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Federal Facility Agreement for the Oak Ridge Reservation

U. S. Environmental Protection Agency
Region IV

U. S. Department of Energy

Tennessee Department of Environment and Conservation

Effective Date—January 1, 1992

CONTROLLED DOCUMENT

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APPENDICES

THE UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IV

AND

THE UNITED STATES DEPARTMENT OF ENERGY

AND

THE TENNESSEE DEPARTMENT OF ENVIRONMENT AND CONSERVATION

IN THE MATTER OF:	)	
	)	
The U. S. Department	)	FEDERAL FACILITY AGREEMENT
of Energy's	)	UNDER SECTION 120 OF CERCLA
	)	AND SECTIONS 3008(h) AND 6001
OAK RIDGE RESERVATION	)	OF RCRA
	)	
_____	)	Docket No. 89-04-FF

Based upon the information available to the Parties on the effective date of this FEDERAL FACILITY AGREEMENT (Agreement), and without trial or adjudication of any issues of fact or law, the Parties agree as follows:

I. JURISDICTION

A. Each Party is entering into this Agreement pursuant to the following authorities:

1. The U. S. Environmental Protection Agency (EPA),

Region IV, enters into those portions of this Agreement that relate to the remedial investigation/feasibility study (RI/FS) pursuant to Section 120(e)(1) of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), 42 U.S.C. § 9620(e)(1), as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA), Pub. L. 99-499 (hereinafter jointly referred to as CERCLA) and Sections 3008(h) and 6001 of the Resource Conservation and Recovery Act (RCRA), 42 U.S.C. §§ 6928(h) and 6961, as amended by the Hazardous and Solid Waste Amendments of 1984 (HSWA) (hereinafter jointly referred to as RCRA) and Executive Order 12580;

2. The EPA, Region IV, enters into those portions of this Agreement that relate to operable units and final remedial actions pursuant to Section 120(e)(2) of CERCLA, Sections 3008(h) and 6001 of RCRA and Executive Order 12580;

3. The U. S. Department of Energy (DOE) enters into those portions of this Agreement that relate to the RI/FS pursuant to Section 120(e)(1) of CERCLA, Sections 3008(h) and 6001 of RCRA, Executive Order 12580, the National Environmental Policy Act, 42 U.S.C. § 4321, and the Atomic Energy Act of 1954 (AEA), as amended, 42 U.S.C. § 2201;

4. The DOE enters into those portions of this Agreement that relate to operable units and final remedial actions pursuant to Section 120(e)(2) of CERCLA, Sections 3008(h) and 6001 of RCRA, Executive Order 12580, and the AEA;

5. The DOE will take all necessary actions in order

to fully effectuate the terms of this Agreement, including undertaking response actions at the Oak Ridge Site (including areas located off the Oak Ridge Reservation) in accordance with Federal and State applicable or relevant and appropriate laws, standards, limitations, criteria, and requirements to the extent consistent with CERCLA.

6. The Tennessee Department of Environment and Conservation (TDEC) enters into this Agreement pursuant to Sections 120(f) and 121(f) of CERCLA and the Tennessee Code Annotated Sections 68-46-101, et seq. and 68-46-201, et seq.

B. The Oak Ridge Site was included by EPA on the Federal Agency Hazardous Waste Compliance Docket established under Section 120 of CERCLA, 42 U.S.C. § 9620, 53 Federal Register 4280 (February 12, 1988). The EPA proposed the Oak Ridge Site for inclusion on the NPL in Update Nine to the NPL published on July 14, 1989 at 54 Federal Register 29820. The EPA finalized the Oak Ridge Site on the NPL on November 21, 1989 at 54 Federal Register 48184. The Parties intend that this Agreement shall satisfy the requirements for an interagency agreement under Section 120 of CERCLA, 42 U.S.C. § 9620, for the Oak Ridge Site.

II. DEFINITIONS

Except as provided below or otherwise explicitly stated herein, the definitions provided in CERCLA and the National Oil and Hazardous Substances Pollution Contingency Plan, 40 C.F.R. Part 300 (hereinafter the National Contingency Plan or NCP), shall control the meaning of the terms used in this Agreement. This

Agreement references documents required by the DOE's RCRA permit. Appendix A to this Agreement identifies those documents and their CERCLA counterparts. Any references to the documents or terms identified in Appendix A shall also include the corresponding RCRA or CERCLA document.

In addition, the following definitions are used for purposes of this Agreement. If any of the following terms are amended by revisions to the NCP after the effective date of this Agreement, the revised NCP definition shall control the meaning of that term.

A. Additional Work shall mean any work agreed upon by the Parties under Section XX (Additional Work) to this Agreement.

B. Atomic Energy Act (AEA) shall mean the Atomic Energy Act of 1954, as amended, 42 U.S.C. §§ 2011, et seq.

C. Agreement shall mean this document and shall include all Appendices to this document referred to herein. All such Appendices shall be appended to and made an enforceable part of this Agreement.

D. Applicable State Laws shall include but not be limited to all laws determined to be applicable or relevant and appropriate requirements (ARARs). It is recognized that in some instances in which this phrase is used, there may be no applicable State laws.

E. ARAR(s) shall mean "legally applicable" or "relevant and appropriate" laws, standards, requirements, criteria, or limitations as those terms are used in Section 121(d) of CERCLA, 42 U.S.C. § 9621(d).

F. Authorized Representatives shall mean a Party's employees, agents, successors, assigns, and contractors acting in any capacity, including an advisory capacity, when so designated by that Party.

G. CERCLA shall mean the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, 42 U.S.C. §§ 9601, et seq., as amended by the Superfund Amendments and Reauthorization Act of 1986, Pub. L. 99-499.

H. Corrective Action shall mean those actions necessary to correct releases to all media from all solid waste management units at RCRA facilities. Corrective action consists primarily of four steps: the RCRA Facility Assessment, the RCRA Facility Investigation, the Corrective Measures Study, and the Corrective Measures Implementation.

I. Corrective Measures Implementation (CMI) shall mean the design, construction, operation, maintenance, and monitoring of selected corrective measures.

J. Corrective Measures Study(s) (CMS) shall mean the study or report identifying and recommending, as appropriate, specific corrective measures that will correct the release(s) identified during the RCRA Facility Investigation. The CMS shall include a corrective action plan(s), as appropriate.

K. Days shall mean calendar days, unless business days are specified. Any submittal or written statement of dispute that under the terms of this Agreement would be due on a Saturday, Sunday, or holiday shall be due on the following business day.

L. DOE shall mean the United States Department of Energy and its authorized representatives.

M. D1 Primary Document shall mean the first report issued by the DOE of any primary document listed in Section XXI.C.1 (Review/Comment), numbered DOE/OR/nn-nnnn&D1, and transmitted to EPA and TDEC for review and comment under Section XXI (Review/Comment) of this Agreement.

N. D2 Primary Document shall mean the revised report issued by the DOE for any primary document listed in Section XXI.C.1 (Review/Comment), and numbered DOE/OR/nn-nnnn&D2, after receipt of comments from the EPA and TDEC and before it becomes an approved/finalized primary document under Section XXI (Review/Comment). A revised D2 primary document may be subject to the dispute resolution procedures of Section XXVI (Resolution of Disputes) of this Agreement and have subsequent documents numbering D3, D4,..prior to approval/finalization by the parties.

O. EPA shall mean the United States Environmental Protection Agency and its authorized representatives.

P. Feasibility Study(s) (FS) shall mean a study that fully evaluates and develops remedial action alternatives to prevent and/or mitigate the migration of the release of hazardous substances, pollutants, or contaminants at and from the Site.

Q. Hazardous Constituent(s) shall mean those substances listed in Appendix VIII to 40 C.F.R. Part 261 and includes hazardous constituents released from solid waste and hazardous constituents that are reaction by-products.

R. Hazardous Substances shall have the meaning set forth by Section 101(14) of CERCLA, 42 U.S.C. § 9601(14).

S. Hazardous Waste(s) shall have the meaning set forth by § 1004(5) of RCRA, 42 U.S.C. § 6903(5) and in 40 C.F.R. Parts 260 and 261.

T. Interim Measures shall mean those measures conducted in accordance with the DOE's RCRA permit to contain, remove, or treat contamination resulting from the release of hazardous constituents from solid waste management units in order to protect human health and the environment. Such measures may be conducted concurrently with operable units under this Agreement.

U. National Contingency Plan (NCP) shall mean the National Oil and Hazardous Substances Pollution Contingency Plan, 40 C.F.R. Part 300, and any amendments thereto.

V. National Priorities List (NPL) Site shall mean the Site as finally promulgated at 40 C.F.R. Part 300.

W. Oak Ridge Reservation (ORR) shall mean the lands owned by the United States and under the jurisdiction of the DOE (approximately 58,000 acres) that are located in Roane and Anderson counties in eastern Tennessee. The ORR is described in more detail in Section VIII and Appendix B of this Agreement.

X. On-site shall mean the areal extent of contamination and all suitable areas in very close proximity to the contamination necessary for implementation of the response action.

Y. Operable Unit shall mean a discrete action that comprises an incremental step toward comprehensively addressing site problems. This discrete portion of a remedial response manages migration, or eliminates or mitigates a release, threat of release, or pathway of exposure. The cleanup of a site can be

divided into a number of operable units, depending on the complexity of the problems associated with the site. Operable units may address geographic portions of a site, specific site problems, or initial phases of an action, or may consist of any set of actions performed over time or any actions that are concurrent but located in different parts of a site. Operable units will not impede implementation of subsequent actions, including final action at the Site.

Z. Parties shall mean all parties who are signatories to this Agreement.

AA. Project Manager(s) shall mean the officials designated by EPA, DOE, and TDEC to coordinate, monitor, or direct remedial response actions at the Site.

BB. Proposed Plan(s) or Proposed Remedial Action Plan(s) shall mean the report(s) describing the remedial action(s) recommended for the Site.

CC. Quality Assured Data shall mean data that have undergone quality assurance as set forth in the approved Quality Assurance Plan.

DD. RCRA shall mean the Resource Conservation and Recovery Act, 42 U.S.C. §§ 6901, et seq., as amended by the Hazardous and Solid Waste Amendments of 1984, Pub. L. 98-616.

EE. RCRA Facility Assessment(s) (RFA(s)) shall mean the assessment(s) performed under RCRA to identify actual and potential releases from solid waste management units located on the Oak Ridge Reservation.

FF. RCRA Facility Investigation(s) (RFI(s)) shall mean an investigation(s) performed in accordance with the RCRA permit to gather data sufficient to fully characterize the nature, extent and rate of migration of contaminant releases identified in the RFA(s).

GG. Record(s) of Decision (ROD(s)) shall mean the document issued by the lead agency as the final remedial action plan for the Site (or any operable unit) pursuant to Section 120 of CERCLA, 42 U.S.C. § 9620. The ROD shall contain a statement of the basis and purpose for the selected remedy at the Site. In addition, the ROD shall consist of (1) a Declaration stating the selected remedy and showing that the selection was made in accordance with the statutory and regulatory requirements of CERCLA and applicable Tennessee law, (2) a Decision Summary providing a summary of the problems posed by the Site, the alternatives evaluated and the analysis of those alternatives, and an explanation of how the statutory requirements were met, and (3) a Responsiveness Summary responding to public comments received on the Proposed Plan, RI/FS, and other information made available in the administrative record.

HH. Release shall have the meaning set forth by Section 101(22) of CERCLA, 42 U.S.C. § 9601(22).

II. Remedial Action(s) (RA(s)) shall mean the implementation of the RAP and the RD consistent with the NCP and the Superfund Remedial Design and Remedial Action Guidance (EPA) including on-site construction, treatment processes, removals, and any other tasks necessary.

JJ. Remedial Action Plan(s) (RAP(s)) shall mean the report describing the remedy selected for cleanup of the Site.

KK. Remedial Design(s) (RD(s)) shall mean the technical analysis and procedures which follow the selection of remedy and result in a detailed set of plans and specifications for implementation of the remedial action.

LL. Remedial Investigation(s) (RI(s)) shall mean an investigation conducted to fully assess the nature and extent of the release or threat of release of hazardous substances, pollutants, or contaminants and to gather necessary data to support the corresponding feasibility study.

MM. Removal Action shall have the same meaning as "remove" or "removal" as defined by Section 101(23) of CERCLA, 42 U.S.C. § 9601(23).

NN. Respond or Response shall have the meaning set forth in Section 101(25) of CERCLA, 42 U.S.C. § 9601(25).

OO. Site (Oak Ridge Site) shall mean "facility" as defined by Section 101(9) of CERCLA, 42 U.S.C. § 9601(9).

PP. Solid Waste(s) shall have the meaning set forth by Section 1004(27) of RCRA, 42 U.S.C. § 6903(27) and in 40 C.F.R. Part 261.

QQ. Solid Waste Management Units (SWMUs) shall mean those units subject to applicable RCRA corrective action requirements, identified by EPA and TDEC, either presently or in the future, as requiring further investigation, and specifically identified as SWMUs in Appendix C. This Appendix may be revised by agreement of the Parties.

RR. Tank System(s) shall mean those units listed or otherwise identified in Appendix F to this Agreement. This Appendix may be revised by mutual agreement of the Parties.

SS. TDEC shall mean the State of Tennessee's Department of Environment and Conservation and its authorized representatives.

TT. Timetables and Deadlines shall mean schedules as well as that work and those actions that are to be completed and performed in conjunction with such schedules, including performances of actions established pursuant to Section XIX (Timetables and Deadlines), Section XX (Additional Work), Section XXI (Review/Comment), and Section XXVI (Resolution of Disputes) of this Agreement.

UU. Waste Area Grouping(s) (WAG(s)) shall mean a group of solid waste management units and/or other areas of contamination that are geographically contiguous or are located within defined hydrologic units. The DOE may consolidate SWMUs, WAGs, and/or other areas into single groupings for purposes of conducting any work under this Agreement.

III. PURPOSES OF AGREEMENT

A. The general purposes of this Agreement are to:

1. Ensure that the environmental impacts associated with past and present activities at the Site are thoroughly investigated and that appropriate remedial action is taken as necessary to protect the public health and welfare and the environment;

2. Establish a procedural framework and schedule for developing, implementing, and monitoring appropriate response actions at the Site in accordance with CERCLA, the NCP, RCRA, NEPA, appropriate guidance and policy, and in accordance with Tennessee State law;

3. Prevent, mitigate, or abate releases or threatened releases of hazardous substances from low-level radioactive waste tank systems under this Agreement prior to final remedial action at the Site;

4. Facilitate cooperation, exchange of information, and participation of the Parties;

5. Minimize the duplication of investigative and analytical work and documentation and ensure the quality of data management;

6. Ensure that remedial action(s) at the Site will be in compliance with ARARs;

7. Expedite response actions with a minimum of delay;

8. Establish a basis for a determination that the DOE has completed the RI/FS(s), remedial design(s), and remedial action(s) at the Site pursuant to CERCLA and applicable Tennessee State laws;

9. Coordinate response actions under CERCLA and this Agreement with RFI(s) and corrective measures now being conducted under RCRA and applicable State laws; and

10. Ensure that all releases of hazardous substances, pollutants or contaminants as defined by CERCLA and

all releases of hazardous wastes or hazardous constituents as defined by RCRA are addressed so as to achieve a comprehensive remediation of the Site.

B. Specifically, the purposes of this Agreement are to:

1. Identify operable units which are appropriate at the Site prior to the implementation of final remedial action(s) for the Site. Operable units shall be identified and proposed by the Parties as early as possible prior to formal proposal of operable units to EPA by DOE pursuant to CERCLA. This process is designed to promote cooperation among the Parties in identifying potential operable units prior to selection of final operable units;

2. Establish requirements for the performance of an RI(s) to determine the nature and extent of the threat to the public health or welfare or the environment caused by the release or threatened release of hazardous substances, pollutants or contaminants at the Site;

3. Establish requirements for the performance of an FS(s) for the Site to identify, evaluate, and select alternatives for the appropriate remedial action(s) to prevent, mitigate, or abate the release or threatened release of hazardous substances, pollutants or contaminants at the Site in accordance with CERCLA;

4. Identify the nature, objective and schedule of response actions to be taken at the Site. Response actions at the Site shall attain that degree of remediation of hazardous substances, pollutants or contaminants mandated by CERCLA;

5. Implement the selected operable unit(s) and final remedial action(s) in accordance with CERCLA;

6. Establish requirements for low-level radioactive waste tank systems under this Agreement to ensure structural integrity, containment and detection of releases, and source control pending final remedial action at the Site;

7. Meet the requirements of Section 120(e)(2) of CERCLA, 42 U.S.C. § 9620(e)(2), for an interagency agreement between the Parties;

8. Provide for continued operation and maintenance following completion of the selected remedial action(s);

9. Assure compliance with Federal and Tennessee State hazardous waste laws and regulations for matters covered by this Agreement;

10. Expedite the remediation process to the extent necessary to protect human health and welfare and the environment.

IV. RCRA/CERCLA COORDINATION

A. The Parties intend to coordinate the DOE's CERCLA response obligations with the corrective measures required and conducted by DOE under its current RCRA permit. The Parties intend that the response actions under this Agreement, together with the corrective measures under the RCRA permit, achieve comprehensive remediation of releases and threatened releases of hazardous substances, hazardous wastes (including hazardous constituents), pollutants or contaminants at or from the ORR. For that reason, this Agreement supplements corrective actions under

the RCRA permit with response actions under CERCLA for releases not presently addressed in the RCRA permit. Therefore, the Parties intend that activities covered by this Agreement will be deemed to achieve compliance with CERCLA, 42 U.S.C. §§ 9601, et seq.; to satisfy the corrective action requirements of Section 3008(h) of RCRA, 42 U.S.C. § 6928(h), for interim status facilities; and to meet or exceed all applicable or relevant and appropriate Federal and State laws and regulations to the extent required by Section 121 of CERCLA, 42 U.S.C. § 9621.

