | 3                                 |
| 3023     | 01.25A  | Inactive LLLW Collection/Storage Tank W-13 | Tank      | RA      | Weekly                 | 3                                 |
| 3023     | 01.25B  | Inactive LLLW Collection/Storage Tank W-14 | Tank      | RA      | Weekly                 | 3                                 |
| 3023     | 01.25C  | Inactive LLLW Collection/Storage Tank W-15 | Tank      | RA      | Weekly                 | 3                                 |
| 3023     | 01.28   | Inactive LLLW Collection/Storage Tank W-1A | Tank      | RA      | Weekly                 | 3                                 |
| 3037     | 01.29   | Inactive LLLW Collection/Storage Tank WC-1 | Tank      | RA      | Weekly                 | 6                                 |
| 3042     | 01A.03  | Oak Ridge Research Reactor                 | Bldg.     | RA/D/D  | Weekly                 | 6                                 |
| 3042     | 01A.03  | ORR Experimental Facilities (Basement)     | Bldg.     | D/D     | Weekly/Daily           | 31/5                              |
| 3075     | 01.19   | Decommissioned LITR Ponds                  | Area      | RA      | Weekly                 | 8                                 |
| 3077     | 01A.02B | Air Cooler - Low Intensity Test Reactor    | Bldg.     | D/D     |                        |                                   |
| 3083     | 01A.03  | Neutron Flight Tube Building               | Bldg.     | D/D     |                        |                                   |
| 3085     | 01A.03  | Pumphouse for ORR                          | Bldg.     | RA/D/D  | Weekly/Daily           | 8/4                               |
| 3085A    | 01A.03  | 20,000 Gallon Water Tank                   | Tank      | D/D     |                        |                                   |
| 3085B    | 01A.03  | 20,000 Gallon Water Tank                   | Tank      | D/D     |                        |                                   |
| 3086     | 01A.03  | Cooling Tower for ORR (#1)                 | Bldg.     | RA/D/D  | Weekly/Daily           | 8/1                               |
| 3087     | 01A.16  | ORR Trane Water-to-Air Heat Exchangers     | Bldg.     | D/D     |                        |                                   |
| 3089     | 01A.03  | Cooling Tower for ORR (#2)                 | Bldg.     | D/D     | Weekly                 | 8                                 |
| 3102     | 01A.03  | Heat Exchanger for ORR (#2)                | Bldg.     | D/D     | Daily                  | 2                                 |
| 3103     | 01A.03  | Cooling Tower for ORR (#3)                 | Bldg.     | RA/D/D  | Weekly/Daily           | 7/1                               |
| 3107     | 01A.03  | Neutron Flight Tube Building               | Bldg.     | D/D     |                        |                                   |
| 3109     | 01A.03  | Off-Gas Filters for ORR                    | Bldg.     | D/D     |                        |                                   |
| 3110     | 01.22   | Filter House/Isotope Area Ductwork         | Bldg.     | D/D     | Weekly                 | 1                                 |
| 3116     |         | Nitrogen Cylinder Storage Bldg.            | Bldg.     | OR      | Weekly                 | 8                                 |
| 3126     | 01A.03  | Charcoal Filter (NOG) for ORR              | Bldg.     | RA      | Weekly                 | 4                                 |
| 3139     | 01A.03  | Cell Ventilation Filter for ORR            | Bldg.     | D/D     | Daily                  | 4                                 |
| 3503     | 01.01   | Mercury Contaminated Soil                  | Area      | D/D     | Daily                  | 4                                 |

**Appendix A**  
**ORNL ER Surveillance and Maintenance Program Facility Management List**

| <b>FAC. NO.</b> | <b>FFA</b> | <b>FACILITY NAME</b>                          | <b>FAC. TYPE</b> | <b>PROGRAM</b> | <b>Surveillance Frequency</b> | <b>Number of Surveillance Activities</b> |
|-----------------|------------|---|------------------|----------------|-------------------------------|--|
| 3505            | 01.63      | Transfer Canal and Dissolver Pit              | Bldg.            | RA             |                               |  |
| 3505            | 01A.07     | Metal Recovery Facility                       | Bldg.            | D/D            |                               |  |
| 3506            | 01.62      | Waste Evaporator Facility                     | Bldg.            | D/D            | Weekly                        | 5  |
| 3507            | 01.26A     | Inactive LLLW Collection/Storage Tank W-5     | Tank             | RA             | Weekly                        | 4  |
| 3507            | 01.26B     | Inactive LLLW Collection/Storage Tank W-6     | Tank             | RA             | Weekly                        | 4  |
| 3507            | 01.26C     | Inactive LLLW Collection/Storage Tank W-7     | Tank             | RA             | Weekly                        | 4  |
| 3507            | 01.26D     | Inactive LLLW Collection/Storage Tank W-8     | Tank             | RA             | Weekly                        | 4  |
| 3507            | 01.26E     | Inactive LLLW Collection/Storage Tank W-9     | Tank             | RA             | Weekly                        | 4  |
| 3507            | 01.26F     | Inactive LLLW Collection/Storage Tank W-10    | Tank             | RA             | Weekly                        | 4  |
| 3507            | 01.27      | Inactive LLLW Collection/Storage Tank W-11    | Tank             | RA             | Weekly                        | 4  |
| 3507 Area       | 01.21      | FPDL LLLW Transfer Line to STF                | Area             | RA             | Weekly                        | 5  |
| 3512            | 01.11      | Decommissioned Waste Holding Basin            | Area             | RA             |                               |  |
| 3513            | 01.12      | Waste Holding Basin                           | Pond             | RA             | Weekly                        | 10                                       |
| 3515            | 01A.06     | Fission Product Pilot Plant                   | Bldg.            | D/D            | Weekly                        | 6  |
| 3517            | 01A.05     | FPDL Inactive Cells & Service Tunnel          | Bldg.            | D/D            | Weekly                        | 8  |
| 3524            | 01.13      | Waste Holding Basin                           | Pond             | RA             | Monthly                       | 3  |
| 3535            |            | Filter Enclosure in South Tank Farm           | Bldg.            | RA             | Weekly                        | 7  |
| 3539            | 01.14      | Waste Holding Basin                           | Pond             | RA             | Monthly                       | 3  |
| 3540            | 01.15      | Waste Holding Basin                           | Pond             | RA             | Monthly                       | 3  |
| 3592            | 01.02      | Mercury Contaminated Soil                     | Area             | RA             |                               |  |
| 4003            | 01.47      | SWSA 2 Burial Grounds                         | Area             | RA             | Quarterly                     | 4  |
| 4501            | 01.03      | Mercury Contaminated Soil                     | Area             | RA             |                               |  |
| 4507            | 01A.12     | High Radiation Level Chemical Development Lab | Bldg.            | D/D            | Weekly                        | 8  |
| 4507 South      | 01.78      | Inactive LLLW Collection Tank T-30            | Tank             | RA             | Semi-Monthly                  | 1  |
| 4508            | 01.04      | Mercury Contaminated Soil                     | Area             | RA             |                               |  |

Appendix A  
ORNL ER Surveillance and Maintenance Program Facility Management List

| FAC. NO.  | FFA     | FACILITY NAME   | FAC. TYPE | PROGRAM | Surveillance Frequency | Number of Surveillance Activities |
|-----------|---------|---|-----------|---------|------------------------|-----------------------------------|
| 7002W     | 17.02A  | Waste Oil Storage Tank                                | Tank      | RA      |                        |                                   |
| 7019      | 99.09   | Thorium Handling Facility                             | Bldg.     | RA      | Weekly                 | 9                                 |
| 7078/6556 | 00.11   | Environmental Restoration Program Office Trailer Site | Site      | RA      | Weekly                 | 14                                |
| 7500      | 09A.01B | Homogeneous Reactor Experiment                        | Bldg.     | D/D     | Daily                  | 29                                |
| 7502      | 09.05   | Radioactive Waste Evaporator (Bldg. 7500)             | Bldg.     | D/D     |                        |                                   |
| 7503      | 08A.01D | Molten Salt Reactor Experiment Building               | Bldg.     | D/D     | Daily                  | 59                                |
| 7503A     | 08.20   | LLLW Tank at MSRE                                     | Tank      | D/D     |                        |                                   |
| 7511      | 08A.01F | Filter Pit (for Building 7503)                        | Bldg.     | D/D     |                        |                                   |
| 7512      | 08A.01E | Exhaust Stack (for Building 7503)                     | Bldg.     | D/D     |                        |                                   |
| 7513      | 08A.01B | MSRE Cooling Tower                                    | Bldg.     | D/D     |                        |                                   |
| 7514      | 08A.01A | Supply Air Filter House (for Building 7503)           | Bldg.     | D/D     |                        |                                   |
| 7554      | 09A.01A | Cooling Tower (for Building 7500)                     | Bldg.     | D/D     |                        |                                   |
| 7555      | 08A.01C | Diesel Generator House                                | Bldg.     | D/D     |                        |                                   |
| 7556      | 09.01   | Homogeneous Reactor Experiment (HRE) Pond             | Area      | RA      |                        |                                   |
| 7557      | 09A.01C | Charcoal Absorber Pit (for Building 7500)             | Bldg.     | D/D     |                        |                                   |
| 7558      | 09.06   | Waste Evaporator Loading Pit (for Bldg. 7500)         | Bldg.     | D/D     |                        |                                   |
| 7559      | 09A.01D | Charcoal Absorber Valve Pit (for Bldg. 7500)          | Bldg.     | D/D     |                        |                                   |
| 7560      | 09.02A  | LLLW Collection and Storage Tank 7560                 | Tank      | RA      | Monthly                | 6                                 |
| 7561      | 09A.01F | Waste Valve Pit 7561 (Decon Pit)                      | Bldg.     | RA      |                        |                                   |
| 7562      | 09.02B  | LLLW Collection and Storage Tank 7562                 | Tank      | RA      | Monthly                | 6                                 |
| 7563      |         | Circulator Pump Pit (for Bldg. 7500)                  | Bldg.     | D/D     |                        |                                   |
| 7569C     | 19.07   | Soil Injection of Radioactive Gas                     | Area      | RA      |                        |                                   |
| 7613      | 18.05   | Waste Retention Basin                                 | Area      | RA      |                        |                                   |
| 7615      | 18.02   | Paint Solvents Storage Tank                           | Area      | RA      |                        |                                   |
| 7658      | 12.01   | Closed Contractors' Landfill                          | Area      | RA      |                        |                                   |
| 7659B     | 19.06   | Reactive Chemicals Disposal Area                      | Area      | RA      | Weekly                 | 2                                 |