B. This Agreement expands the RCRA Facility Assessments and Investigations presently under way at the ORR with requirements to investigate (1) releases at or from units not included in the RCRA permit and (2) releases of hazardous and/or radioactive substances not regulated by DOE's RCRA permit. The Parties intend to coordinate and combine these assessments, investigations, and other response actions at the Site. The Parties intend to combine the administrative records developed for activities under the RCRA permit and response actions under this Agreement in order to facilitate public participation in the selection of RCRA/CERCLA response actions and to ensure comprehensive remediation of the Site. The Parties intend to coordinate the procedures for the selection of response action(s) under this Agreement with the administrative procedures for issuance of any additional RCRA permits and/or any future modifications of RCRA permits. The Parties intend to modify the DOE's RCRA permit, as appropriate, to incorporate the remedial

action(s) selected under this Agreement as corrective measures to satisfy Sections 3004(u) and (v) of RCRA. The Parties agree that with respect to releases of hazardous constituents from facilities that are or were authorized to operate under Section 3005(e) of RCRA, 42 U.S.C. § 6925(e) and are covered by this Agreement, that RCRA shall be considered an applicable or relevant and appropriate requirement pursuant to Section 121 of CERCLA, 42 U.S.C. § 9621.

C. The Parties recognize that the requirement to obtain permits for response actions undertaken pursuant to this Agreement shall be as provided for in CERCLA and the NCP. The Parties further recognize that ongoing hazardous waste management activities at the ORR may be subject to or require the issuance of additional permits under Federal and State laws. This Agreement does not relieve the DOE of its obligations, if any, to obtain such permits. This Agreement does not supersede, modify, or otherwise change the requirements of the DOE's existing RCRA permits.

D. Notwithstanding any provision of this Agreement, any challenges to response actions selected or implemented under Sections 104, 106, or 120 of CERCLA, 42 U.S.C. §§ 9604, 9606, or 9620, may be brought only as provided in Section 113 of CERCLA, 42 U.S.C. § 9613.

V. STIPULATED FACTS

For purposes of this Agreement only, the stipulated facts presented in Appendix D (Stipulated Facts) to this Agreement constitute a summary of facts upon which this Agreement is based.

VI. STIPULATED DETERMINATIONS

For the purposes of this Agreement only, the following constitute the determinations upon which this Agreement is based.

A. The Oak Ridge Reservation (ORR) is located in Roane and Anderson Counties in eastern Tennessee and constitutes a facility within the meaning of Section 101(9) of CERCLA, 42 U.S.C. § 9601(9) and Tennessee Code Annotated Sections 68-46-202(5) and 68-46-104(5) and includes certain facilities authorized to operate under Sections 3005(c) and 3005(e) of RCRA, 42 U.S.C. §§ 6925(c) and 6925(e);

B. The ORR, for the purposes of this Agreement, is a federal facility which is subject to, and shall comply with, CERCLA in the same manner and to the same extent, both procedurally and substantively, as any nongovernmental entity, including liability under Section 107 of CERCLA, 42 U.S.C. § 9607, and applicable Tennessee State law.

C. On September 25, 1986, the EPA issued a permit under Section 3005(c) of RCRA, 42 U.S.C. § 9625(c), to DOE to require it to determine whether there have been any releases of hazardous waste or hazardous constituents from solid waste management units on the ORR and to take appropriate corrective action for any such releases. This permit, in conjunction with the Hazardous Waste Permit issued by the State of Tennessee, constitutes the RCRA permit for DOE's Oak Ridge facility.

D. Hazardous substances and pollutants or contaminants and solid wastes and hazardous wastes (including hazardous

constituents) within the meaning of Sections 101(14), 101(33) and 104(a)(2) of CERCLA, 42 U.S.C. §§ 9601(14), 9601(33), and 9604(a)(2), and Sections 1004(27) and 1004(5) of RCRA, 42 U.S.C. §§ 6903(27) and 6903(5) and 40 C.F.R. Part 261, and Tennessee Code Annotated Sections 68-46-107, 68-46-206, 68-46-104(7), and 68-46-202(2) and Tennessee Compilation of Rules and Regulations, Chapter 1200-1-11-.01(2)(a), have been released or disposed of at the Site.

E. There have been releases and there continue to be releases and threatened releases of hazardous substances and pollutants or contaminants and solid and hazardous wastes (including hazardous constituents) from the Site into the environment within the meaning of Sections 101(22), 104, 106, and 107 of CERCLA, 42 U.S.C. §§ 9601(22), 9604, 9606, and 9607, and Sections 1004(27), 1004(5), and 3008(h) of RCRA, 42 U.S.C. §§ 6903(27), 6903(5), and 6928(h), and Tennessee Code Annotated Sections 68-46-104(12) and 68-46-202(4) and Tennessee Compilation of Rules and Regulations, Chapter 1200-1-11-.01(2)(a).

F. With respect to those releases and threatened releases, the DOE is a person and an owner or operator within the meaning of Sections 101(21), 101(20), and 107 of CERCLA, 42 U.S.C. §§ 9601(21), 9601(20), and 9607 and Tennessee Code Annotated Sections 68-46-104(7) and 68-46-202(4). The ORR is also a facility that is and was authorized to operate under Section 3005(e) of RCRA, 42 U.S.C. § 6925(e).

G. The actions to be taken pursuant to this Agreement are reasonable and necessary to protect public health or welfare or the environment; and

H. A reasonable time for completing the actions required by this Agreement will be provided.

VII. PARTIES

The Parties to this Agreement are the EPA, the TDEC, and the DOE. The terms of this Agreement shall apply to and be binding upon the EPA, TDEC, and DOE, their respective agents, employees, and response action contractors and upon all subsequent owners, operators, and lessees of the DOE for the Site. The DOE shall notify the EPA and the TDEC, in its quarterly report, of the identity and assigned tasks of each of its contractors performing work under this Agreement upon their selection. The DOE shall take all necessary measures to assure that its contractors, subcontractors, and consultants performing work under this Agreement act in a manner consistent with the terms of this Agreement. This Section shall not be construed as an agreement by the Parties to indemnify each other or any third party. The DOE shall notify its agents, employees, response action contractors, and all subsequent owners, operators, and lessees of the ORR of the existence of this Agreement.

VIII. SITE DESCRIPTION

The Oak Ridge Reservation (ORR) consists of about 37,000 acres of federally-owned land in the City of Oak Ridge, which is located in both Anderson and Roane Counties, Tennessee. The ORR

is bounded on the north and east by the City of Oak Ridge (population 28,000) and on the south and west by the Clinch River. The area surrounding the ORR is predominately rural, used largely for residences, small farms, and pasture land. Fishing, boating, water skiing, and swimming are favorite recreational activities in the area. Towns that are located in the vicinity of the ORR, together with their approximate populations (1980 Census data) and distances from the ORR include:

Town	Population	Distance	Direction
Oliver Springs	3,600	7 miles	NW
Clinton	5,300	10 miles	NE
Lenoir City	5,400	7 miles	SE
Kingston	4,400	7 miles	SW
Harriman	8,300	8 miles	W

The City of Knoxville (population 183,000), the nearest major metropolitan area, is located approximately 25 miles to the east.

The ORR consists of three major operating facilities: the Oak Ridge National Laboratory (ORNL), the Oak Ridge Gaseous Diffusion Plant (ORPDP or K-25), and the Y-12 Plant. The ORNL, located 10 miles southwest of the City, is an energy research laboratory that includes nuclear reactors, chemical pilot plants, and radioisotope production laboratories constructed in the early 1940's. The ORGDP, located 13 miles west of the City and constructed in 1943, was a production and development facility for uranium enrichment for both nuclear weapons and power productions. Production operations at the ORGDP have been shut down since 1985. The Y-12 Plant, built in 1943, is located

immediately adjacent to the City of Oak Ridge. Its primary activities are the production of nuclear weapons components, manufacturing support for DOE weapon design laboratories, processing of source and special nuclear materials and support for DOE facilities and other government agencies.

The ORR generates a variety of hazardous substances, including radioactive, nonradioactive, and mixed wastes, some of which have been released into the environment at the ORR. Metals, organics, and radionuclides have been detected in the air, soils, groundwater, and surface water at the ORR. Releases of hazardous substances and environmental contamination associated with the ORR are described in greater detail in Appendix B (Detailed Site Description) to this Agreement. Under its RCRA permit, the DOE has begun the remedial investigation process at over 500 solid waste management units at the ORR. This Agreement expands the scope of investigatory and remedial activities presently under way at the Site to include releases not covered by the RCRA permit (e.g., releases or potential releases of radionuclides).

IX. LOW-LEVEL RADIOACTIVE WASTE TANK SYSTEM(S)

A. Applicability:

The provisions of this Section apply to the DOE's low-level radioactive waste tank system(s) that are listed and identified in Appendix F to this Agreement. Appendix F contains four categories of tank system(s) associated with the Oak Ridge National Laboratories (ORNL): (a) new or replacement tank system(s) with secondary containment; (b) existing tank system(s)

with secondary containment; (c) existing tank system(s) without secondary containment; and (d) existing tank system(s) without secondary containment that are removed from service. Subsections B through D, below apply to existing tank system(s) that have secondary containment and to new or replacement tank system(s) installed after the effective date of this Agreement. Subsections E and F, below apply to existing tank system(s) that do not have secondary containment. Subsection G, below applies to all tank system(s) that are permanently removed from service. The DOE agrees to remediate all low-level radioactive waste tank system(s) that are permanently removed from service under this Agreement. The requirements of this Section are illustrated in the "ORNL Tank Logic Diagram" contained in Appendix F to this Agreement.

B. Design/Installation Assessments for New or Replacement Tank(s):

1. For each new or replacement tank system(s) the DOE shall submit to EPA and TDEC for review and approval, a written assessment(s), certified by a qualified, registered professional engineer licensed in the State of Tennessee and knowledgeable of tank systems, that the tank system(s) has sufficient structural integrity and is acceptable for the storing or treating of hazardous and/or radioactive substances. This assessment shall be submitted to EPA and TDEC for approval at least ninety (90) days prior to installation of a new or replacement tank system(s).

2. The design/installation assessment(s) shall demonstrate that the foundation, structural support, seams, connections, and pressure controls (if applicable) are adequately designed and that the tank system(s) has sufficient structural strength, compatibility with the hazardous/radioactive substances to be stored or treated, and corrosion protection to ensure that the tank system(s) will not collapse, rupture, or fail. At a minimum, the design/installation assessment(s) shall include the information described in Subsection B.1. of Appendix F herein.

3. New or replacement tank system(s) shall be constructed and installed in accordance with the specifications in the approved design/installation assessment(s) and all other requirements specified in Section B of Appendix F herein, entitled "Standards for Design/Installation of New or Replacement Tank System(s)."

C. Containment/Detection of Releases and Operational Standards for Secondary Containment Tank System(s):

1. For new or replacement tank system(s), the DOE shall submit design demonstration(s) to the EPA and TDEC for review and approval that show that all new or replacement tank system(s) meet the containment/release detection standards contained in Section C of Appendix F herein, entitled "Standards for Containment/Release Detection". This design demonstration(s) shall be incorporated into the Design/Installation Assessment(s) submitted under the provisions of Subsection B herein.

2. For new or replacement tank system(s), the DOE shall install secondary containment system(s) that are (a) designed, installed, and operated to prevent any migration of hazardous or radioactive constituent, hazardous substances, or accumulated liquid out of the system(s) to the air, soil, groundwater, or surface water at any time during the use of the tank system(s) or component(s), and (b) capable of detecting and collecting releases and accumulated liquids until the collected material is removed under the provisions of this Agreement.

3. Within sixty (60) days of the effective date of this Agreement, the DOE shall submit to EPA and TDEC for approval a schedule for the submittal of written design demonstration(s) for existing tank system(s) that have secondary containment. This design demonstration(s) shall show that the tank systems meet, or can be retrofitted to meet, the standards contained in Section C of Appendix F herein, entitled "Standards for Containment/Release Detection". The design demonstration(s) shall include plans and schedules for any such retrofitting necessary to meet these standards.

4. The DOE shall monitor and maintain the secondary containment tank system(s) (including new or replacement tank system(s)) throughout the active life of the tank system(s) and until the tank system(s) is removed from service in accordance with Subsection G, below.

D. Disposition of Leaking Secondary Containment Tank(s):

1. For a secondary containment tank system(s) or component(s) from which there may be or has been a leak or spill,

the DOE shall satisfy the requirements contained in Section D of Appendix F herein, entitled "Disposition of Leaking Tank System(s)." For the purposes of Section IX and Appendix F to this Agreement, a leak shall mean the escape of a hazardous substance from primary or secondary containment. Leak detection methods may include installed leak detection equipment and procedures, photographic or visual inspections that show liquid or accumulating dried wastes, or sampling and analysis.

2. The DOE may return to service a secondary containment tank system(s) or component(s) from which there has been a leak or spill provided that the DOE demonstrates, subject to the review and approval of EPA and TDEC, that it meets the requirements contained in Subsections D6(a) through D6(d) of Appendix F, entitled "Disposition of Leaking Tank System(s)."

3. If the EPA and TDEC determine that a secondary containment tank system(s) or component(s) shall not be returned to service, then the DOE shall, within thirty (30) days of receipt of such a determination, submit a plan and schedule for removal from service to EPA and TDEC for approval. In the event the DOE determines to remove a secondary containment tank system(s) or component(s) from service, it shall submit a plan and schedule for removal from service to EPA and TDEC for approval.

4. Upon receipt of approval of any plan and schedule submitted under Subsection D.3. above, the DOE shall remove the tank system(s) or component(s) from service in

accordance with the approved plan and schedule. Upon removal from service, the DOE shall implement the requirements in Subsection G, below.

E. Schedules for Removal of Tank System(s) from Service:

1. Within sixty (60) days of the effective date of this Agreement, the DOE shall submit to EPA and TDEC for review and approval, a plan and schedule for the removal from service of all tank system(s) that do not meet the secondary containment standards of Subsection B, above. For specific tank system(s), the DOE may request a sixty (60) day extension to submit its plan and schedule for removal from service. The DOE shall give priority in its plan and schedule to tank system(s) that do not have secondary containment and that fail to demonstrate structural integrity under Subsection F, below. If the DOE determines that immediate removal of an existing tank system(s) from service will pose either unacceptable risks to worker health or safety, or an immediate risk to human health or the environment, then the DOE shall include an assessment of those risks in its plan and schedule. Tank system(s) shall be removed from service in accordance with the requirements of the approved plan and schedule.

2. Subject to the approval of EPA and TDEC, the DOE may continue operation of non-secondary containment tank system(s) that demonstrate structural integrity under Subsection F, below. The DOE shall immediately cease operation of these tank system(s) in the event that a new or replacement tank system(s) is placed in operation. At that time, the tank system(s) shall be removed from

service in accordance with Subsection G, below. For tank system(s) that develop leaks, the DOE shall comply with the requirements in Section D of Appendix F herein, entitled "Disposition of Leaking Tank System(s).

3. Tank system(s) removed from service prior to the effective date of this Agreement shall be considered removed from service under this Agreement and no schedule shall be submitted for those tank system(s) under this Subsection. Tank system(s) removed from service prior to the effective date of this Agreement may not be returned to service and shall be evaluated and remediated under Subsection G, below.

F. Structural Integrity Assessment(s) for Non-Secondary Containment Tank System(s):

1. Within ninety (90) days of the effective date of this Agreement, or within ninety (90) days of the date on which EPA or TDEC disapprove of a design demonstration under Subsection C.3. above, whichever is later, the DOE shall submit a schedule for approval by EPA and TDEC for providing all available information concerning the structural integrity of tank system(s) that do not meet the secondary containment standards of Subsection B, above. For these tank system(s), the DOE shall submit the information described in Subsection A in Appendix F, entitled "Standards for Integrity Assessment for Tank System(s)." The DOE shall submit its structural integrity information under this Subsection in accordance with the approved schedule.