Appendix A  
ORNL ER Surveillance and Maintenance Program Facility Management List

| FAC. NO. | FFA    | FACILITY NAME  | FAC. TYPE | PROGRAM | Surveillance Frequency | Number of Surveillance Activities |
|----------|--------|--|-----------|---------|------------------------|-----------------------------------|
| 7711     | 16.02  | Process Waste Basin  | Area      | RA      |                        |                                   |
| 7759     | 16.01  | Cesium-137 "Forest" Research Area                          | Area      | RA      | Weekly                 | 6                                 |
| 7800     | 04.03  | SWSA 4 Burial Grounds                                      | Area      | RA      | Weekly                 | 7                                 |
| 7802     | 05.07  | SWSA 5 South (Trenches, Undefined Area, Dump, Auger Holes) | Area      | RA      | Weekly                 | 23                                |
| 7802A    |        | Seep Area C Collection and Treatment Unit (WAG 5)          | Area      | RA      | Weekly                 | 22                                |
| 7802B    |        | Seep Area D Collection and Treatment Unit (WAG 2)          | Area      | RA      |                        |                                   |
| 7802C    |        | Deep Monitoring Well #1                                    | Well      | RA      | Monthly                | 4                                 |
| 7802D    |        | Deep Monitoring Well #2                                    | Well      | RA      | Monthly                | 4                                 |
| 7805     | 07.05  | Chemical Waste Pit #1                                      | Area      | RA      | Monthly                | 7                                 |
| 7806     | 07.06A | Chemical Waste Pit #2                                      | Area      | RA      | Monthly                | 7                                 |
| 7807     | 07.06B | Chemical Waste Pit #3                                      | Area      | RA      | Monthly                | 7                                 |
| 7808     | 07.06C | Chemical Waste Pit #4                                      | Area      | RA      | Monthly                | 7                                 |
| 7809     | 07.07  | Chemical Waste Trench #5                                   | Area      | RA      | Monthly                | 7                                 |
| 7810     | 07.08  | Chemical Waste Trench #6                                   | Area      | RA      | Monthly                | 7                                 |
| 7811     | 04.02  | Pilot Pits 1, 2 (7811)                                     | Area      | RA      | Monthly                | 7                                 |
| 7818     | 07.09  | Chemical Waste Trench #7                                   | Area      | RA      | Quarterly              | 5                                 |
| 7819     | 07.01  | Interim Decontamination Building                           | Area      | RA      | Monthly                | 7                                 |
| 7821     | 06.02  | Emergency Waste Basin                                      | Bldg.     | OR      | Weekly                 | 10                                |
| 7822     | 06.01  | SWSA #6 RCRA Caps  | Pond      | RA      | Quarterly              | 3                                 |
| 7822-A   | 06.03  | SWSA 6 - Explosive Detonation Trench                       | Area      | RA      | Monthly                | 18                                |
| 7822F    |        | Tumulus I  | Area      | RA      |                        |                                   |
| 7822G    |        | Tumulus II   | Area      | RA      | Monthly                | 1                                 |
| 7835     | 05.06  | Process Waste Sludge Basin                                 | Area      | RA      | Monthly                | 1                                 |
| 7841     | 07.12  | Equipment Storage Area                                     | Area      | RA      | Weekly                 | 14                                |

Appendix A  
ORNL ER Surveillance and Maintenance Program Facility Management List

| FAC. NO. | FFA    | FACILITY NAME   | FAC. TYPE | PROGRAM | Surveillance Frequency | Number of Surveillance Activities |
|----------|--------|---|-----------|---------|------------------------|-----------------------------------|
| 7852     | 05.03  | Old Hydrofracture Facility Site Surface Facilities    | Bldg.     | D/D     | Quarterly              | 23                                |
| 7852A    | 05.02  | OHF Pond/Pits   | Pond      | RA      | Weekly                 | 12                                |
| HF-S1    | 10.01  | Hydrofracture Experimental Site #1                    | Area      | RA      | Annually               | 10                                |
| HF-S1A   | 07.03  | Hydrofracture Experimental Site #1 Soil Contamination | Area      | RA      |                        |                                   |
| HF-S2    | 10.02  | Hydrofracture Experimental Site #2                    | Area      | RA      | Biannually             | 6                                 |
| HF-S2A   | 08.02  | Hydrofracture Experimental Site #2 Soil Contamination | Area      | RA      |                        |                                   |
| HF-S3    |        | Hydrofracture Experimental Site #3                    | Area      | RA      |                        |                                   |
| HF-S4    |        | Hydrofracture Experimental Site #4                    | Area      | RA      |                        |                                   |
| WAG 2    |        | Waste Area Grouping 2                                 | Area      | RA      | Monthly                | 8                                 |
| XDO751   | 11.01  | White Wing Scrap Yard                                 | Area      | RA      | Monthly                | 18                                |
| XF1226   | 20.01  | Municipal Sewage Sludge Application Site              | Area      | RA      |                        |                                   |
|          | 16.03  | Buried Scrap Metal Area                               | Area      | RA      | Weekly                 | 9                                 |
|          | 00.33  | FPPP Contaminated Soil                                | Area      | RA      |                        |                                   |
|          | 00.44  | Soil at HRE Decontamination Pad/Shed                  | Area      | RA      | Weekly                 | 9                                 |
|          | 00.50  | WAG 1 Groundwater                                     | Area      | RA      |                        |                                   |
|          | 00.51  | WOC Floodplain Soils & Sediments                      | Area      | RA      |                        |                                   |
|          | 00.52  | WAG 10 Groundwater                                    | Area      | RA      |                        |                                   |
|          | 00.53  | Groundwater   | Area      | RA      |                        |                                   |
|          | 00.54  | SWSA 6 TVA Easement                                   | Area      | RA      | After Storms           | 1                                 |
|          | 01.05A | LLLW Lines & Leak Sites - South of Building 3020      | Area      | RA      |                        |                                   |
|          | 01.05B | LLLW Lines & Leak Sites - East of Building 3020       | Area      | RA      |                        |                                   |
|          | 01.05C | LLLW Lines & Leak Sites - West of Building 3082       | Area      | RA      |                        |                                   |

**Appendix A**  
**ORNL ER Surveillance and Maintenance Program Facility Management List**

| <b>FAC. NO.</b> | <b>FFA</b> | <b>FACILITY NAME</b>                                 | <b>FAC. TYPE</b> | <b>PROGRAM</b> | <b>Surveillance Frequency</b> | <b>Number of Surveillance Activities</b> |
|-----------------|------------|--|------------------|----------------|-------------------------------|--|
|                 | 01.05D     | LLLW Lines & Leak Sites - North of Building 3019     | Area             | RA             |                               |  |
|                 | 01.05E     | LLLW Lines & Leak Sites - SW Corner of Building 3019 | Area             | RA             |                               |  |
|                 | 01.05F     | LLLW Lines & Leak Sites - Between W-5 & WC-19        | Area             | RA             |                               |  |
|                 | 01.05G     | LLLW Lines & Leak Sites - Underneath Building 3047   | Area             | RA             |                               |  |
|                 | 01.05H     | LLLW Lines & Leak Sites, General Isotopes Area       | Area             | RA             |                               |  |
|                 | 01.05I     | LLLW Lines & Leak Sites - Building 3092 Area         | Area             | RA             |                               |  |
|                 | 01.05J     | LLLW Lines & Leak Sites - Underneath Building 3026   | Area             | RA             |                               |  |
|                 | 01.05K     | LLLW Lines & Leak Sites - Between WC-1 & W-5         | Area             | RA             |                               |  |
|                 | 01.05L     | LLLW Lines & Leak Sites - ORR Water Line             | Area             | RA             |                               |  |
|                 | 01.05M     | LLLW Lines & Leak Sites - Building 3028              | Area             | RA             |                               |  |
|                 | 01.05N     | LLLW Lines & Leak Sites - East of Building 2531      | Area             | RA             |                               |  |
|                 | 01.05O     | LLLW Lines & Leak Sites - Underneath Building 3515   | Area             | RA             |                               |  |
|                 | 01.05P     | LLLW Lines & Leak Sites - Building 3525 to a Sump    | Area             | RA             |                               |  |
|                 | 01.05Q     | LLLW Lines & Leak Sites - Underneath Building 3550   | Area             | RA             |                               |  |
|                 | 01.05R     | LLLW Lines & Leak Sites - Sewer Near Building 3500   | Area             | RA             |                               |  |