2. For each non-secondary containment tank system(s), the DOE shall demonstrate, subject to the review and approval of EPA and TDEC, that the tank system(s) is not (or may be) leaking. This demonstration shall include: (a) volume balancing data for transfer lines and tank liquids level trend data, together with all supporting data or information, or (b) data/information from alternate method(s) that accurately evaluates tank integrity.

3. For each non-secondary containment tank system(s), the written assessment(s) submitted under this Subsection shall demonstrate that the tank system(s) is adequately designed and, at the time of assessment, has sufficient structural strength and compatibility with the hazardous and/or radioactive substances to be stored or treated, to ensure that the tank system(s) will not collapse, rupture, or fail prior to removal from service or re-assessment. This requirement shall also apply to tank system(s) that have been removed from service prior to the effective date of this Agreement.

4. Within sixty (60) days of the effective date of this Agreement, the DOE shall submit a schedule for providing the results of leak detection tests together with a schedule for the periodic review and revision of the structural integrity assessment(s) required by this Subsection until the tank system(s) is removed from service and any necessary response action(s) is completed under Subsection G, below. The demonstration required by this Subsection shall be in writing and shall be certified by a

qualified, registered professional engineer licensed in the State of Tennessee and knowledgeable of tank systems.

5. If at any time DOE determines that liquids from an uncontrolled source (e.g., infiltration of groundwater) are entering a Category C tank listed in Appendix F, intentional waste additions to the tank shall be stopped immediately. In addition, the liquid within the tank shall be reduced to and/or maintained at a level to prevent a release of hazardous substances to the environment until the tank is removed from service.

G. Removal of Tank System(s) From Service:

1. This Subsection shall apply to all low-level radioactive waste tank system(s) listed in Appendix F to this Agreement that are removed from service. Within ninety (90) days of the effective date of this Agreement, or within ninety (90) days of the date a tank is declared inactive, whichever is later, the DOE shall provide to EPA and TDEC a schedule for conducting the waste characterization(s) of tank contents for hazardous and/or radiological constituents in tank system(s) removed from service. The DOE's waste characterization(s) shall include the results of the sampling and analysis of the contents (including wastes, liquids, and sludges) of all tank system(s) removed from service.

2. Within ninety (90) days of the effective date of this Agreement, or within ninety (90) days of the date a tank is declared inactive, whichever is later, the DOE shall submit to EPA and TDEC for approval risk characterization plan(s) and schedule(s) for characterizing the risk(s) associated with all tank system(s)

removed from service. The DOE's risk assessment plan(s) shall characterize and define categories of risks associated with the tank system(s) pending final remediation. The DOE shall conduct risk characterization(s) for tank system(s) removed from service in accordance with the approved schedules.

3. Based upon the results of the waste and risk characterization(s) required above, the DOE shall propose a schedule(s) to EPA and TDEC for approval for operable units/ interim measures or final remedial action as described below. This schedule shall be proposed and updated as part of the annual timetables and deadlines submittal under Section XIX (Timetables and Deadlines) of this Agreement.

4. The DOE shall remediate all tank system(s) removed from service. To the extent practicable, the DOE shall remove or decontaminate, or otherwise remediate all residues, contaminated containment system components (liners, etc.), contaminated soils and structures and equipment associated with the tank system(s).

5. The DOE shall address the following phases of tank system(s) remediation as both corrective measures and remedial actions under the applicable waste area grouping or operable unit:

a. Remediation of the tank(s) contents;

b. Remediation of the tank(s) and related piping and appurtenances; and

c. Remediation of any surrounding releases or contamination.

6. The provisions described herein shall become effective six months after the effective date of this change.

Prior to the scheduled remediation of tank system(s) as required in Sections IX.G.3 through IX.G.5, the DOE may conduct routine transfers of the liquid contents of the tank system(s) to the active portions of the LLLW system for the treatment and/or storage, upon receiving written approval from TDEC prior to such transfer operations. The DOE shall submit a written request to TDEC, for approval, and EPA, for information, of such transfers at least 14 days prior to the transfer operation. The DOE may combine requests for recurring routine transfers into a single document which may be submitted annually to TDEC, for approval, and to EPA, for information, for recurring routine (Appendix I-7) transfer operations rather than submit individual routine transfer requests. Transfers that TDEC determine are not routine (Appendix I-8) shall be conducted in accordance with the provisions of Section IX.G.5 or Section XIII. of the FFA. The declaration of whether a transfer is routine shall be within the discretion of TDEC, and subject to resolution of disputes as set forth in Section XXVI.

7. The DOE shall conduct all necessary response actions under Sections X through XV of this Agreement for all tank system(s) identified in Appendix F.

X. SITE EVALUATION(S)

For newly discovered areas with potential or known releases of hazardous substances, the DOE agree to: (a) provide notice to EPA and TDEC in accordance with Section 300.405 of the NCP; and (b) conduct removal site evaluations (SEs) in accordance with Section 300.410 of the NCP. The DOE shall submit to EPA and TDEC Removal Site Evaluation Reports based on such evaluations. If the removal SE indicates that removal action under Section 300.415 of the NCP is necessary, the DOE will satisfy the requirements of Section XIII (Removal Actions) of this Agreement. If upon completion of a Removal Site Evaluation and/or a removal action, the resulting report indicates that remedial action under Section 300.430 of the NCP may be necessary for an area, DOE will amend the ORR Remedial Site Evaluation list of Appendix C to this Agreement to

include such area. For those areas in the Remedial Site Evaluation list of Appendix C to this Agreement, the DOE agrees to conduct remedial SEs in accordance with Section 300.420 of the NCP. The DOE shall submit to EPA and TDEC, Remedial Site Evaluation Reports based on such evaluations, and recommend the need for further response actions. If DOE's recommendation is accepted, then EPA and TDEC will concur by written response. If the EPA and TDEC determine that further remedial response action is necessary for an area, then the DOE agrees, subject to the dispute resolution procedures in Section XXVI (Resolution of Disputes), to amend the Characterization Areas list of Appendix C to this Agreement to include such area and to conduct additional work at such area under the terms of this Agreement.

XI. REMEDIAL INVESTIGATION(S)/FEASIBILITY STUDY(S)

The DOE agrees that it shall conduct an RI(s) for the site (including any operable unit(s) at the Site) which is in accordance with the timetables and deadlines set forth in Appendix E to this Agreement. Prior to initiating operable unit RI Work Plan development, representatives of the three parties will prepare for, in accordance with Appendix I-5 (Document Information Assessment Operating Instructions), and conduct a RI/FS scoping workshop according to the operating instruction in Appendix I-4. Operable units at the Oak Ridge Reservation, which must address classification issues during the performance of the RI/FS phase, will follow the Appendix I-3 (Referencing Classified Documents Operating Instructions) and Appendix I-5 (Document Information Assessment Operating Instructions) in regard to the classified information. The RI(s) shall meet the purposes set forth in Section III of this Agreement. For SWMUs for which the DOE is required to conduct an RFI pursuant to its RCRA permit, the Parties agree that the RFI and RI shall be combined into a single investigation designed to meet the requirement of both the RCRA permit and the purposes of this Agreement.

The DOE agrees it shall conduct an FS(s) for the Site (including any operable unit(s) at the Site) and report upon a FS(s) for the Site which is in accordance with the timetables and

deadlines set forth in Appendix E of this Agreement. The FS(s) shall be based on the RI(s) and shall meet the purposes set forth in Section III of this Agreement. For SWMUs for which the DOE is required to conduct a CMS pursuant to its RCRA permit, the Parties agree that the CMS and FS shall be combined into a single study designed to meet the requirements of both the RCRA permit and the purposes of this Agreement.

XII. OPERABLE UNIT(S)

Pursuant to the published schedules and timetables, the DOE agrees that it shall develop alternatives for operable units, together with monitoring plans. After consultation with EPA and TDEC, the DOE shall submit its proposed operable units and its analysis of the proposals to EPA and TDEC. The Parties shall make a final selection of the operable units for the Site. If the Parties are unable to agree upon the selection of operable units, the final selection of the operable units shall be made by the Administrator and shall not be subject to dispute by the DOE. The designation of operable unit(s) shall be reviewed and revised annually in conjunction with the establishment of timetables and deadlines under Section XIX (Timetables and Deadlines) of this Agreement.

All submittals and elements of work undertaken pursuant to this Section shall be performed in accordance with the requirements and time schedules set forth in Section XIX (Timetables and Deadlines) of this Agreement. Operable units shall meet the purposes set forth in Section III (Purposes of Agreement) of this Agreement.

XIII. REMOVAL ACTIONS

A. The DOE shall designate an On-Scene Coordinator (OSC) as required by Section 300.120 of the NCP. The ORR OSC shall be the point of contact between DOE, EPA and the TDEC for all removal actions for hazardous substances.

B. Removal Actions conducted by the DOE on the ORR shall be consistent with CERCLA and the NCP. The DOE shall notify the EPA and TDEC in writing of any such proposed removal actions, including

proposed technical specifications. The EPA and TDEC shall respond with any comments and/or objections within thirty (30) days of receipt of such notification. The EPA and TDEC may request additional time not to exceed twenty (20) days in which to respond to the notification. The DOE agrees to submit to the EPA and TDEC an annual Removal Report which describes the removal actions performed during the previous fiscal year. The Removal Report will be incorporated into the Quarterly Report due on or before January 31, of each fiscal year.

C. In cases in which a release at the Site could cause imminent and substantial endangerment to the public health or welfare or the environment, the DOE shall proceed as soon as possible with a Removal Action and notify EPA and TDEC within forty-eight (48) hours of such release. A description of the emergency and the technical specifications for the Removal Action, including any further action needed to complete the Removal Action, shall be submitted in writing to EPA and TDEC within five (5) days of the release.

D. Nothing in this Agreement shall alter the DOE's authority with respect to Removal Actions conducted pursuant to Section 104 of CERCLA, 42 U.S.C. § 9604.

XIV. REMEDIAL ACTION PLAN(S)/RECORD(S) OF DECISION

Following completion and a review in accordance with Section XXI (Review/Comment) by EPA and TDEC of an RI(s) (including any RI for an operable unit) and the corresponding FS(s) (including any FS for an operable unit) for all or part of the Site, the DOE shall submit a Proposed Plan(s) for remedial action(s), including appropriate timetables and deadlines, to EPA and TDEC for review in accordance with Appendix E and Section XXI (Review/Comment) of this Agreement. The Proposed Plan(s) shall meet the purposes set forth in Section III (Purposes of Agreement) of this Agreement. Following approval by the EPA and TDEC pursuant to Section XXI (Review/Comment) of this Agreement, the DOE shall publish its proposed Remedial Action Plan (RAP) for public review and comment in accordance with Section 117(a) of CERCLA, 42 U.S.C. § 9617(a), and applicable State law. Upon completion of the public comment period,

all Parties shall confer about the need for modification of the Proposed Remedial Action Plan and additional public comment based on the public response. When public comment has been properly considered, the DOE shall submit its initial D1 Record(s) of Decision, including the responsiveness summary, in accordance with applicable guidance. The DOE shall also submit the proposed Administrative Record (AR) Index with transmittal of the D1 ROD for review, in accordance with Appendix I-10, AR Index Transmittal Operating Instructions. The D1 ROD(s) shall meet the purposes set forth in Section III (Purposes of Agreement) of this Agreement. A review in accordance with Section XXI (Review/Comment) shall be conducted on the D1 Record(s) of Decision. If the Parties agree on the D1 Record(s) of Decision, the D1 Record(s) of Decision shall be adopted by EPA and TDEC, and the DOE shall issue the Record(s) of Decision for signature by the Parties. If the Parties are unable to reach agreement on the D1 Record(s) of Decision, the selection of the remedial action shall be made by the Administrator of EPA, or his delegatee, and EPA shall then prepare the EPA signed Record(s) of Decision. The final selection of the remedial action(s) by the Administrator shall be final and shall not be subject to dispute under Section XXVI (Resolution of Disputes). Notice of the final Record(s) of Decision shall be published by the DOE with EPA's concurrence and shall be made available to the public prior to the commencement of the remedial action(s), in accordance with Sections 117(b), (c), and (d) of CERCLA, 42 U.S.C. §§ 9617(b), (c), and (d). The EPA and/or TDEC shall propose any modifications necessary to the corrective action provisions of the DOE's RCRA permit in conjunction with the notice of the Proposed Plan(s) and the approved ROD(s).

XV. REMEDIAL DESIGN(S)/REMEDIAL ACTION(S)

Following final selection of the remedial action(s), the DOE shall submit a Remedial Design Work Plan(s) and Remedial Action Work Plan(s) for the completion of the selected remedial action(s), to EPA and TDEC for review in accordance with Appendix E and Section

XXI (Review/Comment) of this Agreement. The Remedial Design Work Plan(s) and Remedial Action Work Plan(s) shall meet the purposes set forth in Section III (Purposes of Agreement) of this Agreement. Upon approval of the Remedial Design Reports(s) and Remedial Action Work Plan(s) by EPA and TDEC, the DOE shall implement the remedial action(s) in accordance with the then approved requirements and imetables and deadlines and documented in the Appendix E.

XVI. DELIVERABLES

The DOE agrees to submit to EPA and TDEC certain deliverables to fulfill the obligations and meet the purposes of this Agreement. The schedule for the deliverable submittals are specified in Appendix E to this Agreement.

XVII. GUIDANCE

The EPA and TDEC agree to provide DOE with guidance and to give a timely response to requests for guidance to assist DOE in the performance of the requirements under this Agreement.

XVIII. SCOPING WORK PRIORITIES

A. The DOE agrees to use the procedures set forth in Appendix G to this Agreement to establish priorities annually for implementing the work required under this Agreement. These procedures shall be used to identify and rank all tasks under this Agreement. The establishment of priorities under this Agreement shall be coordinated with the schedules and milestones for corrective action contained in the DOE's RCRA permit(s).

B. The DOE shall notify the EPA and TDEC each year immediately upon receipt of its budget call to begin establishing priorities under this Section. The DOE shall submit work priorities to EPA and TDEC no later than March 15 for each succeeding fiscal year. The EPA and TDEC shall review and comment to DOE on the submittal no later than April 15. The DOE shall revise its original submittal, if necessary, after receiving the comments by EPA and TDEC. Upon concurrence by EPA and TDEC, the work priorities shall be proposed by ORR to DOE headquarters for inclusion in the DOE's budget and funding submissions. Finalization of priority activities is contingent upon the authorization and appropriation of funds by Congress.

C. The established priorities, included as Appendix E to this Agreement, shall be subject to revision in accordance with Section XLI (Modifications) at any time by mutual agreement of all Parties. In the event that agreement cannot be reached, the procedures of Section XXVI (Resolution of Disputes) of this Agreement shall be followed.

XIX. TIMETABLES AND DEADLINES

A. The timetables and deadlines established by the Parties for the submittal of all deliverances and other documents (including D1 primary documents) and reports required under this Agreement are contained in Appendix E to this Agreement. The Parties may modify these timetables and deadlines in accordance with Section XLI (Modifications). Modification of the timetables for submittal of deliverances other than D1 primary documents

shall not be considered major modifications under Section XLI (Modifications) of this Agreement.

B. Within forty-five (45) days of receiving its initial Financial Plan (budget allocation) for the priorities established under Section XVIII (Scoping Work Priorities) under this greement, the DOE shall propose deadlines for completion of draft primary documents and target dates for completion of secondary documents for the current fiscal year. Within forty-five (45) days of receipt, the EPA and TDEC shall review and provide comments to the DOE on the proposed deadlines. Within twenty-one (21) days following receipt of the comments, the DOE shall, as appropriate, revise and reissue the proposed deadlines. The Parties shall confer as necessary to agree upon the proposed deadlines for the current fiscal year. If the Parties agree upon the proposed deadlines, then the deadlines shall be incorporated into Appendix E of this Agreement and shall become final enforceable deadlines under this Agreement. If the Parties fail to agree within thirty (30) days upon the proposed deadlines, then the matter shall immediately be submitted for dispute resolution under Section XXVI (Resolution of Disputes) to this Agreement. The DOE shall publish the final deadlines established pursuant to this Section.

XX. ADDITIONAL WORK

A. Except as provided in Section XXI (Review/Comment) of this Agreement, either EPA or TDEC may at any time request additional work, including field modifications, remedial

investigatory work, or engineering evaluations, which they determine necessary to accomplish the purposes of this Agreement. Such requests shall be in writing to the DOE, with copies to the other Party. The DOE agrees to give full consideration to all such requests. The DOE may either accept or reject any such requests and shall do so in writing, together with a statement of reasons, within forty-five (45) days of receipt of any such request. If there is not agreement concerning whether or not the requested additional work or modification to work should be conducted, then dispute resolution may be invoked only at the time of review of the subsequent corresponding primary document, in accordance with the procedures set forth in Section XXI (Review/ Comment) of this Agreement.