Appendix A  
ORNL ER Surveillance and Maintenance Program Facility Management List

| FAC. NO. | FFA | FACILITY NAME  | FAC. TYPE | PROGRAM | Surveillance Frequency | Number of Surveillance Activities |
|----------|-----|--|-----------|---------|------------------------|-----------------------------------|
| 01.05S   |     | LLLW Lines & Leak Sites - Abandoned Line Central Ave Area            | Area      | RA      |                        |                                   |
| 01.05T   |     | LLLW Lines & Leak Sites - Building 4508, North                       | Area      | RA      |                        |                                   |
| 01.05U   |     | LLLW Lines & Leak Sites - Building 3518, West                        | Area      | RA      |                        |                                   |
| 01.05V   |     | LLLW Lines & Leak Sites - Northwest of SWSA-1                        | Area      | RA      |                        |                                   |
| 01.05W   |     | LLLW Lines & Leak Sites - Building 3503, Ground Contamination        | Area      | RA      |                        |                                   |
| 01.06    |     | Contaminated Surfaces & Soil from 1959 Explosion, Building 3019 Cell | Area      | RA      |                        |                                   |
| 01.07    |     | Contamination at Base of 3019 Stack                                  | Area      | RA      |                        |                                   |
| 01.09    |     | Oak Ridge Research Reactor Decay Tank Rupture Site                   | Area      | RA      |                        |                                   |
| 01.20    |     | Filter Pit (Fission Product Development Lab)                         | Bldg.     | RA      |                        |                                   |
| 01.30A   |     | Inactive LLLW Collection/Storage Tank WC-15                          | Tank      | RA      |                        |                                   |
| 01.30B   |     | Inactive LLLW Collection/Storage Tank WC-17                          | Tank      | RA      |                        |                                   |
| 01.31A   |     | Inactive LLLW Collection/Storage Tank TH-1                           | Tank      | RA      |                        |                                   |
| 01.31B   |     | Inactive LLLW Collection/Storage Tank TH-2                           | Tank      | RA      |                        |                                   |
| 01.31C   |     | Inactive LLLW Collection/Storage Tank TH-3                           | Tank      | RA      |                        |                                   |
| 01.32    |     | Inactive LLLW Collection/Storage Tank TH-4                           | Tank      | RA      | Weekly                 | 5                                 |
| 01.56A   |     | Inactive LLLW Collection Tank W-19                                   | Tank      | RA      | Weekly                 | 5                                 |
| 01.56B   |     | Inactive LLLW Collection Tank W-20                                   | Tank      | RA      | Weekly                 | 5                                 |
| 01.58    |     | Former Waste Pile Area (South of NRWTP)                              | Area      | RA      |                        |                                   |
| 01.71    |     | Inactive LLLW Collection Tank H-209                                  | Tank      | RA      | Weekly                 | 5                                 |

**Appendix A**  
**ORNL ER Surveillance and Maintenance Program Facility Management List**

| <b>FAC. NO.</b> | <b>FFA</b> | <b>FACILITY NAME</b>                                     | <b>FAC. TYPE</b> | <b>PROGRAM</b> | <b>Surveillance Frequency</b> | <b>Number of Surveillance Activities</b> |
|-----------------|------------|--|------------------|----------------|-------------------------------|--|
|                 | 01.81      | Corehole 8   | Area             | RA             | Monthly                       | 3  |
|                 | 04.01      | LLW Line North of Lagoon Road                            | Area             | RA             |                               |  |
|                 | 05.01A     | LLLW Lines and Leak Sites - OHF, Release of Grout        | Area             | RA             |                               |  |
|                 | 05.01B     | LLLW Lines and Leak Sites - OHF Contaminated Soil        | Area             | RA             |                               |  |
|                 | 05.05A     | Inactive OHF Waste Storage Tank T1                       | Tank             | RA             | Weekly                        | 2  |
|                 | 05.05B     | Inactive OHF Waste Storage Tank T2                       | Tank             | RA             | Weekly                        | 2  |
|                 | 05.05C     | Inactive OHF Waste Storage Tank T3                       | Tank             | RA             | Weekly                        | 2  |
|                 | 05.05D     | Inactive OHF Waste Storage Tank T4                       | Tank             | RA             | Weekly                        | 2  |
|                 | 05.05E     | Inactive OHF Waste Storage Tank T9                       | Tank             | RA             | Weekly                        | 1  |
|                 | 05.05F     | LLLW Line from Valve Box to OHF                          | Area             | RA             |                               |  |
|                 | 05.07A     | PWSB Pipeline from PWSB to Process Waste Treatment Plant | Area             | RA             |                               |  |
|                 | 05.07B     | Drainage 1, 2 in WAG 5                                   | Area             | RA             |                               |  |
|                 | 05.07C     | Drainage 3 next to WAG 5                                 | Area             | RA             | Weekly                        | 4  |
|                 | 05.14      | Old Landfill (NE Edge of SWSA 5 South)                   | Area             | RA             |                               |  |
|                 | 07.02      | Homogeneous Reactor Experiment (HRE) Fuel Wells          | Area             | RA             | Monthly                       | 8  |
|                 | 07.04A     | LLLW Leak Site at Gauging Station NW of Bldg. 7852       | Area             | RA             | Quarterly                     | 5  |
|                 | 07.04B     | Leak Site 1 Pit 6 SE                                     | Area             | RA             | Quarterly                     | 5  |
|                 | 07.04C     | Leak Site 2 End of Trench 7 Access Road                  | Area             | RA             | Quarterly                     | 5  |
|                 | 07.04D     | Leak in Transfer Line from Decon Facility and Pit 1      | Area             | RA             | Quarterly                     | 5  |
|                 | 07.04E     | Leak in Line Between Pit 3 and Trench 6                  | Area             | RA             |                               |  |
|                 | 07.04F     | Leak in Valve Pit North of Trench 7                      | Area             | RA             |                               |  |
|                 | 07.11      | Building 7819 Septic Tank                                | Area             | OR             |                               |  |

Appendix A  
ORNL ER Surveillance and Maintenance Program Facility Management List

| FAC. NO. | FFA     | FACILITY NAME   | FAC. TYPE | PROGRAM | Surveillance Frequency | Number of Surveillance Activities |
|----------|---------|---|-----------|---------|------------------------|-----------------------------------|
|          | 08.03A  | LLLW Lines & Leak Sites - Lagoon Rd & Melton Valley Dr.         | Area      | RA      |                        |                                   |
|          | 08.03B  | LLLW Lines & Leak Sites - Melton Valley Drive & SWSA 5 Access   | Area      | RA      |                        |                                   |
|          | 08.03C  | LLLW Lines & Leak Sites - 7500 Area                             | Area      | RA      |                        |                                   |
|          | 08.03D  | LLLW Lines & Leak Sites - West of Melton Valley Pumping Station | Area      | RA      |                        |                                   |
|          | 08.03E  | LLLW Lines & Leak Sites - Bldg. 7920 & MV Pumping Station Area  | Area      | RA      |                        |                                   |
|          | 08.03F  | LLLW Lines & Leak Sites - 7920 Ditch Line                       | Area      | RA      |                        |                                   |
|          | 08.03G  | LLLW Lines & Leak Sites - Melton Valley Transfer Line           | Area      | RA      |                        |                                   |
|          | 08.13   | Contractor Spoils Area - Melton Valley, W-SW of 7900            | Area      | RA      |                        |                                   |
|          | 08.14   | HFIR Cooling Tower Surface Impoundment                          | Area      | RA      |                        |                                   |
|          | 08.15   | Aircraft Reactor Experiment Surface Impoundment                 | Area      | RA      |                        |                                   |
|          | 08.16   | MSRE Storage Well   | Area      | RA      |                        |                                   |
|          | 08.17   | Abandoned Sanitary Waste Pipeline & Septic Tank N of 7917       | Area      | RA      |                        |                                   |
|          | 08A.01G | ARE Contaminated Tool Storage                                   | Area      | RA      |                        |                                   |
|          | 09.04   | Trash Area East of HRE Parking Lot                              | Area      | RA      |                        |                                   |
|          | 09A.01E | HRE Decontamination Pad   | Area      | RA      |                        |                                   |
|          | 10.03   | Old Hydrofracture Injection Well                                | Well      | RA      |                        |                                   |
|          | 10.04   | New Hydrofracture Injection Well                                | Well      | RA      |                        |                                   |
|          | 10.04A  | Grout Sheets  | Area      | RA      |                        |                                   |
|          | 16.03   | Buried Scrap Metal Area   | Area      | RA      |                        |                                   |
|          | 99.01   | Abandoned Burn Pit  | Area      | RA      | Weekly                 | 9                                 |
|          |         |   |           |         | Weekly                 | 2                                 |

Appendix A  
ORNL ER Surveillance and Maintenance Program Facility Management List