B. Should additional work be required pursuant to this Section, deadlines and schedules for the submission of primary documents (or modifications of primary documents relating to that work) and the target dates for any secondary documents, as well as schedules for implementation of any remedial activity (including proposed operable units), shall be proposed by the DOE and reviewed and approved by the EPA and TDEC and shall be included in Appendix E to this Agreement and shall become enforceable parts of this Agreement, subject to stipulated penalties under Section XLIV (Stipulated Penalties).

C. The discovery of previously unknown sites, releases of hazardous substances, contamination, or other significant new

site conditions may be addressed as additional work under this Section.

D. Any additional work or modifications to work proposed by DOE shall be proposed in writing to the other Parties and shall be subject to review in a primary document (or modification to an existing primary document) in accordance with Section XXI (Review/Comment) of this Agreement. The DOE shall not initiate such work prior to review and approval by EPA and TDEC.

E. Any additional work or modification to work agreed to under this Section, shall be completed in accordance with the standards, specifications, and schedules determined or approved by EPA and TDEC and shall be governed by the provisions of this Agreement.

XXI. REVIEW/COMMENT ON RI/FS and RD/RA FINAL DOCUMENTS

A. Applicability:

The provisions of this Section establish the procedures that shall be used by the DOE, EPA and TDEC to provide the Parties with appropriate notice, review, comment, and response to comments regarding RI/FS and RD/RA documents, specified herein as either primary or secondary documents. In accordance with Section 120 of CERCLA, 42 U.S.C. § 9620, the DOE shall be responsible for issuing primary and secondary documents to EPA and TDEC. As of the effective date of this Agreement, all reports for any deliverable document identified herein shall be prepared, distributed, and subject to dispute in accordance with Subsections B through J, below, and Section XXVI (Resolution of Disputes).

The designation of a document as D1 or D2 is solely for purposes of consultation with EPA and TDEC in accordance with this Section. Such designation does not affect the obligation of the Parties to issue documents to the public for review and comment as appropriate and as required by law.

B. General Process for RI/FS and RD/RA Documents:

1. Primary documents include those reports that are major, discrete portions of RI/FS or RD/RA activities. D1 primary documents are initially issued by the DOE subject to review and comment by EPA and TDEC. Following receipt of comments on a particular D1 primary document, the DOE will respond to comments received and issue a D2 primary document subject to dispute resolution. The D2 primary document will become the approved primary document either after the period of time established for review of a D2 document if dispute resolution is not invoked or as modified by decision of the dispute resolution process.

2. Secondary documents include those reports that are discrete portions of the primary documents and are typically feeder documents. D1 secondary documents are issued by the DOE subject to review and comment by EPA and TDEC. Although the DOE will respond to comments received, the D1 secondary documents may be finalized in the context of the corresponding primary documents. A secondary document may be disputed at the time the corresponding D2 primary document is submitted.

3. The Parties agree that plans and reports prepared by the DOE for SWMUs subject to the corrective action requirements of its RCRA permit, as well as the review of such plans and reports by the EPA and TDEC, shall be combined into a single document designed to meet the requirements of both the RCRA permit and this Agreement.

C. Primary Reports:

1. The DOE shall complete and transmit D1 reports for the following primary documents to EPA and TDEC for review and comment in accordance with the provisions of this Section:

a. Community Relations Plan;
b. Remedial Site Evaluation Report(s)
c. RI/FS Work Plan(s);
d. RI Report(s);
e. FS Report(s);
f. Proposed (Remedial Action) Plan(s);
g. Record(s) of Decision;
h. Remedial Design Work Plan(s);
i. Remedial Design Report(s);
j. Remedial Action Work Plan(s); and
k. Remedial Action Report(s).
l. LLLW Tank Implementation Plans & Schedules

2. The Remedial Design(s) may be submitted in phased packages when necessary to expedite construction work under this Agreement. In such cases, the ROD(s) shall describe the phase submittals and identify the Remedial Design submittals which shall be considered primary documents for purposes of Section XLIV (Stipulated Penalties) under this Agreement.

3. Only the D2 reports for the primary documents identified above shall be subject to dispute resolution. The DOE

shall complete and transmit D1 primary documents in accordance with Section XIX (Timetables and Deadlines) of this Agreement.

D. Secondary Documents:

1. The DOE shall complete and transmit D1 reports for the following secondary documents to EPA and TDEC for review and comment in accordance with the provisions of this Section. The following list contains examples of secondary documents:

a. Sampling and Analysis Plan(s) and QAPP(s);
b. Preliminary Risk Assessment Report(s);
c. Site Characterization Summary Report(s);
d. Baseline Risk Assessment Report(s)
e. Screening/Analysis of Alternatives; and
f. Treatability Study Report(s)

2. Although EPA and TDEC may comment on the D1 reports for the secondary documents listed above, such documents shall not be subject to dispute resolution except as provided by Subsection B hereof. Target dates shall be established for the completion and transmission of D1 secondary reports pursuant to Section XIX (Timetables and Deadlines) of this Agreement.

E. Meetings of Project Managers:

The Project Managers shall meet approximately every quarter, except as otherwise agreed by the Parties, to review and discuss the progress of work being performed at the Site on the primary and secondary documents. Prior to preparing any D1 report specified in Subsections C and D above, the Parties shall confer to discuss the report results in an effort to reach a common understanding.

F. Identification and Determination of Potential ARARs:

1. For those primary reports or secondary documents that consist of or include ARAR determinations, prior to the issuance of a D1 report, the Parties shall confer to identify and propose, to the best of their ability, all potential ARARs pertinent to the report being addressed. D1 ARARs determinations shall be prepared by the DOE in accordance with Section 121(d)(2) of CERCLA, 42 U.S.C. § 9621(d)(2), the NCP, and pertinent guidance issued by EPA.

2. In identifying potential ARARs, the Parties recognize that actual ARARs can be identified only on a site-specific basis and that ARARs depend upon the specific hazardous substances, pollutants or contaminants at a site, the particular actions proposed as a remedy and the characteristics of a site. The Parties recognize that ARARs identification is necessarily an iterative process and that potential ARARs must be re-examined throughout the RI/FS and RD processes until the RA is implemented.

G. Review and Comment on D1 Reports:

1. The DOE shall complete and transmit each D1 primary report to EPA and TDEC on or before the corresponding deadline established for the submittal of the report. The DOE shall complete and transmit the D1 secondary document in accordance with the target dates established for the issuance of such reports established pursuant to Section IX (Timetables and Deadlines) of this Agreement. Additional issuance information is provided in Appendix I-2 (Document Transmittal Operating Instructions).

2. Unless the Parties mutually agree to another time period, all D1 reports, except the Proposed Plan and the Record of Decision reports, shall be subject to a ninety (90) day period for review and comment. The D1 Proposed Plan and Record of Decision reports shall be subject to a sixty (60) day period for review and comment. Review of any document by the EPA and TDEC may concern all aspects of the report (including its completeness) and should include, but is not limited to, technical evaluation of any aspect of the document and consistency with CERCLA, the NCP, and any pertinent guidance or policy promulgated by the EPA or TDEC. Comments by the EPA and TDEC shall be provided with adequate specificity so that the DOE may respond to the comment and, if appropriate, make changes to the D1 report. Comments shall refer to any pertinent sources of authority or references upon which the comments are based, and, upon request of the DOE, the EPA and TDEC shall provide a copy of the cited authority or reference. In cases involving complex or unusually lengthy reports, EPA and TDEC may extend the comment period for an additional thirty (30) days by written notice to the DOE prior to the end of the comment period. On or before the close of the comment period, the EPA and TDEC shall transmit its written comments to the DOE.

3. Representatives of the DOE shall make themselves readily available to the EPA and TDEC during the comment period for purposes of informally responding to questions and comments on D1 reports. Oral comments made during such discussions need not be the subject of a written response by the DOE at the close of the comment period.

4. In commenting upon a D1 report which contains a proposed ARARs determination, EPA or TDEC shall include a reasoned statement of whether it objects to any portion of the proposed ARAR determination. To the extent that the EPA and/or TDEC objects, it shall explain the bases for its objection in detail and shall identify any ARARs which it believes were not properly addressed in the proposed ARAR determination.

5. Following the close of the comment period for a D1 report, the DOE shall give full consideration to all written comments on the D1 report submitted during the comment period; on a D1 secondary report, the DOE shall transmit to EPA and TDEC its written response to comments received within the comment period. Within sixty (60) days of the receipt of comments on a D1 primary report, the DOE shall transmit to EPA and TDEC the D2 primary report, which shall include the DOE's response to all written comments received within the comment period, with comment resolutions identified per Appendix I-2 (Document Transmittal Operating Instructions). While the resulting D2 report shall be the responsibility of the DOE, it shall be the product of consensus to the maximum extent possible unless the Parties mutually agree to another time period, all D2 reports shall be subject to a thirty (30) day period for review and comment.

6. The DOE may extend the sixty (60) day period for either responding to comments on a D1 report or for issuing the D2 primary report for an additional thirty (30) days by providing written notice to EPA and TDEC. This time period may be further

extended in accordance with Section XXX (Extensions) of this Agreement.

H. Availability of Dispute Resolution for D2 Primary Documents:

1. Dispute resolution shall be available to the Parties for D2 primary reports as set forth in Section XXVI (Resolution of Disputes).

2. When dispute resolution is invoked on a D2 primary report, work may be stopped in accordance with the procedures set forth in Section XXVI (Resolution of Disputes).

I. Finalization of Reports:

The D2 primary report shall become the approved or finalized primary report if no Party invokes dispute resolution regarding the document in accordance with the procedures set forth in Section XXVI (Resolution of Disputes) of this Agreement or, if invoked, at completion of the dispute resolution process should the DOE's position be sustained. If the DOE's determination is not sustained in the dispute resolution process, the DOE shall prepare, within not more than sixty (60) days, a revision of the D2 report which conforms to the results of dispute resolution. In appropriate circumstances, the time period for this revision period may be extended in accordance with Section XXX (Extensions) of this Agreement.

J. Subsequent Modifications of Final Reports:

Following finalization of any primary report pursuant to Subsection I, above, the EPA, TDEC, or the DOE may seek to modify the report, including seeking additional field work, pilot

studies, computer modeling or other supporting technical work, only as provided in Subsections J.1 and 2, below.

1. The EPA, TDEC, or the DOE may seek to modify a report after finalization if it determines, based on new information (i.e., information that became available, or conditions that became known, after the report was finalized) that the requested modification is necessary. The EPA, DOE, or TDEC may seek such a modification by submitting a concise written request to the Project Manager of the other Parties. The request shall specify the nature of the requested modification and how the request is based on new information.

2. In the event that a consensus is not reached by the Project Managers on the need for a modification, any of the Parties may invoke dispute resolution to determine if such modification shall be conducted. Modification of a report shall be required only upon a showing that: (1) the requested modification is based on significant new information and (2) the requested modification could be of significant assistance in evaluating impacts on the public health or the environment, in evaluating the selection of remedial alternatives, or in protecting human health and the environment.

3. Nothing in this Subsection shall alter either EPA's or TDEC's ability to request the performance of additional work pursuant to Section XX (Additional Work) of this Agreement which does not constitute modification of a final document.

XXII. PERMITS

A. The Parties recognize that under Sections 121(d) and 121(e)(1) of CERCLA, 42 U.S.C. §§ 9621(d) and 9621(e)(1), and the NCP portions of the response actions called for by this Agreement and conducted entirely on-site are exempted from the procedural requirements to obtain Federal, State, or local permits but must satisfy all the applicable or relevant and appropriate Federal and State laws, standards, requirements, criteria, or limitations which would have been included in any such permit. When the DOE proposes a response action (including a Work Plan pursuant to this Agreement) to be conducted entirely on-site, which in the absence of Section 121(e)(1) of CERCLA, 42 U.S.C. § 9621(e)(1) and the NCP would require a Federal or State permit, the DOE shall include in the submittal:

1. Identification of each permit which would otherwise be required;

2. Identification of the standards, requirements, criteria, or limitations which would have had to have been met to obtain each such permit;

3. Explanation of how the response action proposed will meet the standards, requirements, criteria, or limitations identified in Subsection A.2, above; and

4. All information necessary for EPA and TDEC to determine the standards, requirements, criteria, or limitations that are applicable or relevant and appropriate for the proposed remedial action (e.g., relevant RCRA Part B information).

Upon request of the DOE, the EPA and TDEC will provide their positions with respect to Subsections A.2 and 4, above.

B. Subsection A above, is not intended to relieve the DOE of the requirements to obtain Federal, State, or local permits whenever it proposes a response action involving the shipment or movement of hazardous or radioactive waste or hazardous substances to or from the ORR.

C. The DOE shall notify the Commissioner of the TDEC and the Regional Administrator of EPA in writing of any permits required for off-site activities as soon as it becomes aware of such requirements. Upon request, the DOE shall provide the Commissioner of the TDEC and the Regional Administrator of EPA copies of all such permit applications and other documents related to the permit process.

D. If a permit which is necessary for implementation of this Agreement is not issued, or is issued or renewed in a manner which is materially inconsistent with the requirements of this Agreement, the DOE agrees it shall notify the Commissioner of the TDEC and the Regional Administrator of EPA of its intention to propose modifications to this Agreement (or modifications to primary or secondary documents required by this Agreement) to obtain conformance with the permit (or lack thereof). Notifications by the DOE of its intention to propose modifications shall be submitted within seven (7) calendar days of receipt by the DOE of notification that: (1) a permit will not be issued;

(2) a permit has been issued or reissued; or (3) a final determination with respect to any appeal related to the issuance of a permit has been entered. Within thirty (30) days from the date it submits its notice of intention to propose modifications, the DOE shall submit to the Commissioner of the TDEC and the Regional Administrator of EPA its proposed modifications to this Agreement with an explanation of its reasons in support thereof.

E. During any appeal of any permit required to implement this Agreement or during review of any of the DOE's proposed modifications as provided in Subsection D, above, the DOE shall continue to implement those portions of this Agreement which can be implemented pending final resolution of the permit issue(s).

F. Except as otherwise provided in this Agreement, the DOE shall comply with applicable State and Federal hazardous waste management requirements at the ORR.

G. Notwithstanding the provisions of this Section, the TDEC specifically reserves any rights it may have under Section 121(e) of CERCLA, 42 U.S.C. § 9621(e) or other federal or state laws to require permits for activities conducted on the ORR by the DOE.

XXIII. CREATION OF DANGER

In the event that the Commissioner of the TDEC or the Regional Administrator of EPA determines that activities conducted pursuant to this Agreement may present an imminent and substantial endangerment to the health or welfare of the people on the Site or in the surrounding areas or to the environment, the Commissioner

of the TDEC or the Regional Administrator of EPA may order the DOE to stop any work being implemented under this Agreement for such period of time as needed to abate the danger or may require the DOE to take necessary action to abate the danger or both. In the event that the DOE determines that any on-site activities or work being implemented under this Agreement may create an immediate threat to human health or the environment from the release or threat of release of a hazardous substance, pollutant or contaminant, it may stop any work or on-site activities for such period of time as needed to respond to or abate the danger. In the event the DOE makes a determination to stop work under this Section, it shall immediately notify the EPA and TDEC. The DOE shall submit a written summary of events to EPA and TDEC within five (5) days of making a determination under this Section.

XXIV. REPORTING

The DOE agrees that it shall submit to the Commissioner of the TDEC and the Regional Administrator of EPA, quarterly written progress reports which describe the actions which the DOE has taken during the previous quarter to implement the requirements of this Agreement. Progress reports shall also describe the schedules of activities to be taken during the upcoming quarter. Progress reports shall be submitted on or before the thirtieth day following the end of each quarter. The DOE's first progress report shall be due thirty (30) days after the end of the first quarter following the effective date of this Agreement. The progress reports shall include a detailed

statement of the manner and extent to which the requirements and time schedules set out in the Appendices to this Agreement are being met. In addition, the progress reports shall identify any anticipated delays in meeting time schedules, the reason(s) for the delay and actions taken to prevent or mitigate the delay.

XXV. NOTIFICATION

A. Unless otherwise specified, any report or submittal provided pursuant to a schedule or deadline identified in or developed under this Agreement shall be sent by certified mail, return receipt requested, or similar method (including electronic transmission) which provides a written record of the sending and receiving dates or hand delivered to the following persons:

U. S. Environmental Protection Agency, Region IV
Oak Ridge Remedial Project Manager
RCRA and Federal Facilities Branch
345 Courtland Street, N. E.
Atlanta, Georgia 30365

Tennessee Department of Environment and Conservation
Oak Ridge Remedial Project Manager
761 Emory Valley Road
Oak Ridge, Tennessee 37830-7072

U. S. Department of Energy
Oak Ridge Operations
Oak Ridge Remedial Project Manager
Box 2001
Oak Ridge, Tennessee 37831

Unless otherwise specified or requested, all routine correspondence, other than a report or submittal as described above, may be sent via regular mail or electronically transmitted to the above persons.