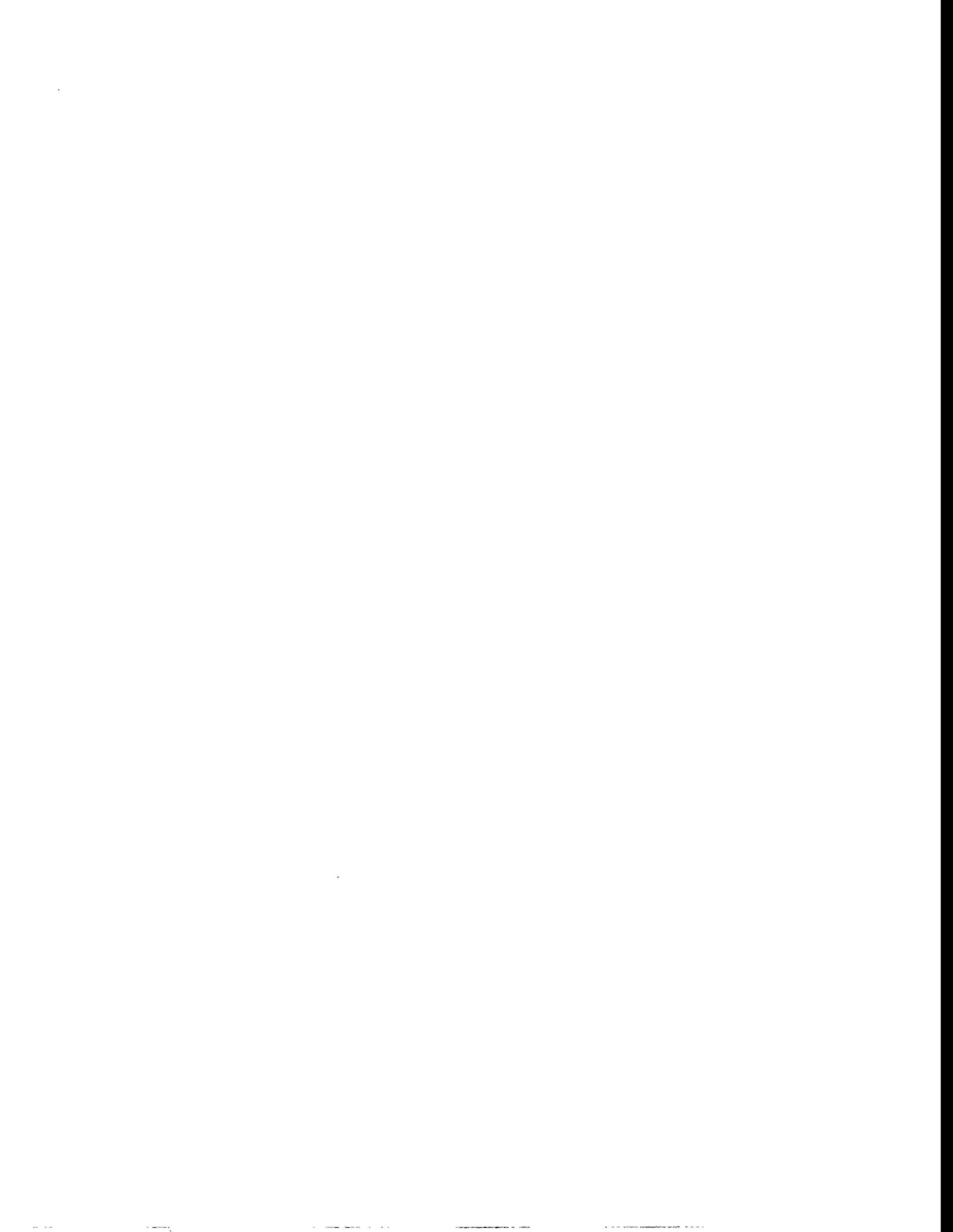
| FAC. NO. | FFA   | FACILITY NAME   | FAC. TYPE | PROGRAM | Surveillance Frequency | Number of Surveillance Activities |
|----------|-------|---|-----------|---------|------------------------|-----------------------------------|
|          | 99.03 | Cs-137, Co-60 Contaminated Forest Area (Chestnut Ridge) | Area      | RA      | Weekly                 | 5                                 |
|          | 99.04 | Cs-137 Contaminated Forest Floor                        | Area      | RA      | Weekly                 | 6                                 |
|          | 99.05 | Cs-137 Contaminated Forest Understory                   | Area      | RA      | Weekly                 | 6                                 |
|          | 99.06 | Cs-137 Contaminated Meadow                              | Area      | RA      |                        |                                   |
|          | 99.10 | Thorium Storage Silos                                   | Area      | RA      | Annually               | 1                                 |
|          | ER.01 | Ca-45 Tagged Trees                                      | Area      | RA      |                        |                                   |
|          | ER.02 | Ca-45 Tagged Soil and Vegetation                        | Area      | RA      |                        |                                   |
|          | ER.03 | Na-22 Contaminated Soil                                 | Area      | RA      |                        |                                   |
|          | ER.04 | Cs-137 Bagged Leaves Study                              | Area      | RA      |                        |                                   |
|          | ER.05 | Hg-197 Tagged Stream                                    | Area      | RA      |                        |                                   |
|          | ER.06 | Cs-134 Tagged Tree                                      | Area      | RA      |                        |                                   |
|          | ER.07 | Ca-45 Tagged Forest                                     | Area      | RA      |                        |                                   |
|          | ER.08 | Cs-137, Fe-59 Contaminated Animal Pens (NcNew Hollow)   | Area      | RA      |                        |                                   |
|          | ER.09 | Hg-203 Tagged Stream                                    | Area      | RA      |                        |                                   |
|          | ER.10 | H-3 Contaminated Trees                                  | Area      | RA      |                        |                                   |
|          | ER.12 | Cs-134 Contaminated Oak Trees                           | Area      | RA      |                        |                                   |
|          | ER.13 | Zn-65 Tagged Red Oak Seedlings                          | Area      | RA      |                        |                                   |
|          | ER.14 | Cs-134 Contaminated Pine and Oak Seedlings              | Area      | RA      |                        |                                   |
|          | ER.15 | Rb-86 Contaminated Plants                               | Area      | RA      |                        |                                   |
|          | ER.16 | Cs-134 Contaminated Soybean and Sorghum                 | Area      | RA      |                        |                                   |
|          | ER.17 | Cs-134 Contaminated Grasses                             | Area      | RA      |                        |                                   |
|          | ER.18 | Cs-134 Contaminated Lichens and Mosses                  | Area      | RA      |                        |                                   |
|          | ER.19 | Tc-95m Contaminated Soil and Plants                     | Area      | RA      |                        |                                   |
|          | ER.20 | Tc-95 Uptake Studies                                    | Area      | RA      |                        |                                   |
|          | ER.21 | Tc-95m and I-131 Contaminated Pasture                   | Area      | RA      |                        |                                   |

Appendix A  
ORNL ER Surveillance and Maintenance Program Facility Management List

| FAC. NO. | FFA | FACILITY NAME   | FAC. TYPE | PROGRAM | Surveillance Frequency | Number of Surveillance Activities |
|----------|-----|---|-----------|---------|------------------------|-----------------------------------|
| ER.22    |     | Cr-51 Contaminated Grass Plots  | Area      | RA      |                        |                                   |
| ER.23    |     | Tc-99 & Np-237 Contaminated Soil Lysimeters-Plutonium Floodplain              | Area      | RA      |                        |                                   |
| ER.27    |     | Cs-134 Contaminated Persimmon Tree  | Area      | RA      |                        |                                   |
| ER.28    |     | Co-60 and Mn-54 Animal Study  | Area      | RA      |                        |                                   |
| ER.29    |     | C-14 Maintenance-Respiration Study  | Area      | RA      |                        |                                   |
| ER.30    |     | C-14 Sucrose Inoculation of Oak and Pine Trees                                | Area      | RA      |                        |                                   |
| ER.31    |     | C-14 Allocation in White Oak Trees  | Area      | RA      |                        |                                   |
| ER.32    |     | C-14 Allocation in White Pine Trees   | Area      | RA      |                        |                                   |
| ER.33    |     | C-14 Efflux in Yellow Poplar Stand  | Area      | RA      |                        |                                   |
| ER.34    |     | C-14 Allocation in Woody Biomass Plantation Species                           | Area      | RA      |                        |                                   |
|          |     | Decontamination Area  | Area      | RA      | Weekly                 | 15                                |
|          |     | Inactive Wells (Bethel Valley)  | Well      | RA      | Every 3 Years          | 9                                 |
|          |     | Inactive Wells (Melton Valley)  | Well      | RA      | Every 3 Years          | 9                                 |
|          |     | Monitoring Stations 1 & 3   | Area      | RA      | Monthly                | 2                                 |
|          |     | ORNL Area-wide Groundwater Program (Active Wells)                             | Area      | RA      | Annually               | 9                                 |
|          |     | ORNL WAG 10 - Remedial Investigation OU#3 - Hydrofracture Wells and Boreholes | Area      | RA      | After Storms           | 4                                 |
|          |     | Post 24   | Bldg.     | RA      | Monthly                | 12                                |
|          |     | Seal Tank Outside 3005  | Tank      |         |                        |                                   |
|          |     | Steam Cleaning Area   | Area      | RA      | Weekly                 | 12                                |
|          |     | SWSA 4 Deer Fences  | Area      | RA      | Weekly                 | 3                                 |
|          |     | SWSA 5 Deer Fences  | Area      | RA      | Weekly                 | 3                                 |
|          |     | WAG 4 Sr-90 Seeps   | Area      | RA      | Weekly                 | 7                                 |