XXVI. RESOLUTION OF DISPUTES

Except as specifically set forth elsewhere in this Agreement, if a dispute arises under this Agreement, the procedures of this Section shall apply. All Parties to this Agreement shall make reasonable efforts to informally resolve disputes at the Project Manager or immediate supervisor level. If resolution cannot be achieved informally, then the procedures of this Section shall be implemented to resolve a dispute.

A. Within thirty (30) days after: (1) the period established for review of a D2 primary document pursuant to Section XXI (Review/Comment) of this Agreement or (2) any action which leads to or generates a dispute (including a failure of the informal dispute resolution process), the disputing Party shall submit to the other Parties a written statement of dispute setting forth the nature of the dispute, the work affected by the dispute, the disputing Party's position with respect to the dispute, and the information the disputing Party is relying upon to support its position.

B. Prior to any Party's issuance of a written statement of dispute, the disputing Party shall engage the other Parties in informal dispute resolution among the Project Managers and/or their immediate supervisors. During the informal dispute resolution process, the Parties shall meet as many times as are necessary to discuss and attempt resolution of the dispute.

C. If agreement cannot be reached on any issue during the informal dispute resolution process, the disputing Party shall

forward the written statement of dispute to the Dispute Resolution Committee (DRC), thereby elevating the dispute to the DRC for resolution.

D. The DRC will serve as a forum for resolution of disputes for which agreement has not been reached through informal dispute resolution. The Parties shall each designate one individual and an alternate to serve on the DRC. The individuals designated to serve on the DRC shall be employed at a policy level (Senior Executive Service or equivalent). The EPA designated member on the DRC is the Waste Management Division (WMD) Director of EPA's Region IV. The DOE's designated member is the Assistant Manager for Environmental Restoration and Waste Management, Oak Ridge Field Office. The TDEC designated member is the Administrator, Bureau of Environment.

E. Following elevation of a dispute to the DRC, the DRC shall have twenty-one (21) days to unanimously resolve the dispute and issue a written decision. If the DRC is unable to unanimously resolve the dispute within this twenty-one (21) day period, the written statement of dispute shall be forwarded to the Senior Executive Committee (SEC) for resolution.

F. The SEC will serve as the forum for resolution of disputes for which agreement has not been reached by the DRC. The EPA representative on the SEC is the Regional Administrator of EPA's Region IV. The DOE representative on the SEC is the Manager, Oak Ridge Operations. The TDEC representative on the SEC is the Commissioner. The SEC members shall, as appropriate,

confer, meet, and exert their best efforts to resolve the dispute and issue a written decision. If unanimous resolution of the dispute is not reached within twenty-one (21) days, EPA's Regional Administrator shall issue a written position on the dispute. The DOE or TDEC may, within twenty-one (21) days of the Regional Administrator's issuance of EPA's position, issue a written notice elevating the dispute to the Administrator of EPA for resolution in accordance with all applicable laws and procedures. In the event that neither the DOE nor the TDEC elect to elevate the dispute to the EPA Administrator within the designated twenty-one (21) day elevation period, the DOE and the TDEC shall be deemed to have agreed with the Regional Administrator's written position with respect to the dispute.

G. Upon elevation of a dispute to the EPA Administrator pursuant to Subsection F, the Administrator will review and resolve the dispute within twenty-one (21) days. Upon request and prior to resolving the dispute, the Administrator shall meet and confer with any of the following parties; the Secretary of the DOE or the Commissioner of the TDEC to discuss the issue(s) under dispute. Upon resolution, the Administrator shall provide all Parties with a written final decision setting forth resolution of the dispute. These duties of the Administrator set forth in this Subsection shall not be delegated.

H. The pendency of any dispute under this Section shall not affect the DOE's responsibility for timely performance of the work required by this Agreement, except that the time period for

completion of work affected by such dispute shall be extended for a period of time usually not to exceed the actual time taken to resolve any good faith dispute in accordance with the procedures specified herein. All elements of the work required by this Agreement which are not affected by the dispute shall continue and be completed in accordance with the applicable schedule.

I. When dispute resolution is in progress, work affected by the dispute will immediately be discontinued if the Waste Management Division Director for EPA's Region IV requests, in writing, that work related to the dispute be stopped because, in EPA's opinion, such work is inadequate or defective, and such inadequacy or defect is likely to yield an adverse effect on human health or the environment, or is likely to have a substantial adverse effect on the remedy selection or implementation process. To the extent possible, EPA shall give DOE prior notification that a work stoppage request is forthcoming. After stoppage of work, if DOE believes that the work stoppage is inappropriate or may have potential significant adverse impacts, then the DOE may meet with the WMD to discuss the work stoppage. The final written decision of the WMD may be subjected to formal dispute resolution immediately. Such dispute may be brought directly to either the DRC or the SEC, at the discretion of the DOE or the TDEC.

J. Within thirty-five (35) days of resolution of a dispute pursuant to the procedures specified in this Section, the DOE shall incorporate the resolution and final determination into

the appropriate plan, schedule or procedures and proceed to implement this Agreement according to the amended plan, schedule or procedures.

K. Resolution of a dispute pursuant to this Section of this Agreement constitutes a final resolution of any dispute arising under this Agreement. All Parties shall abide by all terms and conditions of any final resolution of dispute obtained pursuant to this Section of this Agreement. Any resolution of a dispute pursuant to this Agreement shall be incorporated into this Agreement and shall become a term and condition of this Agreement.

L. Resolution of disputes may include a determination of the length of any time extensions which are necessary.

M. Pursuant to this Section, all or a portion of a dispute may be elevated.

N. Authorities set forth to members of the DRC or SEC may be delegated only to those person acting for the designated member during a designated member's absence.

XXVII. DESIGNATED PROJECT MANAGERS

A. The EPA, DOE, and the TDEC will each designate Project Managers to coordinate the implementation of this Agreement and shall notify each other in writing of the designation. Each party may change its designated Project Manager by notifying the other Parties in writing.

B. To the maximum extent possible, communications between the EPA, DOE, and the TDEC and all documents, including reports, agreements, and other correspondence, concerning the

activities performed pursuant to the terms and conditions of this Agreement, shall be directed through the Project Managers. Each Project Manager shall be responsible for assuring the internal dissemination and processing of all communications and documents received from the other Project Managers.

XXVIII. QUALITY ASSURANCE/SAMPLING AVAILABILITY/DATA MANAGEMENT

A. The Parties shall make available to each other, upon request, results of sampling, tests, or other data generated pursuant to this Agreement or any other environmental protection statute, regulation, or order. All quality-assured data contained in reports submitted to EPA and/or TDEC pursuant to this agreement shall be made available to the EPA and/or TDEC in electronic format within 30 days after report submission. All other environmental data generated pursuant to this Agreement or any other environmental protection statute, regulation, or order shall be made available, to a requesting party in hard copy or electronic format within 30 days after receipt of written request.

B. At the request of the EPA and/or the TDEC Project Manager, the DOE shall allow split or duplicate samples to be taken by EPA or TDEC during sample collection conducted pursuant to this Agreement. All such sampling locations or samples will be subject to review by the DOE's Classification and Technical Information Office. If the locations or samples are determined to be of a sensitive nature, then the packaging, handling, transport, analysis, and disposal of such samples must be carried out in a manner consistent with security concerns. The samples

and resulting data must be analyzed and stored in a secure facility meeting DOE security requirements and the data reviewed for classification. Notwithstanding this provision or any other provision of law, all requirements of the AEA, 42 U.S.C. § 2011, et seq., and all Executive Orders concerning the handling of unclassified controlled nuclear information, restricted data, and national security information, including "need to know" requirements, shall be applicable to any grant of access to classified information (including sample collection under this Section) under the provisions of this Agreement.

C. The Parties intend to integrate all data and release characterization studies generated pursuant to this Agreement with all data generated pursuant to the RFA/RFI being conducted pursuant to the corrective action requirements contained in DOE's RCRA permit for the Oak Ridge facility. All data and studies produced under this Agreement shall be managed and presented in accordance with the requirements contained in a Data Management Plan to be developed by the Parties and appended to this Agreement after the effective date of this Agreement. The DOE shall maintain one consolidated data base for the Site which includes all data/studies generated pursuant to this Agreement and those generated under Federal and State environmental permits. This data may be maintained in electronic form provided however, that hard copies of all data/studies and related documents are made available upon request.

XXIX. ACCESS/DATA/DOCUMENT AVAILABILITY

A. The EPA and TDEC will be permitted to enter the

Site at reasonable times previously arranged and coordinated for the purpose of inspecting records, logs, and other documents relevant to implementation of this Agreement; reviewing the progress of the DOE, its contractors, and lessees in carrying out the activities under this Agreement; conducting, with prior notice to the DOE, tests which EPA or TDEC deem necessary; and verifying data submitted to EPA and TDEC by DOE. The DOE shall honor all reasonable requests for access to the Site made by EPA or TDEC. When on-site, the EPA and TDEC shall comply with OSHA Hazardous Waste Operations and Emergency Response rules, where applicable, and the DOE's site health and safety requirements. The EPA and TDEC access shall be subject to the applicable requirements of the AEA, 42 U.S.C. § 2011, et seq., and Executive Orders concerning the handling of unclassified controlled nuclear information, restricted data, and national security information. Upon request by EPA or TDEC, the DOE shall submit to EPA and TDEC copies of records, and other documents, including sampling and monitoring data, that are relevant to oversight activities.

B. To the extent that activities pursuant to this Agreement must be carried out on property other than ORR property, the DOE agrees to use its best efforts, including exercising its authority, if necessary, to obtain access pursuant to Section 104(e) of CERCLA, 42 U.S.C. § 9604(e), from the present owners and/or lessees. The DOE shall use its best efforts to obtain access agreements which shall provide reasonable access for DOE, EPA, and TDEC and their representatives, and other appropriate state regulatory agencies.

C. The DOE shall use its best efforts to obtain written access agreements with respect to non-DOE property upon which pumping wells, treatment facilities, or other facilities may be located to carry out response actions under this Agreement. In the event DOE is unable to obtain access within sixty (60) days after the access is sought, the DOE shall promptly notify EPA and the TDEC regarding both the lack of access and the efforts undertaken to obtain such access. If appropriate, the DOE shall submit proposed modification(s) to this Agreement to EPA and TDEC in response to such inability to obtain access.

D. Information, records, or other documents (including D1 primary and secondary documents) produced under the terms of this Agreement by EPA, TDEC, and DOE shall be available to the public except (a) those identified to EPA and TDEC by DOE as classified within the meaning of and in conformance with the AEA or (b) those that could otherwise be withheld pursuant to the Freedom of Information Act or the Privacy Act, unless expressly authorized for release by the originating agency. Documents or information so identified shall be handled in accordance with those regulations. D1 documents may be made available to the public subject to the requirements of the Freedom of Information Act and the Tennessee Public Records Act, Tennessee Code Annotated Section 10-7-503.

XXX. EXTENSIONS

A. Either a timetable and deadline or a schedule shall be extended upon receipt of a timely request for extension and

when good cause exists for the requested extension. Any request for an extension shall be made prior to the deadline or scheduled deliverable date to EPA, TDEC or DOE, as appropriate, either in writing or orally with a written follow-up request, within ten (10) business days. Any oral or written request shall be provided to the other Parties pursuant to Section XXV (Notification) and in Appendix I-1 (Appendix E Extension Request Operating Instructions). The written request shall specify:

1. The timetable and deadline or the schedule that is sought to be extended;

2. The length of the extension sought;

3. The good cause(s) for the extension; and

4. Any related timetable and deadline or schedule that would be affected if the extension were granted.

B. Good cause exists for an extension when sought in regard to:

1. An event of force majeure;

2. A delay caused by another Party's failure to meet any requirement of this Agreement;

3. A delay caused by the good faith invocation of dispute resolution or the initiation of judicial action;

4. A delay caused, or which is likely to be caused, by the grant of an extension in regard to another timetable and deadline or schedule;

5. A delay caused by additional work agreed to by the Parties; and

6. Any other event or series of events mutually agreed to by the Parties as constituting good cause.

C. Absent agreement of the Parties with respect to the existence of good cause, the Parties may seek and obtain a determination through the dispute resolution process of whether or not good cause exists.

D. For extension requests by DOE, the EPA and TDEC shall use the following procedures:

1. Within fourteen (14) days of receipt of a written request for an extension of a timetable and deadline or a schedule, the EPA and TDEC shall advise all Parties in writing of their positions on the request. Any failure by EPA and TDEC to respond within the 14-day period shall be deemed to constitute concurrence with the requested extension. If EPA or TDEC do not concur with the requested extension, they shall include in their statement of nonconcurrence an explanation of the basis for their position.

2. If there is consensus among the Parties that the requested extension is warranted, then DOE shall extend the affected timetable and deadline or schedule accordingly. If there is no consensus among the Parties as to whether all or part of the requested extension is warranted, the timetable and deadline or schedule shall not be extended except in accordance with a determination resulting from the dispute resolution process.

3. Within fourteen (14) days of receipt of a statement of nonconcurrence with the requested extension, the DOE may invoke dispute resolution. If DOE does not invoke dispute resolution within fourteen (14) days of receipt of a statement of nonconcurrence, then DOE shall be deemed to have accepted EPA's or TDEC's nonconcurrence and the existing schedule shall remain in force.

4. A timely and good faith request for an extension shall toll any assessment of stipulated penalties or application for judicial enforcement of the affected timetable and deadline or schedule until a decision is reached on whether the requested extension will be approved. If dispute resolution is invoked and the requested extension is denied, stipulated penalties may be assessed and may accrue from the date of the disputed timetable, deadline, or schedule. Following the grant of an extension, an assessment of stipulated penalties, as defined in Section XLIV (Stipulated Penalties), or an application for judicial enforcement may be sought only to compel compliance with the timetable and deadline or schedule as most recently extended.

E. For extension requests by EPA and the TDEC, if no Party invokes dispute resolution within fourteen (14) days after written notice of the requested extension, the extension shall be deemed approved.

XXXI. FIVE YEAR REVIEW

Consistent with Section 121(c) of CERCLA, 42 U.S.C. § 9621(c), and in accordance with this Agreement, the DOE agrees

hat if the selected remedial action(s) result in hazardous substances, pollutants or contaminants remaining at the Site, the EPA and TDEC will review the remedial action(s) no less often than once every five (5) years after the initiation of the final remedial action(s) to assure that human health and the environment are being protected by the remedial action(s) being implemented. If, upon such review, it is the judgment of EPA or TDEC that additional action or modification of a remedial action is appropriate in accordance with Sections 104 or 106 of CERCLA, 42 U.S.C. §§ 9604 or 9606, then EPA or TDEC shall require DOE to submit a proposal to implement such additional or modified action(s), which shall be subject to review and approval by EPA and TDEC.

Any dispute under this Section shall be resolved under Section XXVI (Resolution of Disputes) of this Agreement.

XXXII. RETENTION OF RECORDS

The DOE shall preserve, during the duration of this Agreement and for a minimum of ten (10) years after the termination and satisfaction of this Agreement, the complete Administrative Record, post-Record of Decision, primary and secondary documents and quarterly reports. After this ten (10) year period, the DOE shall notify EPA and TDEC at least ninety (90) days prior to the destruction of any such records or documents. Upon request by EPA or TDEC, the DOE shall make available any such records or copies of such records.

XXXIII. ADMINISTRATIVE RECORD

A. The DOE shall establish and maintain both an on-site and off-site Administrative Record File and Administrative Record for each Record of Decision-Final, Record of Decision-Interim, and Removal Action performed on the Site. The off-site copy of the Administrative Record Files and Administrative Records shall be available to the public at the Information Resource Center in Oak Ridge, Tennessee. The DOE shall establish and maintain a database of the Administrative Record File and Administrative Record Indexes that can be accessed electronically by the Parties and the public. Hard copies of these indexes and any publicly available documents identified in the electronic indexes shall be made available at the Information Resource Center.

B. The selection of each response action shall be based on the Administrative Record, in accordance with Section 113(k) of CERCLA, 42 U.S.C. § 9613(k), any regulations promulgated pursuant to that Section and any applicable guidance. A complete index of each Administrative Record shall be maintained at EPA's Region IV office, currently at 345 Courtland Street, N. E., Atlanta, Georgia 30365.

C. The DOE shall provide EPA and TDEC with copies of documents generated or possessed by DOE which are included in the Administrative Record Files and Administrative Records. The EPA and TDEC shall provide DOE with copies of documents generated by each agency which should be included within the Administrative Record Files and Administrative Records.

D. The DOE shall submit to the EPA and TDEC for review and approval, both an electronic and hard copy index of the

proposed Administrative Record with the D1 version of the Record of Decision document and each subsequent revision.

E. The EPA and TDEC shall review the proposed Administrative Record and notify the DOE, in writing, of any recommendations or comments concerning the contents of the proposed Administrative Record.