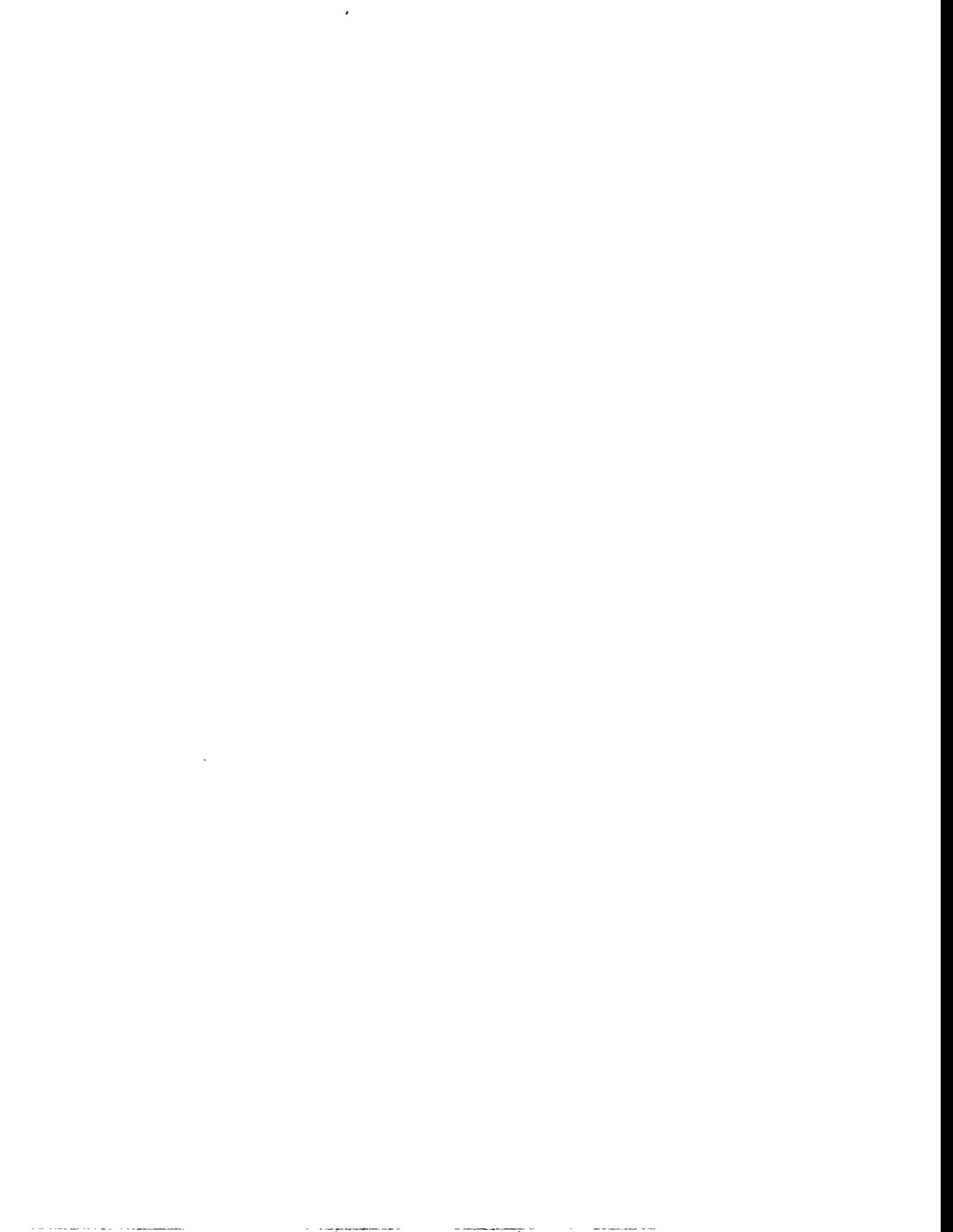
**Appendix A**  
**ORNL ER Surveillance and Maintenance Program Facility Management List**

| <b>FAC. NO.</b> | <b>FFA</b> | <b>FACILITY NAME</b>  | <b>FAC. TYPE</b> | <b>PROGRAM</b> | <b>Surveillance Frequency</b> | <b>Number of Surveillance Activities</b> |
|-----------------|------------|-----------------------|------------------|----------------|-------------------------------|--|
|                 |            | Waste Area Grouping 8 | Area             | RA             | Quarterly (After Storms)      | 3  |
|                 |            | Waste Area Grouping 9 | Area             | RA             | Quarterly (After Storms)      | 8  |



**Appendix B**

**INACTIVE TANK LEVEL TRENDING**



# 1. INTRODUCTION

Oak Ridge National Laboratory (ORNL) has a total of 54 inactive liquid low-level waste (LLLW) tanks. In the past, these tanks were used to contain radioactive liquid wastes from various research programs, decontamination operations, and reactor operations. The tanks have since been removed from service for various reasons; the majority were retired because of their age. Some were removed due to integrity compromises and others because they did not meet the current standards established by the Federal Facilities Agreement. Many of the tanks contain residual radioactive liquids or sludge. Plans are to remediate all tanks; however, until remediation, each tank requires monitoring to ensure the safety and inventory containment of these tanks. The ORNL Environmental Restoration (ER) Program, as Operations Manager for the inactive LLLW tanks system, manages all programs associated with the inactive LLLW tanks. Personnel within the line organization of the Waste Management and Remedial Action Division (WMRAD) at ORNL have been commissioned by the ORNL ER Program to operate as Facility Managers for the inactive LLLW tanks.

Table B.1 is a listing of the inactive tanks with their surveillance activities, frequencies, and a summary of pertinent information concerning the inactive LLLW tanks such as location, capacities, material of construction, and level measurement instrumentation of the tank contents. Fig. B-1 shows the location of the 45 tanks in the Main Plant Area, and Fig. B-2 shows the location of the nine tanks in Melton Valley.

## 2. TANK LEVEL TREND ANALYSIS

The following sections contain tank data, information regarding level trends, and factors affecting them.

### 2.1 GUNITE STORAGE TANK W-5; SOUTH TANK FARM SITE, 3507, NORTH ROW

Tank W-5 level has remained unchanged throughout fiscal year (FY) 1995. The tank was only about 16% full at the end of FY 1995. The level instrument is a Robertshaw Inven-Tel-185 conductivity probe. There were problems with the instrument in both May and September 1995. The instrument was repaired in May, and there was no real effect on the level.

### 2.2 GUNITE STORAGE TANK W-6; SOUTH TANK FARM SITE, 3507, SOUTH ROW

Tank W-6 level has been slowly increasing during FY 1995; this increase is attributed to inleakage, probably due to rainfall. At the end of FY 1995, the tank was about 83% full. The level instrument is a Robertshaw Inven-Tel-185 conductivity probe. There were no instrument problems reported during the year. Approximately 50,000 gal of liquid transferred to LLLW and 50,000 gal transferred to W-8.



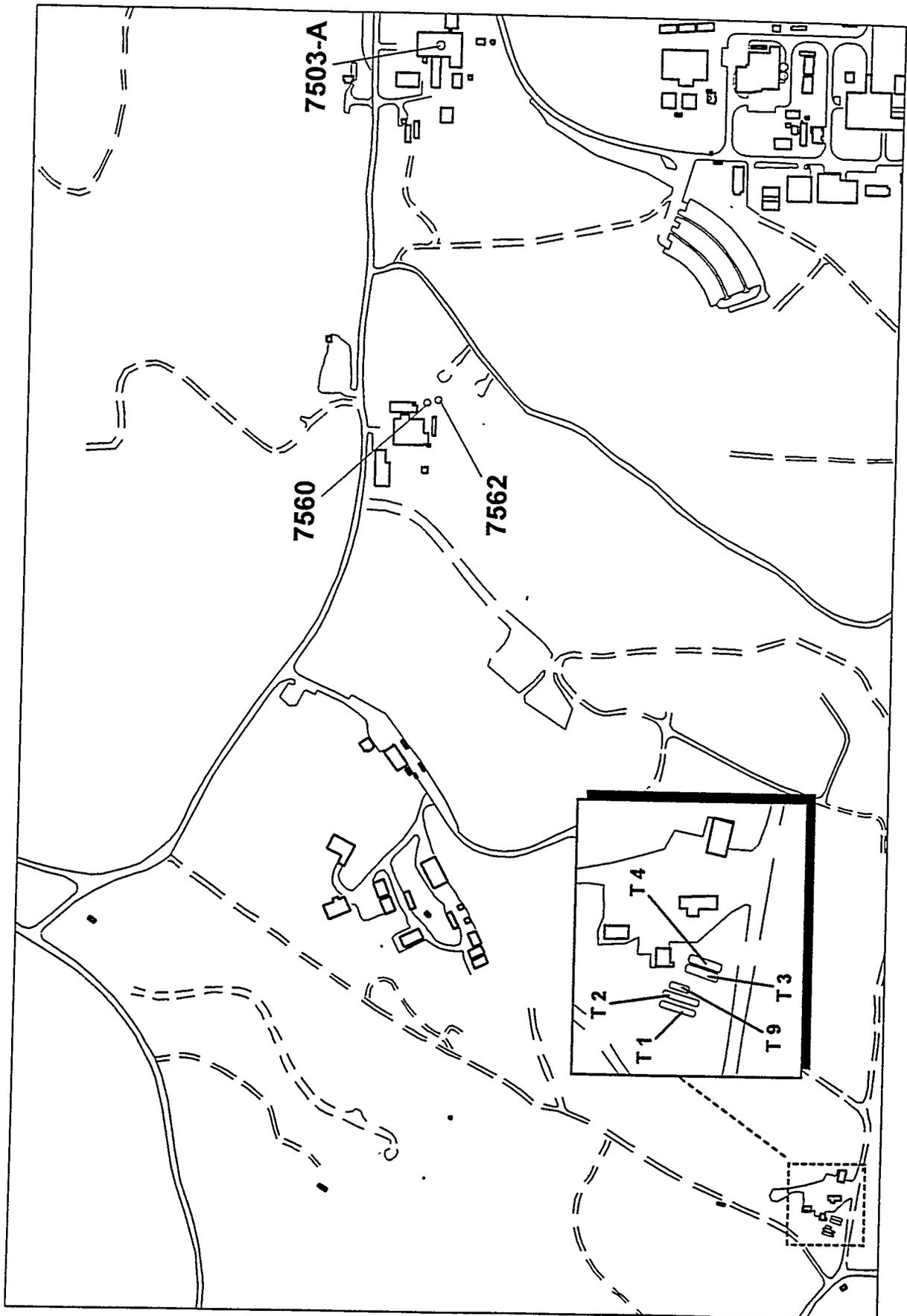


Fig. B-2. ORNL S&M program inactive tanks located in Melton Valley.