F. Following issuance of the Record of Decision, the EPA and TDEC shall issue written approval of the proposed Administrative Record contents and the DOE will establish the Administrative Record, and provide the EPA and TDEC with a copy of the official Administrative Record Index.

G. The EPA shall provide the DOE with guidance on establishing and maintaining the Administrative Record as the Agency develops guidance.

H. The DOE shall provide to the EPA and TDEC, upon request and with the appropriate clearance level, review of Administrative Record File or Administrative Record documents identified as Privileged and therefore, not available for public review at the Information Resource Center.

XXXIV. PUBLIC PARTICIPATION

A. The Parties agree that work conducted under this Agreement and any subsequent proposed remedial action alternative(s) and subsequent plan(s) for remedial action at the Site arising out of this Agreement shall comply with the public participation requirements of CERCLA, including Section 117 of CERCLA, 42 U.S.C. § 9617, the NCP, all applicable guidance developed by EPA, and all applicable State laws. This shall be achieved through implementation of the approved Community

Relations Plan prepared and implemented by DOE. When appropriate, the Parties intend to coordinate public participation activities under this Agreement with those required under other State and Federal environmental laws regulating activities at the Oak Ridge facility.

B. Excluding imminent hazard situations, any Party issuing an official press release to any publication with reference to any of the work required by this Agreement shall advise the other Parties of such official press release and the contents thereof at least two (2) business days before the issuance of such press release.

C. Nothing in this Agreement shall be construed to preclude any Party from responding to public inquiries at any time.

XXXV. RECOVERY OF EXPENSES

A. Reimbursement of EPA Expenses

The EPA and DOE agree to amend this Section at a later date in accordance with any subsequent resolution of the currently contested issue of EPA cost reimbursement.

B. Reimbursement of TDEC Expenses

1. The DOE agrees to reimburse the TDEC for its costs specifically related to the implementation of this Agreement at the Site and that are not inconsistent with the NCP.

2. A separate funding agreement between DOE and TDEC will be executed contemporaneously with this Agreement. The separate funding agreement between DOE and TDEC shall be the

specific mechanism for the transfer of funds between DOE and TDEC for payment of the costs referred to in Subsection B.1.

3. For the purposes of budget planning only, the TDEC shall provide to DOE, on or before February 15th of each year, a written estimate of TDEC's projected oversight costs in implementing the Agreement for two succeeding fiscal years. For example, on February 15, 1990, the TDEC will provide an estimate for fiscal years 1991 and 1992.

4. The State reserves all rights it has to recover any other past and future costs incurred by TDEC in connection with activities conducted at the Site.

5. In the event of a substantial increase in TDEC's costs incurred specifically related to the implementation of this Agreement, the TDEC and DOE agree to negotiate the amount established in the separate funding agreement to reflect such increase proportionate to the circumstances. The amount and schedule of payment of these costs will be negotiated with consideration for DOE's multi-year funding cycle.

6. Any dispute arising under this Section (e.g., a disputed cost item) is not subject to the process established by Section XXVI (Resolution of Disputes) of this Agreement, but will be resolved under the dispute resolution procedures established in the separate funding agreement between DOE and TDEC. If any disputes arising under the separate funding agreement cannot be resolved, the TDEC reserves any rights it may have to recoup costs not reimbursed by DOE under applicable law. In any event, the

TDEC shall at all times retain all of its legal and equitable remedies to recover any costs that are not reimbursed by DOE, and DOE shall retain all legal and equitable defenses available under Federal and State law.

XXXVI. CLAIMS AND PUBLICATION

A. The DOE agrees to assume full responsibility for the remediation of the Site in accordance with CERCLA, the NCP, and applicable Tennessee State law. However, nothing in this Agreement shall constitute or be construed as a release by TDEC, DOE, or EPA of any claims, causes of action, or demand in law or equity against any person, firm, partnership, or corporation not a signatory to this Agreement for any liability which it may have arising out of or related in any way to the generation, storage, treatment, handling, transportation, release, or disposal of any hazardous substances, hazardous wastes, pollutants, or contaminants found at, taken to, or taken from the Site.

B. This Agreement does not constitute any decision or preauthorization by EPA of funds under Section 111(a)(2) of CERCLA, 42 U.S.C. § 9611(a)(2) for any person, agent, contractor, or consultant acting for DOE.

C. The EPA and TDEC shall not be held as a party to any contract entered into by DOE to implement the requirements of this Agreement.

D. This Agreement shall not restrict EPA or TDEC from any legal, equitable, administrative, or response action for any matter not part of the work covered by this Agreement.

E. Nothing in this Agreement shall be considered an admission by any Party with respect to any unrelated claims by any Party or any claims by persons not a Party to this Agreement.

XXXVII. ORDER OF PREFERENCE

In the event of any inconsistency between the Sections of this Agreement and the Appendices to this Agreement, the Sections of this Agreement shall govern unless specifically stated otherwise in this Agreement.

XXXVIII. FUNDING

A. It is the expectation of the Parties that all obligations of DOE arising under this Agreement will be fully funded. DOE shall take all necessary steps and make efforts to obtain timely funding to meet its obligations under this Agreement. In accordance with Section 120(e)(5)(B) of CERCLA, 42 U.S.C. § 9620(e)(5)(B), the DOE shall include in its annual report to Congress the specific cost estimates and budgetary proposals associated with the implementation of this Agreement. Nothing herein shall affect the DOE's authority over its budget and funding level submissions. The DOE shall make available the appropriate section of its proposed budget to EPA and TDEC after the President has submitted the budget to Congress. The EPA and DOE agree that any requirement for the payment or obligation of funds, including stipulated penalties, by DOE established by the terms of this Agreement shall be subject to the availability of appropriated funds, and no provision herein shall be interpreted to require obligation or payment of funds in violation of the

Anti-Deficiency Act, 31 U.S.C. § 1341. In cases where payment or obligation of funds would constitute a violation of the Anti-Deficiency Act, the dates established requiring the payment of obligation of such funds shall be appropriately adjusted.

B. If appropriated funds are not available to fulfill DOE's obligations under this Agreement, EPA and TDEC reserve the right to initiate any other action which would be appropriate absent this Agreement.

C. If appropriated funds are not available to fulfill DOE's obligation under this Agreement, the Parties shall attempt to agree upon appropriate adjustments to the timetables and deadlines which require the payment or obligation of such funds. If no agreement can be reached then the TDEC and DOE agree that in any action by the TDEC to enforce any provision of this Agreement, the DOE may raise as a defense that its failure or delay was caused by the unavailability of appropriated funds. The TDEC disagrees that the lack of appropriations or funding is a valid defense. However, the TDEC and DOE agree and stipulate that it is premature at this time to raise and adjudicate the existence of such a defense. Acceptance of this provision (or any other specific reservation of rights by TDEC) does not constitute a waiver by DOE that its obligations under this Agreement are subject to the provisions of the Anti-Deficiency Act, 31 U.S.C. § 1341.

D. The DOE is preparing an Environmental Restoration and Waste Management Plan (5-Year Plan) which will identify,

integrate and prioritize compliance and cleanup activities at all DOE nuclear facilities and sites, and provide a consistent basis for DOE to address environmental requirements and develop and support its budget requests. The 5-Year Plan will be updated annually to incorporate any changes that occur in the program, including changes due to the following factors: the availability of Congressional funding; the completion or modification of Federal Facility Agreements; application of a national prioritization system to environmental restoration and waste management activities conducted under the 5-Year Plan; conditions determined as the result of assessment and characterization activities at DOE facilities and sites; and new or amended regulatory requirements. The activities and related milestones in the 5-Year Plan shall be consistent with the provisions, including requirements and schedules, of this Agreement; it is the intent of DOE that the 5-Year Plan be drafted to ensure that the provisions of this Agreement are incorporated into the DOE planning and budget process. Nothing in the 5-Year Plan shall be construed to affect the provisions of this Agreement. However, the Parties recognize that application of the 5-Year Plan's national prioritization system may result in a proposed implementation schedule for environmental restoration and waste management activities that is different than the timetables and deadlines specified in this Agreement; the Parties shall work to address and resolve any such differences and reserve the right to modify this

Agreement and, where necessary, to invoke the appropriate dispute resolution provisions of this Agreement. Any modifications to this Agreement will be incorporated, as necessary, in the annual updates of the 5-Year Plan.

XXXIX. COMPLIANCE WITH LAWS

All actions undertaken pursuant to this Agreement by the Parties, or their representative(s), shall be done in accordance with all applicable Federal laws, regulations and Executive Orders, and all applicable State and local laws and regulations.

XL. FORCE MAJEURE

A. A Force Majeure shall mean any event arising from causes beyond the control of a Party that causes a delay in or prevents the performance of any obligation under this Agreement, including, but not limited to:

1. Acts of God; fire; war; insurrection; civil disturbance; or explosion;

2. Unanticipated breakage or accident to machinery, equipment or lines of pipe despite reasonably diligent maintenance;

3. Adverse weather conditions that could not be reasonably anticipated; unusual delay in transportation;

4. Restraint by court order or order of public authority;

5. Inability to obtain, at a reasonable cost and after exercise of reasonable diligence, any necessary

authorizations, approvals, permits, or licenses due to action or inaction of any governmental agency or authority other than DOE;

6. Delays caused by compliance with applicable statutes or regulations governing contracting, procurement or acquisition procedures, despite the exercise of reasonable diligence; and

7. For EPA and DOE only, insufficient availability of appropriated funds which have been diligently sought. In order for Force Majeure based on insufficient funding to apply to DOE, the DOE shall have made timely request for such funds as part of the budgetary process set forth in Section XXXVIII (Funding) of this Agreement.

B. A Force Majeure shall also include any strike or other labor dispute, not within the control of the Parties affected thereby. Force Majeure shall not include increased costs or expenses of Response Actions, whether or not anticipated at the time such Response Actions were initiated.

C. The DOE and TDEC agree that Subsection A.2 (entirely), Subsection A.3 ("delay in transportation"), Subsection A.4 ("order of public authority"), Subsection A.5 ("at reasonable cost"), and Subsection A.6 (entirely) above, do not create any presumptions that such events arise from causes beyond the control of a Party. The TDEC specifically reserves the right to withhold its concurrence to any extensions which are based on such events which TDEC contends are not entirely beyond the control of DOE

pursuant to terms of Section XXX (Extensions), or to contend that such events do not constitute force majeure in any action to enforce this Agreement.

XLI. MODIFICATION OF AGREEMENT

A. This Agreement may be modified by agreement of all the Parties. All major modifications shall be in writing and shall become effective upon the date on which such modifications are signed by all Parties. EPA shall be the last signatory on any modifications to this Agreement.

B. Except as provided in Subsection C, no informal advice, guidance, suggestions, or comments by EPA or TDEC regarding reports, plans, specifications, schedules, and any other written submittal by DOE shall be construed as relieving DOE of its obligation to obtain such formal approval as may be required by this Agreement.

C. Modifications shall be considered major modifications under Subsection A, if designated "major" by any Party. A major modification is subject to public participation to the extent required by the DOE's Community Relations Plan under Section XXXIV (Public Participation) of this Agreement. All other modifications (including field modifications) shall not be considered major and can be made informally upon consent of the Project Managers. Informal modifications shall be confirmed in writing within ten (10) days following the consent of the Project Managers.

D. Any modification to this Agreement, its appendices, or any primary or secondary document which incorporates new

innovative technology shall be considered a major modification to this Agreement. The Parties agree that such modifications will be made in the future where appropriate to incorporate those new technologies which achieve compliance with this Agreement, either at reduced cost, or in a shorter period of time.

XLII. COVENANT NOT TO SUE/RESERVATION OF RIGHTS

A. In consideration for DOE's compliance with this Agreement, and based on the information known to the Parties on the effective date of this Agreement, the EPA agrees that compliance with this Agreement shall stand in lieu of any administrative, legal and equitable remedies against the DOE available to it regarding the currently known releases or threatened releases of hazardous substances including hazardous wastes, pollutants or contaminants at the Site which are the subject of the RI/FS(s) and which will be addressed by the remedial action(s) provided for under this Agreement; the TDEC agrees to exhaust fully any remedies provided in Section XXVI (Resolution of Disputes) of this Agreement prior to taking any other enforcement action available to it regarding the currently known releases or threatened releases of hazardous substances including hazardous wastes, pollutants or contaminants at the Site which are the subject of the RI/FS(s) and which will be addressed by the remedial action(s) provided for under this Agreement. Nothing in this Agreement shall preclude either the EPA or TDEC from exercising any administrative, legal and equitable remedies available (including the assessment of civil penalties and damages

if such are otherwise legally assessable) to require additional response actions by the DOE in the event that the implementation of the requirements of this Agreement is no longer protective of public health and the environment.

B. Except to the extent expressly provided in Subsection A of this Section, this Agreement shall not be construed as waiving any right or authority that TDEC may have and shall not be construed as a bar or release of any claim, cause of action or demand in law or equity including any right TDEC may have to assess penalties for DOE's failure to comply with any term or condition of this Agreement or any timetable or deadline established pursuant to this Agreement. Notwithstanding the provisions of Section XXVI.K., or any other Section of this Agreement, in the event that TDEC is dissatisfied with any final decision issued by the Administrator pursuant to Section XXVI (Resolution of Disputes) TDEC may take any action concerning the disputed matter which would be available in the absence of this Agreement.

C. Notwithstanding this Section, or any other Section of this Agreement, the TDEC shall retain the right to obtain judicial review of any final decision of EPA on selection of a remedial action pursuant to any authority the TDEC may have under Sections 113, 121(e)(2), 121(f), and 310 of CERCLA, 42 U.S.C. SS 9613, 9621(e)(2), 9621(f), and 9659.

D. This Agreement does not affect any claims TDEC may have for natural resource damage assessments or for damages to natural resources.

XLIII. PROPERTY TRANSFER

In the event that DOE determines to enter into any contract for the sale or transfer of any of the Site, the DOE shall comply with the requirements of Section 120(h) of CERCLA, 42 U.S.C. § 9620(h), in effectuating that sale or transfer, including all notice requirements. In addition, the DOE shall include notice of this Agreement in any document transferring ownership or operation of the Site to any subsequent owner and/or operator of any portion of the Site and shall notify EPA and TDEC of any such sale or transfer at least ninety (90) days prior to such sale or transfer. No change in ownership of the Site or any portion thereof or notice pursuant to Section 120(h)(3)(B) of CERCLA, 42 U.S.C. § 9620(h)(3)(B), shall relieve the DOE of its obligation to perform pursuant to this Agreement. No change of ownership of the Site or any portion thereof shall be consummated by the DOE without provision for continued maintenance of any containment system, treatment system, or other response action(s) installed or implemented pursuant to this Agreement. This provision does not relieve the DOE of its obligations under 40 C.F.R. Part 270.

XLIV. STIPULATED PENALTIES

A. In the event that DOE fails to submit a primary document, as identified in Section XXI (Review/Comment), to EPA and/or TDEC pursuant to the appropriate timetable or deadline in

accordance with the requirements of this Agreement, or any extensions granted pursuant to this Agreement, or fails to comply with a term or condition of this Agreement which relates to an operable unit or final remedial action, EPA and/or TDEC may assess a stipulated penalty against DOE. A stipulated penalty may be assessed in an amount not to exceed $5,000 (total amount of EPA and TDEC assessment) for the first week (or part thereof), and $10,000 (total amount of EPA and TDEC assessment) for each additional week (or part thereof) for which a failure set forth in this Subsection occurs.

B. Upon determining that the DOE has failed in a manner set forth in Subsection A, above, EPA and/or TDEC shall so notify DOE in writing. If the failure in question is not already subject to dispute resolution at the time such notice is received, then DOE shall have fifteen (15) days after receipt of the notice to invoke dispute resolution on the question of whether the failure did in fact occur. The DOE shall not be liable for the stipulated penalty assessed by EPA or TDEC if the failure is determined, through the dispute resolution process, not to have occurred. No assessment of a stipulated penalty shall be final until the conclusion of dispute resolution procedures related to the assessment of the stipulated penalty.

C. The DOE annual report to Congress required by Section 120(e)(5) of CERCLA, 42 U.S.C. § 9620(e)(5), shall include, with

respect to each final assessment of a stipulated penalty against DOE under this Agreement, each of the following:

1. The facility responsible for the failure;

2. A statement of the facts and circumstances giving rise to the failure;

3. A statement of any administrative or other corrective action taken at the relevant facility, or a statement of why such measures were determined to be inappropriate;

4. A statement of any additional action taken by the facility to prevent recurrence of the same type of failure; and

5. The total dollar amount of the stipulated penalty assessed for the particular failure.

D. Stipulated penalties assessed pursuant to this Section shall be payable to the Hazardous Substances Response Trust Fund from funds authorized and appropriated for that specific purpose.

E. Stipulated penalties assessed by TDEC pursuant to this Section shall be payable, as TDEC may direct, to the Tennessee Remedial Action fund, The Tennessee Environmental Protection Fund or the Solid Waste Disposal Site Restoration Fund.

F. In no event shall this Section give rise to a stipulated penalty in excess of the amount set forth in Section 109 of CERCLA, 42 U.S.C. § 9609.

G. This Section shall not affect DOE's ability to obtain an extension of a timetable, deadline, or schedule pursuant to Section XXX (Extensions) of this Agreement.

H. Nothing in this Agreement shall be construed to render any officer or employee of DOE personally liable for the payment of any stipulated penalty assessed pursuant to this Section.

XLV. ENFORCEABILITY

A. The Parties agree that:

1. Upon the effective date of this Agreement, any standard, regulation, condition, requirement, or order which has become effective under CERCLA and is incorporated into this Agreement is enforceable by any person pursuant to Section 310 of CERCLA, 42 U.S.C. § 9659, and any violation of such standard, regulation, condition, requirement, or order will be subject to civil penalties under Sections 310(c) and 109 of CERCLA, 42 U.S.C. §§ 9659(c) and 9609;

2. All timetables or deadlines associated with the development, implementation and completion of the RI/FS shall be enforceable by any person pursuant to Section 310 of CERCLA, 42 U.S.C. § 9659, and any violation of such timetables or deadlines will be subject to civil penalties under Sections 310(c) and 109 of CERCLA, 42 U.S.C. §§ 9659(c) and 9609;

3. All terms and conditions of this Agreement which relate to operable units or final remedial actions, including corresponding timetables, deadlines, or schedules, and all work associated with the interim or final remedial actions, shall be enforceable by any person pursuant to Section 310(c) of CERCLA, 42 U.S.C. § 9659(c), and any violation of such terms or conditions

will be subject to civil penalties under Sections 310(c) and 109 of CERCLA, 42 U.S.C. §§ 9659(c) and 9609; and

4. Any final resolution of a dispute pursuant to Section XXVI (Resolution of Disputes) of this Agreement which establishes a term, condition, timetable, deadline, or schedule shall be enforceable by any person pursuant to Section 310(c) of CERCLA, 42 U.S.C. § 9659(c), and any violation of such term, condition, timetable, deadline or schedule will be subject to civil penalties under Section 310(c) and 109 of CERCLA, 42 U.S.C. §§ 9659(c) and 9609.

B. Nothing in this Agreement shall be construed as authorizing any person to seek judicial review of any action or work where review is barred by any provisions of CERCLA, including Section 113(h) of CERCLA, 42 U.S.C. § 9613(h).

C. The Parties agree that all Parties shall have the right to enforce the terms of this Agreement.

D. Appendix H to this Agreement is a letter from the U.S. Department of Justice to the State of Tennessee which sets forth the Department of Justice's position on the enforceability of this Agreement.

XLVI. TERMINATION AND SATISFACTION

A. To the extent that remedial response actions are conducted in operable units under the provisions of this Agreement, following completion of all response actions at an operable unit and upon written request by DOE, the EPA, with the concurrence of the TDEC, will send to DOE a written notice that the operable unit has been completed in accordance with the requirements for that operable unit. This notice shall not be construed to be written notice of termination and satisfaction under Subsection B of this Section.

B. To the extent that remedial response actions are conducted pursuant to the provisions of this Agreement, following the completion of all remedial response actions and upon written request by DOE, the EPA, with the concurrence of the TDEC will send to DOE a written notice of satisfaction of the terms of this Agreement within ninety (90) days of the request. The notice shall state that, in the opinion of EPA and TDEC, the DOE has satisfied all the terms of this Agreement in accordance with the requirements of CERCLA, the NCP, Section 3008(h) of RCRA, 42 U.S.C. § 6928(h), and related guidance, and applicable State laws and that the work performed by DOE is consistent with the agreed-to remedial actions and in compliance with the ARARs identified pursuant to this Agreement.

C. The TDEC may withdraw as a Party to this Agreement by providing at least ninety (90) days written notice of its intent to withdraw to each of the other Parties. Such withdrawal by TDEC

will terminate all of the duties and responsibilities which TDEC would otherwise have under this Agreement. After any such withdrawal, this Agreement shall not be construed as waiving any right or authority that TDEC may have and shall not be construed as a bar or release of any claim, cause of action or demand in law or equity.

XLVII. EFFECTIVE DATE

This Agreement shall become effective after it is executed by all the Parties and upon the date set by EPA in written notification to all Parties that the Agreement has been finally-executed and is effective.

IT IS SO AGREED:

11/8/91
DATE

J. W. Luna, Commissioner
Tennessee Department of
Environment and Conservation

11/13/91
DATE

Joe La Grone, Manager
Department of Energy
Oak Ridge Operations

OCT 16 1991
DATE

Greer C. Tidwell
Regional Administrator
United States Environmental
Protection Agency

APPENDIX A

RCRA/CERCLA TERMINOLOGY

RCRA/CERCLA TERMINOLOGY

RCRA CORRECTIVE ACTION §§ 3004(u),(v)3008(h)	CERCLA REMEDIAL ACTION 40 C.F.R. Part 300	COMBINATION (RCRA/CERCLA)
ACRONYMS:		
RFI: RCRA Facility Investigation	RI: Remedial Investigation	RFI/RI
CMS: Corrective Measures Study	FS: Feasibility Study	CMS/FS
CMP: Corrective Measures Plan	RAP: Remedial Action Plan	CMS/RAP
CMD: Corrective Measures Design	RD: Remedial Design	CMD/RD

General Terminology:

Corrective Action: RCRA term for all activities conducted under either §§ 3004(u) and (v) or § 3008(h) or both. Regulations governing RCRA corrective action are expected to be proposed and published at Subpart S of 40 C.F.R. Part 264.

Closure: RCRA term for requirements of Subpart G of 40 C.F.R. Parts 264 and 265 for RCRA-regulated TSD units only.

Site: CERCLA term as defined in NCP and IAG.

Solid Waste Management Unit (SWMU): RCRA term as defined in RCRA permit.

APPENDIX B

OAK RIDGE SITE DESCRIPTION

GENERAL INFORMATION

General Description of Plant Facilities

The Oak Ridge Reservation (ORR) (Figures 1 and 2) contains three major facilities: the Oak Ridge National Laboratory (ORNL) for energy research and development; the Oak Ridge Y-12 Plant (Y-12) for weapons production; and the Oak Ridge Gaseous Diffusion Plant (ORGDP) formerly utilized for enriching uranium. In April 1984 Martin Marietta Energy Systems, Inc. assumed the role of operating contractor for these facilities.

ORNL, located toward the west end of Bethel Valley, is a large, multipurpose research laboratory whose mission is to conduct basic and applied research in areas related to energy.

The Oak Ridge Y-12 Plant, which is located immediately adjacent to the City of Oak Ridge, has five major responsibilities: (1) fabricate nuclear weapons components, (2) process source and special nuclear materials, (3) provide support to the weapons design laboratories, (4) provide support to other installations, and (5) provide support to other government agencies.

Until the summer of 1985, the primary mission of the ORGDP was U-235 enrichment of uranium hexafluoride (UF_6) for eventual use as a fuel in nuclear reactors. The gaseous diffusion process was used to accomplish the isotopic enrichment. In August 1985, the gaseous diffusion process at ORGDP was shut down.

OAK RIDGE Y-12 PLANT

The Y-12 Plant produces components for the various nuclear weapon system in the nation's defense arsenal. A portion of this effort involves converting U-235 compounds to metal and the appropriate casting, rolling, and machining operations required to produce a finished product.

The Y-12 Plant lies directly south of Oak Ridge, Tennessee. The Y-12 Plant occupies the upper reaches of East Fork Poplar Creek in Bear Creek Valley, which lies between Pine Ridge to the north and Chestnut Ridge to the south. In the Y-12 area, the land surface in Bear Creek Valley has an elevation of 975+/-50 ft, and the tops of Pine and Chestnut Ridges rise to 1200+/-50 ft.

Bear Creek Valley contains a topographic divide that produces a diverging surface water drainage system. Bear Creek flows southwest to Poplar Creek. East Fork Poplar Creek, which drains most of the Y-12 facilities, flows in the opposite direction to the northeast.

Bear Creek Valley is underlain by Cambrian limestones, siltstones and shales referred to as the Conasauga Group. Pine Ridge consists of sandstones and sandy shales of the Rome formation, and Chestnut Ridge is composed of siliceous dolomites of the Knox Group.

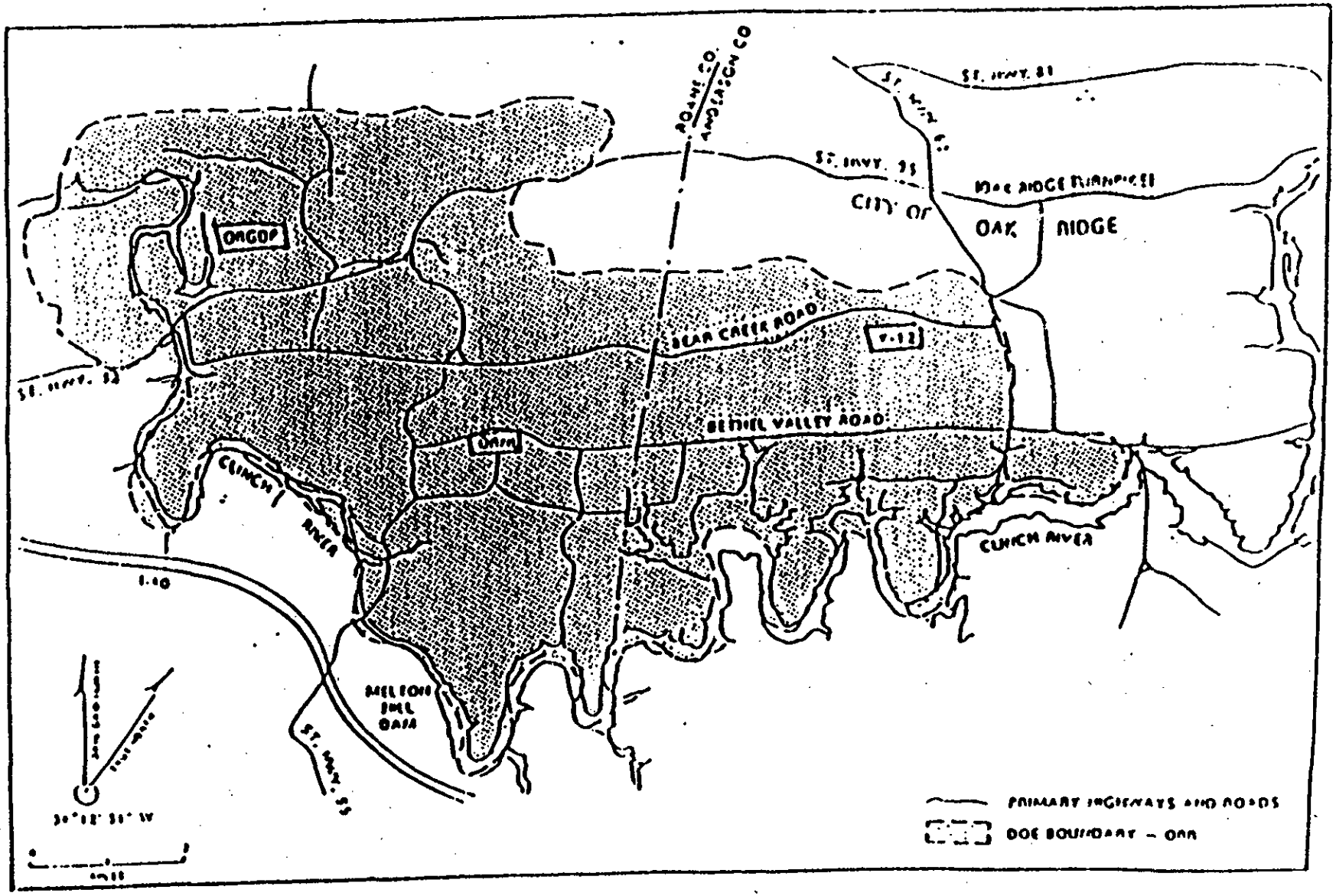


FIGURE 1
MAP OF DOE'S OAK RIDGE RESERVATION

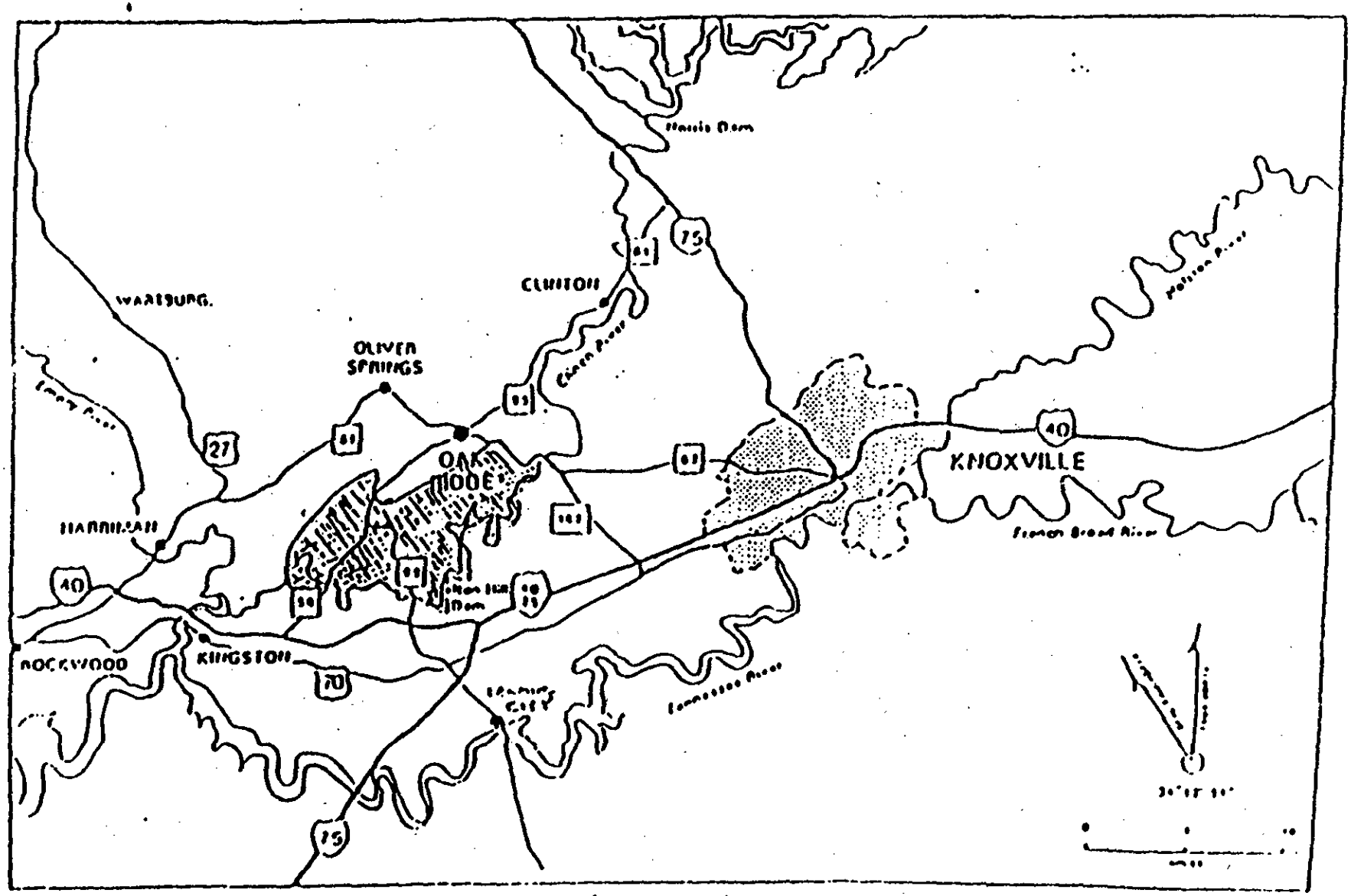


FIGURE 2
MAP OF THE OAK RIDGE, TENNESSEE AREA

OAK RIDGE GASEOUS DIFFUSION PLANT (ORGDP)

Although much of ORGDP (also known as K-25) is shut down, some waste streams are being generated and wastes now in storage will require disposal. Waste management activities at ORGDP are increasing. Low-level radioactive waste from other DOE-ORO sites are now being placed in interim storage facilities in the K-25 Building vaults until the final disposition strategy is identified. Also, polychlorinated biphenyl (PCB) contaminated wastes began arriving from other DOE-ORO sites in 1987 for future incineration in the new K-1435 Toxic Substance Control Act (TSCA) incinerator.

As with any large-scale separation process, major support and auxiliary facilities were required. Typical facilities included the feed system and the systems for collecting the product and waste (tails) streams. The uranium hexafluoride (UF_6) feed material was vaporized to the cascade from its containment cylinder in steam-heated autoclaves. The product and tails withdrawal required a condensing system.