### **2.3 GUNITE STORAGE TANK W-7; SOUTH TANK FARM SITE, 3507, SOUTH ROW**

Tank W-7 level has decreased slightly over the course of FY 1995; this decrease can probably be attributed to evaporation of some of the tank's contents during this relatively dry year. At the end of FY 1995, it was only about 2% full. The level instrument is a Robertshaw Inven-Tel-185 conductivity probe. There were no instrument problems reported this year.

### **2.4 GUNITE STORAGE TANK W-8; SOUTH TANK FARM SITE, 3507, SOUTH ROW**

Tank W-8 level increased slowly over FY 1995; this increase is attributed to inleakage, probably due to rainfall. About 50,000 gal of liquid from Tank W-8 was pumped into the active LLLW evaporating system over the last two weeks of September 1995. At the end of FY 1995, the tank was left at about 16% full. The level instrument is a Robertshaw Inven-Tel-185 conductivity probe. There was an instrument failure in May 1995, but the instrument was rapidly repaired and there was no real effect on the level of the tank. The Instrumentation and Controls (I&C) Division calibrated the instrument in June 1995.

### **2.5 GUNITE STORAGE TANK W-9; SOUTH TANK FARM SITE, 3507, NORTH ROW**

Tank W-9 level increased very slowly over FY 1995; this increase is attributed to inleakage, probably due to occasional rainfall events. At the end of FY 1995, the tank was about 27% full. The level instrument is a Robertshaw Inven-Tel-185 conductivity probe. The instrument registered failures May 19 through 22, 1995, and the instrument was repaired by the I&C Division; there was no real effect on the level of the tank. The instrument was calibrated in June 1995.

### **2.6 GUNITE STORAGE TANK W-10; SOUTH TANK FARM SITE, 3507, SOUTH ROW**

Tank W-10 level increased very slowly in FY 1995; this increase is attributed to inleakage, probably due to rainfall. At the end of FY 1995 the tank was about 62% full. The level instrument is a Robertshaw Inven-Tel-185 conductivity probe. The instrument failed twice in July 1995. The instrument was repaired and had no real effect on the level of the tank.

### **2.7 TANK W-11; SOUTH EAST OF SOUTH TANK FARM**

At the end of FY 1995, Tank W-11 is approximately 26% full of liquid, with a small amount of sludge. The inleakage appears to be from rainwater. Approximately 1,590 gal were removed from the tank during FY 1995. The tank has a staff gauge for level measurement. There was a slight error in the measurement of the level during May when the view of the staff gauge was restricted by the gravel at the base of a tent near the tank.

## **2.8 OLD HYDROFRACTURE TANK T-1; OLD HYDROFRACTURE FACILITY, 7582, MELTON VALLEY**

At the end of FY 1995, Tank T-1 is about 58% full of liquid and sludge. The tank structure is sound. Therefore, there is no rain water infiltration, nor are there concerns for loss of tank contents. Tank T-1 has a Foxboro Model 13A DP transmitter for level measurement. There were frequent power outages that resulted in no level information. There also was a problem with the instrument for a few days in mid-August 1995. None of the incidents had any real effect on the tank level.

## **2.9 OLD HYDROFRACTURE TANK T-2; OLD HYDROFRACTURE FACILITY, 7582, MELTON VALLEY**

At the end of FY 1995, Tank T-2 is about 71% full of liquid and sludge. The tank structure is sound. Therefore, there is no rain water infiltration, nor are there concerns for loss of tank contents. Tank T-2 has a Foxboro Model 13A DP transmitter for level measurement. There were frequent power outages that resulted in no level information. There was a problem with the instrument for a few days in late October 1994; the instrument was repaired. None of the incidents had any real effect on the tank level.

## **2.10 OLD HYDROFRACTURE TANK T-3; OLD HYDROFRACTURE FACILITY, 7582, MELTON VALLEY**

At the end of FY 1995, Tank T-3 is about 11% full of liquid and sludge. The tank structure is sound. Therefore, there is no rain water infiltration, nor are there concerns for loss of tank contents. Tank T-3 has a Foxboro Model 13A DP transmitter for level measurement. There were frequent power outages that resulted in no level information. Level instruments at T-3 at the Old Hydrofracture Facility (OHF) were repaired in March, May, and August 1995. None of the incidents had any real effect on the tank level.

## **2.11 OLD HYDROFRACTURE TANK T-4; OLD HYDROFRACTURE FACILITY, 7582, MELTON VALLEY**

At the end of FY 1995, Tank T-4 is about 61% full of liquid and sludge. The tank structure is sound. Therefore, there is no rain water infiltration, nor are there concerns for loss of tank contents. Tank T-4 has a Foxboro Model 13A DP transmitter for level measurement. There were power outages throughout the year, which had no real effect on the tank level.

## **2.12 OLD HYDROFRACTURE TANK T-9; OLD HYDROFRACTURE FACILITY, 7582, MELTON VALLEY**

At the end of FY 1995, Tank T-9 is about 38% full of liquid and sludge. The tank structure is sound. Therefore, there is no rain water infiltration, nor are there

concerns for loss of tank contents. The small decrease in tank contents was probably due to evaporation in this dry year. Tank T-9 has a Foxboro Model 13A DP transmitter for level measurement. Level instruments at Tank T-9 OHF were repaired in May 1995. The only other problem was power outages throughout the year. None of the incidents had any real effect on the tank level.

### **2.13 THORIUM TANK TH-1; SOUTH OF BUILDING 3503**

Tank TH-1 is empty. A conductivity probe is inserted through an access pipe to check for liquid level. No permanent level instrumentation is mounted to the tank.

### **2.14 THORIUM TANK TH-2; SOUTH OF BUILDING 3503**

Tank TH-2 is empty. A conductivity probe is inserted through an access pipe to check for liquid level. No permanent level instrumentation is mounted to the tank.

### **2.15 THORIUM TANK TH-3; SOUTH OF BUILDING 3503**

Tank TH-3 is empty. A conductivity probe is inserted through an access pipe to check for liquid level. No permanent level instrumentation is mounted to the tank.

### **2.16 THORIUM TANK TH-4; SOUTH OF BUILDING 3500**

Tank TH-4 was jetted in February 1995. Approximately 11,000 gal of liquid were removed and sent to the active LLLW system. At the end of FY 1995, the tank was about 28% full. The level instrument is a Robertshaw Inven-Tel-185 model conductivity probe. The instrumentation required frequent recalibration and repair activities throughout the year. None of these incidents had any real effect on the tank level.

### **2.17 TANK W-1; NORTH TANK FARM, NORTH OF CENTRAL AVENUE, SITE 3023**

At the end of FY 1995, Tank W-1 is about 60% full. The level increase is mostly due to rain water accumulation. The level instrument is a Robertshaw Inven-Tel-185 model conductivity probe. There was a brief problem with instrument failure in May 1995, and there was a recalibration activity in June 1995. There was no real effect on the tank level during repairs and calibration activities.

### **2.18 TANK W-2; NORTH TANK FARM, NORTH OF CENTRAL AVENUE, SITE 3023**

At the end of FY 1995, Tank W-2 is approximately 41% full. The level instrument is a Robertshaw Inven-Tel-185 model conductivity probe. There was a power outage, and the instrument was calibrated by the I&C Division in June 1995.

The instrument required repair in August 1995. None of these incidents had any real effect on the tank level.

#### **2.19 TANK W-3; NORTH TANK FARM, NORTH OF CENTRAL AVENUE, SITE 3023**

Tank W-3 is known to collect surface water. At the end of FY 1995, the tank is approximately 37% full. Tank W-3 has a staff gauge to measure the level in the tank. The staff gage and ball float was removed from Tank W-3 prior to sampling and camera access in May 1995. Approximately 18,500 gal of liquid were jetted from the tank to the active LLLW system in June 1995. These activities were performed prior to commencing tank sampling for the Gunite and Associated Tanks (GAAT) Treatability Studies Project in July 1995. No instrument-related problems were reported. However, during the GAAT activities, the level was determined by taking an ullage measurement once a week.

#### **2.20 TANK W-4; NORTH TANK FARM, NORTH OF CENTRAL AVENUE, SITE 3023**

Tank W-4 is known to collect water, possibly through inlet piping to the tank. At the end of FY 1995, the tank is over 62% full. Tank W-4 has a staff gauge to measure the level in the tank. The staff gauge was removed as part of the GAAT Treatability Studies activities in July 1995. No instrument problems were reported in FY 1995. However, during the GAAT activities, the level was determined by taking an ullage measurement once a week.

#### **2.21 TANK W-13; NORTH TANK FARM, NORTH OF CENTRAL AVENUE, SITE 3023**

Tank W-13 as checked in June, July, and August 1995 and is empty. Tank W-13 has a staff gauge for level measurement. No instrument problems were reported in FY 1995.

#### **2.22 TANK W-14; NORTH TANK FARM, NORTH OF CENTRAL AVENUE, SITE 3023**

Tank W-14 was checked in July 1995 and is empty. Tank W-14 has a staff gauge for level measurement. No instrument problems were reported in FY 1995.

#### **2.23 TANK W-15; NORTH TANK FARM, NORTH OF CENTRAL AVENUE, SITE 3023**

Tank W-15 was checked in November 1993 and is empty. Tank W-15 has a staff gauge for level measurement.

#### **2.24 TANK W-1A; NORTH TANK FARM, NORTH OF CENTRAL AVENUE, SITE 3023**

Rain events affected the levels in Tank W-1A through FY 1995. At the end of FY 1995, the tank is approximately 34% full. Throughout the year a total of 19,454

gal were emptied to the active LLLW system. Tank W-1A is monitored with a Foxboro 823 pneumatic gauge. No instrument problems were reported this year.

#### **2.25 TANK WC-1; BETWEEN BUILDING 3038 AND 3037, NORTH OF CENTRAL AVENUE**

Tank WC-1 was checked again in June 1995 and is empty. A conductivity probe is inserted through an access pipe to check for liquid level. No permanent level instrumentation is mounted to the tank.

#### **2.26 TANK WC-15; SOUTH OF BUILDING 3587, CORNER OF WHITE OAK AVENUE AND FIFTH STREET**

Normally, ground water infiltrates Tank WC-15, causing the tank level to rise and fall as the level of the ground water tables rises and falls. There were no "spikes" in the levels this year since there weren't many severe rain fall events. A Robertshaw Inven-Tel-185 model conductivity probe measures the level for WC-15. There were no level instrument problems reported this year.

#### **2.27 TANK WC-17; SOUTH OF BUILDING 3587, CORNER OF WHITE OAK AVENUE AND FIFTH STREET**

Normally, ground water infiltrates Tank WC-17, causing the tank level to rise and fall as the level of the ground water tables rises and falls. There were no "spikes" in the levels this year because there were not many severe rain fall events. A Foxboro 823 pneumatic gauge measures the level for WC-17. There were no instrument-related problems reported this year.

#### **2.28 TANK 7560; EAST OF BUILDING 7500, MELTON VALLEY**

Tank 7560 is empty. A conductivity probe is inserted through an access pipe to check for liquid level. No permanent level instrumentation is mounted to the tank.

#### **2.29 TANK 7562; EAST OF BUILDING 7500, MELTON VALLEY**

Tank 7562 was checked in October 1994 and was found to contain 2,149 gal of liquid. A pneumatic gauge measures the level in Tank 7562. No instrument-related problems were reported this year.

#### **2.30 TANK T-30; SOUTH OF BUILDING 4507, UNDERGROUND IN CONCRETE PIT**

Tank T-30 was isolated from the LLLW system during FY 1995. There is no further requirement for level measurement for this tank.

**2.31 TANK W-19; SOUTH OF SOUTH TANK FARM, NORTH OF BUILDING 3517**

Tank W-19 was checked in April 1995; it is empty. Tank W-19 has no level measurement instrumentation.

**2.32 TANK W-20; SOUTH OF SOUTH TANK FARM; NORTH OF BUILDING 3517**

Tank W-20 was checked in April 1995; it is empty. Tank W-20 has no level measurement instrumentation.

**2.33 TANK 3001-B; SOUTH OF BUILDING 3001**

The contents of the tank were checked in May 1995 prior to commencing work for the Inactive Tank Removal Project. Tank 3001-B was removed from the vault, there will be no further requirements for level monitoring for Tank 3001-B.

**2.34 TANK 3003-A; SOUTH OF BUILDING 3003**

Tank 3003-A contains roughly 4000 gal of liquid and sludge. Tank 3003-A has no level measurement instrumentation.

**2.35 TANK 3004-B; EAST OF BUILDING 3008; UNDERGROUND, UNDERNEATH LANDSCAPE ROCKS ON PUBLIC ACCESS WALK TO GRAPHITE REACTOR**

Tank 3004-B was removed from its vault during FY 1995 and there will be no further requirements for level monitoring for Tank 3004-B.

**2.36 TANK 3013; EAST OF BUILDING 3017, SOUTH OF BUILDING 3013**

Tank 3013 was isolated from the LLLW system and filled with controlled low strength material in FY 1995; there will be no further requirements for level monitoring for Tank 3013.

**2.37 TANK 7503-A; NORTHWEST OF BUILDING 7503, MELTON VALLEY**

Tank 7503-A contains only a thin layer of dry sludge. The tank is empty at this time. Tank 7503-A does not have working level instrumentation.

**2.38 TANK H-209; SOUTHWEST OF BUILDING 3517, NEXT TO WHITE OAK AVENUE**

Tank H-209 is empty. The tank has no level measurement instrumentation.

### **2.39 TANK 3002-A; SOUTH OF BUILDING 3002, NORTH OF BUILDING 3001**

Tank 3002-A is approximately half full. The tank still collects drainage from the Building 3002 Filter House, probably from rainwater accumulation. The tank has no level measurement instrumentation.

### **2.40 TANK 4501-P UNDERNEATH BASEMENT FLOOR OF BUILDING 4501**

Tank 4501-P contains approximately two gal of liquid as residual from a 1990 emptying and rinse operation. A conductivity probe is inserted into the tank dip leg to detect the presence of liquid. In addition, there is a manometer-type level indicator, which is a little more difficult to use.

### **2.41 TANK S-424; NORTHWEST OF BUILDING 3517**

Tank S-424 is empty. S-424 has a pneumatic gauge and a readout at Building 3517. No instrument-related problems were reported this year.

### **2.42 TANK T-14; NEW HYDROFRACTURE FACILITY (MELTON VALLEY)**

Tank T-14 has some residual, sludge-like grout mixture in the tank. Tank T-14 has a pneumatic liquid level gauge. No instrument-related problems were reported this year.

### **2.43 TANK W-17; SOUTH TANK FARM**

Tank W-17 collects inleakage that is routinely emptied and processed at the LLLW evaporator. An inlet line to W-17 is thought to be the source of the inleakage. Tank W-17 contained a total of 301 gal by the end of FY 1995. W-17 is equipped with a pneumatic level detector with a continuous readout at the Waste Operations Control Center (WOCC). No instrument-related problems were reported this year.

### **2.44 TANK W-18; SOUTH TANK FARM**

Tank W-18 collects inleakage that is routinely emptied and processed at the LLLW evaporator. An inlet line to W-18 is thought to be the source of the inleakage. Tank W-18 had 279 gal at the end of FY 1995. A total of 7778 gal were removed during FY 1995. W-18 is equipped with a pneumatic level detector with a continuous readout at the WOCC. No instrument-related problems were reported this year.

#### **2.45 TANK W-1-I; UNDER BUILDING 3028**

Tank W-1-I is empty of liquid, but it probably contains residual solids. The tank has a pneumatic level gauge with a readout at Building 3028 that indicates that the tank is still empty. No instrument-related problems were reported this year.

#### **2.46 TANK WC-4; ADJACENT TO BUILDING 3026C, ON WEST SIDE**

Tank WC-4 has accumulated approximately 300 gal of liquid at the end of FY 1995. While there is a leaking flange on the tank, it is suspected the primary reason for the increase in liquid volume is an approximately 0.25 gal/day increase from moisture acquired from the tank ventilation. Tank WC-4 has a pneumatic level detector with a continuous readout at the WOCC. No instrument-related problems were reported in FY 1995. However, the instrument was recalibrated by the (Instruments and Controls) I&C Division in June 1995.

#### **2.47 WC-5; SOUTH OF BUILDING 3503**

Tank WC-5 contained 227 gal of liquid at the end of FY 1995. The primary source of inleakage appears to be rain water. Approximately 266 gal of liquid were removed from the tank in May 1995. Tank WC-5 has a pneumatic level detector with a continuous readout at the WOCC. No instrument-related problems were reported in FY 1995.

#### **2.48 TANK WC-6; SOUTH OF BUILDING 3503**

Tank WC-6 contained approximately 157 gal of liquid at the end of FY 1995. The primary source of the inleakage appears to be rain water. A total of 862 gal were drawn off from the tank during FY 1995. Tank WC-6 has a pneumatic level detector with a continuous readout at the WOCC. There was a brief instrument failure in April 1995. There was no real effect on the level of the tank.

#### **2.49 TANK WC-8; SOUTH OF BUILDING 3503**

Tank WC-8 contained approximately 425 gal of liquid at the end of FY 1995. The tank is used to collect pump priming water for a nearby pump. Tank WC-8 has a pneumatic level detector with a continuous readout at the WOCC. No instrument-related problems were reported in FY 1995.

#### **2.50 TANK WC-11; SOUTH OF BUILDING 3587**

Tank WC-11 contained approximately 1,064 gal at the end of FY 1995, some of which is sludge. The tank collects water from the Building 4556 filter pit discharge for Building 4507. Cell ventilation duct work also discharges into Tank WC-11. There was more than 1,072 gal drawn from the tank during FY 1995. Tank WC-11 has a

pneumatic level detector with a continuous readout at the WOCC. No instrument-related problems were reported in FY 1995.

#### **2.51 TANK WC-12; SOUTH OF BUILDING 3587**

Tank WC-12 contained approximately 246 gal of liquid at the end of FY 1995. The tank collected Tank T-30 sump water until T-30 was isolated from the LLLW system. Tank WC-12 has a pneumatic level detector with a continuous readout at the WOCC. No instrument-related problems were reported in FY 1995.

#### **2.52 TANK WC-13; SOUTH OF BUILDING 3587**

Tank WC-13 contained approximately 328 gal at the end of FY 1995. The tank collects water from floor drains in Building 4501. Tank WC-13 has a pneumatic level detector with a continuous readout at the WOCC. No instrument-related problems were reported in FY 1995.

#### **2.53 TANK WC-14; SOUTH OF BUILDING 3587**

Tank WC-14 contained approximately 154 gal of liquid at the end of FY 1995. Tank WC-14 has a pneumatic level detector with a continuous readout at the WOCC. No instrument-related problems were reported in FY 1995.

#### **2.54 TANK W-12; SOUTH OF BUILDING 3525**

Tank W-12 contained approximately 124 gal of liquid at the end of FY 1995. A total of 4213 gal were removed from the tank during the year. The source of inleakage to this tank is still being determined. Tank W-12 has a pneumatic level detector with a continuous readout at the WOCC. No instrument-related problems were reported during FY 1995.

Table B.2 summarizes the incidents affecting the 54 inactive LLLW tanks during FY 1995.

Table B-1. Summary of Inactive Li

| Tank  | October, 1994                     | November, 1994                      | December, 1994   | January, 1995                        | February, 1995  | March                           |
|-------|-----------------------------------|-------------------------------------|--|--------------------------------------|---|---------------------------------|
| T-1   | No Activity                       | No Activity                         | No Activity  | No Activity                          | Power outage  | Power outag                     |
| T-2   | I&C recalibrated instrument       | No Activity                         | No Activity  | No Activity                          | Power outage  | Power outag                     |
| T-3   | No Activity                       | No Activity                         | No Activity  | No Activity                          | Power outage  | Power outag                     |
| T-4   | No Activity                       | No Activity                         | No Activity  | No Activity                          | Power outage  | Power outag                     |
| T-9   | No Activity                       | No Activity                         | No Activity  | No Activity                          | Power Outage  | Power outag                     |
| TH-4  | No Activity                       | I&C reacibrated level instrument    | Instrument problem. Request for I&C to check level instrumentation | No Activity                          | Instrument out of service. 11,000 gal to the active LLLW system | No Activity                     |
| W-1   | No Activity                       | No Activity                         | No Activity  | No Activity                          | No Activity   | No Activity                     |
| W-2   | No Activity                       | No Activity                         | No Activity  | No Activity                          | No Activity   | No Activity                     |
| W-3   | No Activity                       | No Activity                         | No Activity  | No Activity                          | No Activity   | No Activity                     |
| W-4   | No Activity                       | No Activity                         | No Activity  | No Activity                          | No Activity   | No Activity                     |
| W-5   | No Activity                       | No Activity                         | No Activity  | No Activity                          | No Activity   | No Activity                     |
| W-6   | No Activity                       | No Activity                         | No Activity  | No Activity                          | No Activity   | No Activity                     |
| W-8   | No Activity                       | No Activity                         | No Activity  | No Activity                          | No Activity   | No Activity                     |
| W-9   | No Activity                       | No Activity                         | No Activity  | No Activity                          | No Activity   | No Activity                     |
| W-10  | No Activity                       | No Activity                         | No Activity  | No Activity                          | No Activity   | No Activity                     |
| W-11  | No Activity                       | No Activity                         | No Activity  | 790 gal to the active LLLW system    | No Activity   | No Activity                     |
| W-12  | 332 gal to the active LLLW system | 227 gal to the active LLLW system   | 644 gal to the active LLLW system                                  | 783 gal to the active LLLW system    | 952 gal to the active LLLW system                               | 1,105 gal jettec active LLLW sy |
| W-18  | 535 gal to the active LLLW system | 584 gal to the active LLLW system   | 3,100 gal to the active LLLW system                                | No Activity                          | 362 gal to the active LLLW system                               | 2,025 gal jettec active LLLW sy |
| W-1A  | No Activity                       | 2,442 gal to the active LLLW system | No Activity  | 7,958 gal to the active LLLW system. | 2,046 gal to the active LLLW system                             | Power outage                    |
| WC-4  | No Activity                       | No Activity                         | No Activity  | No Activity                          | No Activity   | No Activity                     |
| WC-5  | No Activity                       | No Activity                         | No Activity  | No Activity                          | No Activity   | No Activity                     |
| WC-6  | No Activity                       | 250 gal to the active LLLW system   | No Activity  | No Activity                          | 218 gal to the active LLLW system                               | 285 gal to the a LLLW system    |
| WC-8  | No Activity                       | No Activity                         | No Activity  | No Activity                          | No Activity   | No Activity                     |
| WC-11 | No Activity                       | 525 gal to the active LLLW system   | No Activity  | No Activity                          | No Activity   | No Activity                     |

Low-Level Waste (ILLW) Tanks

| 95 | April, 1995                          | May, 1995   | June, 1995                                    | July, 1995                     | August, 1995  | September, 1995  |
|----|--------------------------------------|---|---|--------------------------------|---|--|
|    | Power outage                         | Instrument problem. Power outage.                   | No Activity                                   | No Activity                    | Instrument problem, bad reading; I&C repaired level instrumentation | No Activity  |
|    | Power outage                         | Power outage.                                       | No Activity                                   | No Activity                    | No Activity   | No Activity  |
|    | Power outage                         | Instrument problem. Power outage.                   | No Activity                                   | No Activity                    | I&C repaired instrument   | No Activity  |
|    | Power outage                         | Power outage  | No Activity                                   | No Activity                    | No Activity   | No Activity  |
|    | Power outage                         | Instrument problem. Power outage.                   | No Activity                                   | No Activity                    | No Activity   | No Activity  |
|    | No Activity                          | No data for 5/19                                    | No Activity                                   | Instrument failure.            | No Activity   | No Activity  |
|    | No Activity                          | No Activity   | I&C calibrated level instrument               | No Activity                    | No Activity   | No Activity  |
|    | No Activity                          | No Activity   | Power outage. I&C calibrated level instrument | No Activity                    | Instrument failure, no reading available                            | No Activity  |
|    | No Activity                          | No Activity   | 18,500 gal to the active LLLW system          | Ullage Measurement             | Ullage Measurement  | Ullage Measurement   |
|    | No Activity                          | Staff gauge rod removed for GAAT project 5/31       | Ullage Measurement                            | Ullage Measurement             | Ullage Measurement  | Ullage Measurement   |
|    | No Activity                          | LO FAIL instrument problem. I&C repaired instrument | No Activity                                   | No Activity                    | No Activity   | No Activity  |
|    | No Activity                          | No Activity   | No Activity                                   | No Activity                    | No Activity   | No Activity  |
|    | No Activity                          | LO FAIL instrument problem.                         | I&C calibrated level instrument               | No Activity                    | No Activity   | LWO transferred 50,000 gal to active LLLW system and 50,000 to W-8 |
|    | No Activity                          | LO FAIL instrument problem.                         | I&C calibrated level instrument               | No Activity                    | No Activity   | No Activity  |
|    | No Activity                          | No Activity   | No Activity                                   | Instrument problem, no reading | No Activity   | No Activity  |
|    | No Activity                          | Staff restricted by gravel used for tent base       | LWO jetted 800 gal to the active LLLW system  | No Activity                    | LWO jetted to active LLLW system                                    | No Activity  |
|    | 486 gal jetted to active LLLW system | 243 gal to active LLLW system                       | No Activity                                   | No Activity                    | No Activity   | No Activity  |
|    | No Activity                          | 1,172 gal to active LLLW system                     | No Activity                                   | No Activity                    | No Activity   | No Activity  |
|    | No Activity                          | 3,253 gal to active LLLW system                     | No Activity                                   | No Activity                    | No Activity   | No Activity  |
|    | No Activity                          | 266 gal to the active LLLW system                   | I&C calibrated level instrument               | No Activity                    | No Activity   | No Activity  |
|    | No Activity                          | 266 gal to active LLLW system                       | No Activity                                   | No Activity                    | No Activity   | No Activity  |
|    | Instrument Failure                   | 109 gal to the active LLLW system                   | No Activity                                   | No Activity                    | No Activity   | No Activity  |
|    | Instrument Failure                   | LO FAIL instrument problem. I&C repaired instrument | No Activity                                   | No Activity                    | No Activity   | No Activity  |
|    | No Activity                          | No Activity   | 547 gal to the active LLLW system             | No Activity                    | No Activity   | No Activity  |

## DISTRIBUTION

1. L. V. Asplund
2. H. L. Boston
3. T. W. Burwinkle
4. T. J. Cofer
5. L. S. Hawk
- 6-10. J. H. Hooyman (5)
11. A. J. Kuhaida
12. J. L. Lyons II
13. R. C. Mason
14. D. M. Matteo
- 15-16. P. T. Owen (2)
17. P. A. Schrandt
- 18-19. S. M. Stoller (2)
20. D. C. White
21. H. D. Wooten
22. Central Research Library
23. ER Document Management Center
24. ORNL Laboratory Records
25. Office of Assistant Manager for Energy Research and Development, Department of Energy,  
Oak Ridge Operations Office, P.O. Box 2001, Oak Ridge, TN 37831-8600
26. Office of Scientific and Technical Information, P.O. Box 62, Oak Ridge, TN 37831





**Please do not forward or discard this document.**

If this address is not correct for the designated addressee, please return this document to the

**ER Document Management Center  
Building K-1002, MS 7243  
Lockheed Martin Energy Systems, Inc.  
P.O. Box 2003  
Oak Ridge, TN 37831**