Operation of most of the diffusion stages is below atmospheric pressure; therefore, containment leakage to the cascade from the atmosphere, from feed materials, and from internal coolant leaks required a purge cascade for removal of unwanted materials. Trapping facilities employing alumina and sodium fluoride were used extensively.

The recirculating water source for the heat dissipation system was raw water from the Clinch River which was pumped to a clarification facility and treated with lime, soda ash, and organic coagulants (polymers) for removal of calcium, magnesium, and suspended solids. The clarified water was treated with hexavalent chromium, zinc, and phosphate to inhibit corrosion of heat transfer equipment.

Due to high rates of water evaporation in this system, it was necessary to remove or direct a portion of the recirculating water flow through a side stream softener for removal of dissolved solids that concentrate in water. The precipitate for this operation was discharged to a holding pond. A blowdown stream from the recirculating water system was processed through an electrolytic reduction facility where the soluble hexavalent chromium (Cr^{+6}) was reduced to the trivalent state, (Cr^{+3}) precipitated, and transferred to the same holding pond.

Support facilities produced solutions that required concentration and recovery with some residual discarded and buried. Laboratory sample residues and obsolete chemical reagents, spent chemicals, and contaminated equipment used in research and development projects, and trapping materials, such as alumina and sodium fluoride, became candidates for discard.

Contaminated classified scrap, material, and equipment discards and classified waste were taken to classified yards and buried.

HISTORICAL RELEASES

Radionuclide Release Summary

From 1946 through 1987, total uranium releases from ORGDP are estimated to be 10,517 kg to the air, 16,699 kg to the surface water, and 33,000 kg to on-site land disposal.

Chemical Release Summary

Numerous chemicals were used at ORGDP each year. Of these, several were released to the atmosphere during normal use due to their volatility. A list of chemicals and the yearly average release for the years between 1979 and 1985 are shown in the following table.

ORGDP Chemical Releases, 1974-1985

Chemical	Annual Average Release
Carbon Tetrachloride	1.8 gal
Chloroform	12 lb
Fluorine	91 lb
Methylene chloride	692 lb
1,1,2-Trichloro-1,2,2-Trifloroethane/acetone	348 gal
1,1,2-Trichloro-1,2,2-Trifluoroethane/isopropanol and nitromethane	226 lb

OAK RIDGE NATIONAL LABORATORY (ORNL)

The Oak Ridge National Laboratory (ORNL), also known as the X-10 Site, is located in the southwest portion of the Oak Ridge Reservation on Bethel Valley Road. It comprises approximately 3563 ha, consisting of 445 ha in the central site located in Bethel Valley, of which 222 ha are fenced, and a 3118-ha buffer area containing several satellite facilities. Controlled access to the site is maintained by fences and a 24-hour security patrol.

The principal facilities located at the central site consist of nuclear research reactors, particle accelerators, hot cells, radioisotope production facilities, research facilities in the basic and applied sciences, support operations, and waste management units. Other facilities are located in satellite areas in proximity to the main plant site. These include research reactors; fuel reprocessing facilities; waste treatment, storage and disposal units located in Melton Valley; and the Tower Shielding Facility located on Copper Ridge south of Melton Valley.

Waste Generation

Although early records of ORNL site operations are generally not complete, it has been possible to piece together a fairly accurate summary of the major waste generating programs through the available records and interviews with ORNL staff who worked during most of the operating life of the Laboratory. Based on that information, six programs or activities were found to be responsible for essentially all of the waste generation and on-site disposal. These activities are listed as follows:

- o fuel reprocessing,
- o isotopes production,
- o waste management,
- o radioisotope applications,
- o reactor developments, and
- o multi-program laboratory operations.

Waste streams (both liquid and solid) produced by these programs can be characterized as nonhazardous, chemically hazardous, radioactive, or mixed, i.e., containing both radionuclides and hazardous chemicals. Although ORNL produces a variety of waste streams, the bulk of the hazardous waste is radioactive or mixed. In addition to waste generated on site, a significant quantity of solid, low-level radioactive wastes generated at other sites have been disposed of at ORNL. These were received when ORNL was designated as the Southern Regional Burial Ground from 1955 to 1963 and are contained in Solid Waste Storage Areas (SWSAs) 4 and 5.

Environmental Releases

Treatment, storage and/or disposal of liquid and solid wastes in underground storage tanks, surface impoundments, pits/trenches, landfills, and waste treatment facilities have resulted in environmental releases of radioactive and nonradioactive contaminants. As a result of routine waste management operations, a number of spills and leaks have occurred that have resulted in contaminant releases. The magnitude of contamination from environmental releases is dependent, among other factors, on the nature of the waste and the method of disposal and is currently being determined by the Remedial Action Program (RAP).

As an initial step in identifying areas where past and current waste management activities have resulted in residual contamination or which represent a potential source of continuing environmental release, a complete listing of all known active/inactive waste management areas and contaminated facilities has been prepared. Because of the large number of sites on the list (around 300), ORNL has combined the sites into 20 waste area groupings (WAGs). The WAG concept was developed in order to allow "perimeter monitoring of both groundwater and surface water for each hydrologic entity in a time frame that is much shorter than that required to isolate and define each solid waste management unit (SWMU) individually" (Resource Conservation and Recovery Act [RCRA] Facility Assessment, 1987). Each WAG contains sites within geographically contiguous and/or hydrologically defined areas. Three of the WAGs contain only a single site (WAGs 11, 12 and 20); several contain only two to four discrete units (WAGs 2, 3, 4, 6, 10, 13, 15, and 16); the remainder contain ten or more sites. The main plant area (WAG 1), for example, contains more than 100 sites that include surface impoundments, landfills, tanks, container storage areas, treatment facilities, and leak/spill sites.

Evaluation of historical information and the analytical results from environmental surveys indicates that seven of the WAGs will be further characterized in order to determine the source and magnitude of contaminant release. These characterizations are currently being conducted under the authority of RCRA Section 3004(u) according to conditions established by the RCRA Hazardous and Solid Waste Amendments permit for ORNL's Hazardous Waste Storage Facility - Building 7652.

As remedial investigations continue, it is expected that additional contaminated sites or potential sources of contaminant releases will be discovered. These will be added to ORNL's list of SWMU/Comprehensive Environmental Response, Compensation, and Liability Act sites, if appropriate, and according to procedures established in ORNL's RCRA permit - Permit No. TN 1890090003.

OAK RIDGE ASSOCIATED UNIVERSITIES

Oak Ridge Associated Universities (ORAU) is a private not-for-profit association of 49 colleges and universities. It is a contractor of the U.S. Department of Energy, conducting research and educational programs in the areas of energy, health, and the environment for DOE, ORAU's member institutions, and other private and government organizations. For administrative purposes, ORAU is being included with ORNL facility description, although the facilities, missions and operating contractors are different.

The accidental irradiation of cattle in New Mexico during the testing of the first atomic bomb in 1945 provided an opportunity to study the long-range biological effects of irradiation on animals. The U.S. Government purchased the cattle and shipped them to Oak Ridge and began a research program to investigate the effects of fallout radiation.

History of Operation

Five potential CERCLA sites at ORAU are considered. Four of these sites are on property previously operated by the University of Tennessee for the Atomic Energy Commission (AEC).

Specific Site Descriptions

ANIMAL DISPOSAL SITE I

A site closure plan was approved on April 11, 1985, by the Tennessee Department of Health and Environment. Closure has been certified.

The carcass burial ground is located near the intersection of Pumphouse and Bethel Valley Roads and is an area not accessible to the general public.

ANIMAL DISPOSAL SITE II

This disposal site is located on Freels Bend Road near Bluff road.

Animal Disposal Site II was used until 1970 for disposal of solid household waste such a paper, cardboard, office materials, and glassware. Small laboratory animals (mice and rats) may have been

disposed of in small quantities, but there is no record of chemical or hazardous waste disposal in this area.

ANIMAL DISPOSAL SITE III

This disposal site is located near Bull Bluff Road at Clark Recreation Center.

Animal Disposal Site III was used until 1963 when Melton Hill Reservoir covered the road leading to the site. It was used for burial of farm, husbandry and research animals such as sheep, pigs, cattle and horses. No contaminated animals are known to be buried there. There is no record of the burial of chemicals or hazardous wastes at this site.

LARGE ANIMAL CONTAINMENT FACILITY

The Large Animal Facility is located in a collection of buildings known as the Scarboro Facility located at the junction of Bethel Valley Road and State Highway 62.

This facility was used for one set of experiments involving pigs and americium. The experimentation lasted from July 19, 1982 - May 20, 1983. Cleanup, decontamination and monitoring took place from June 6, 1983 - August 18, 1983. Americium (Am-241) contaminated ducts are located in the large animal containment facility. The contamination is in the ductwork venting the animal containment rooms up to the first line HEPA filters. The building has been decommissioned.

MERT ACID PIT

Near the MERT Division buildings 2714F and 2714G at 248 Laboratory Road lies a concrete pit into which laboratory sinks drained. The pit had an inner lining of brick and was divided into two sections at the bottom. Since the 1940s the pit received drainage from all laboratories in this complex. It is believed that this pit was placed between the sewer and the laboratories to act as a dilution point for acids. It has not been used as an acid pit since 1946, although laboratory drains emptied into it until October 1984. The pit contained approximately two feet of sludge contaminated with heavy metals and radioactive materials.

On October 29-30, 1984, the sludge from the acid pit was removed and placed in 55-gallon drums. The barrels were checked for pH and neutralized when appropriate. The barrels were disposed of as mixed wastes at the Oak Ridge National Laboratory. No cracks or openings were observed in the 8" concrete walls or floor after the sludge removal.

AREA SURFACE WATERS

The impounded Clinch River (i.e., Melton Hill Reservoir, impounded on the Clinch River in 1963, and the upper portion of Watts Bar Reservoir, impounded on the Tennessee River in 1942) bounds the ORR on the south and west for a distance of approximately 63 km (Fig. 3). This boundary extends from Clinch River Kilometer (CRK) 79 above the Melton Hill Dam (at CRK 37) to CRK 16, approximately 3 km downstream from the mouth of Poplar Creek and near the ORGDP. Contaminants released from the ORR enter the Clinch River primarily downstream from the Melton Hill Dam (at CRK 37) via White Oak Creek (ORNL), Bear Creek and East Fork Poplar Creek

(Y-12), and Poplar Creek (ORGDP), and are transported downstream into Watts Bar Reservoir. The transport of contaminants down the Clinch River and their ultimate distribution in Watts Bar Reservoir are influenced by the flow regimes of the Clinch and Tennessee Rivers, which are controlled primarily by hydropower releases and secondarily by major storm-flow events.

Watts Bar Reservoir is located on the Tennessee River below its confluence with the Clinch River, and is the first impoundment on the Tennessee River downstream of the ORR. Watts Bar was impounded just prior to the development of the Oak Ridge facilities and, therefore, retains in its sediments a long-term accumulation (and history) of materials released from the Oak Ridge complex.

Major Streams Draining the ORR

Poplar Creek, with a drainage basin area of 352 km^2, is the only large stream on the ORR, and has three major tributaries (Fig. 4). The main branch (West Fork Poplar Creek) originates off of the ORR in the Cumberland Mountains and drains some areas of strip mining activity. The Creek enters the ORR at Poplar Creek Kilometer (PCK) 9.3 north of the ORGDP and flows through the plant area before entering the Clinch River near CRK 19. East Fork Poplar Creek originates from a spring at the Y-12 Plant, and stream flow was formerly controlled by the New Hope Pond, a 0.2-ha settling basin located 1.6 km below the spring. New Hope Pond closure under RCRA began prior to November 8, 1988. The function formerly served by New Hope Pond is now provided by the new Lake Reality. The Creek flows for approximately 0.9 km below Lake Reality before leaving the boundary of the ORR and entering the populated section of the City of Oak Ridge. After flowing for a distance of approximately 15 km, the stream again enters the ORR and flows another 7.8 km before eventually joining the West Fork at PCK 8.8. The headwaters of the third tributary, Bear Creek, are also located at the Y-12 Plant, although numerous small tributaries originating along the southeast slope of Pine Ridge are located in the upper reaches of the watershed. The stream flows within the ORR for a distance of 11.3 km from the Y-12 Plant to the confluence with East Fork Poplar Creek at EFPCK 2.4.

The White Oak Creek (WOC) watershed is located near the southern boundary of the ORR and has a drainage area of 16.9 km. WOC drains the ORNL area and also receives the drainage of Melton Valley through Melton Branch (Fig. 4). Three distinct environments can be identified within the WOC watershed: (1) White Oak Lake (WOL), (2) WOC and tributaries above the Lake, and (3) WOC embayment below the Lake. WOL is a shallow impoundment that extends approximately 0.7 km upstream from the dam and has a surface area of about 8 ha. The water level in WOC embayment is controlled by the operation of Melton Hill Dam and Watts Bar Dam. When Watts Bar Reservoir is maintained at or near full pool (approximately April to October) and discharges occur at Melton Hill Dam, the subsequent rise in water level in the Clinch River creates an embayment extending from the mouth of the Creek to the WOL Dam.

The Clinch River

The Clinch River has its headwaters near Tazewell, Virginia, and empties into the Tennessee River at Kingston, Tennesssee. The Clinch River watershed comprises 11% of the Tennessee River watershed. Three dams operated by the TVA control the flow of the Clinch River. The Norris Dam, completed in 1936, is approximately 50 km upstream from the ORR. Norris Reservoir is a water storage, flood control, and hydropower impoundment. The Melton Hill Dam, completed in 1963,

controls the flow of the river near the reservation. Its primary function is not flood control but power generation. Watts Bar Dam, completed in 1942, is located on the Tennessee River downstream of the Clinch-Tennessee confluence and affects the flow of the lower reaches of the Clinch.

Peaking power is generated at the Melton Hill Dam, so water flow in the lower Clinch River is pulsed. Pulsation of the flow in the lower Clinch River affects the tributaries on the reservation. During periods of power generation, backflow may occur into Poplar Creek, White Oak Creek and other embayments.

Periods of no flow from the dam have lasted as long as 29 days, and the annual average number of days of no flow per year is 13. During flood conditions, water velocities may be hazardous and may reach 2.1 m/s.

Appreciable deposition of sediments on the bed of the Clinch River begins downstream from CRM 14. The amount of sediment deposition generally increases towards the mouth of the river, with deposition extending laterally over wider and wider parts of the river bed. Upstream from CRM 14, deposition is confined to parts of the channel immediately adjacent to the bank. Sediment deposition patterns are influenced by the effects of water impoundment in Watts Bar Reservoir on sediment transport capacity. The cross-sectional flow area of the reservoir increases in the down stream direction, and as a consequence, the flow velocity and sediment transport capacity of the river decrease.

The Tennessee River

The Tennessee River is one of the most extensively impounded river systems in the world. The TVA water control system consists of 51 dams, including 36 hydropower projects. Nine large multiple purpose reservoirs are located on the mainstem of the Tennessee River between Knoxville, Tennessee and Paducah, Kentucky. These mainstem, multiple purpose reservoirs are used for flood control, hydropower generation, navigation, municipal and industrial water supply, and recreation. Each of these dams has a navigation lock, and together these mainstem reservoirs comprise a 1046-km (650-mile) navigation channel.

Of the nine mainstem impoundments on the Tennessee River, Watts Bar Reservoir is the first reservoir located downstream of the Oak Ridge facilities. The Watts Bar Dam was closed in 1942, just prior to the initiation of plant operations at Oak Ridge. River impoundments are usually efficient sediment and contaminant traps; therefore, much of the contamination released from the Oak Ridge facilities over the pst [sic] 45 years can be expected to reside in and/or to be reflected in the Watts Bar Reservoir sediments. recent [sic] efforts to determine the extent of contamination of the Watts Bar Reservoir sediments have provided evidence in support of this expectation.

Stream Classification and Water Use

The area in and adjacent to the ORR has no streams classified as scenic rivers or otherwise "sensitive areas." Waters in the Clinch and Tennessee Rivers are used for water supply, industrial processes, fishing and recreation, irrigation, generation of electric power, and navigation.

Twelve water supplies, serving an estimated population of 200,000 persons within 274 river km (170 river miles) of White Oak Creek, use water potentially influenced by materials released from the ORR. Principal users of the water are the ORGDP and the TVA Kingston Steam Plant on the Clinch River and the communities of Kingston, Soddy Daisy, Falling Water, Waldens Ridge, Chattanooga, and South Pittsburg, Tennessee, on the Tennessee River. Surface water is used by facilities on the ORR as a source of water supply as well as a means for wastewater discharge.

Contaminant Release to the Clinch River

Historical radionuclide releases from the DOE Oak Ridge facilities have been summarized recently (U.S. DOE 1988). Existing data on the estimated annual liquid releases from the ORO include H-3, Co-60, Sr-90, Nb-95, Zr-95, Ru-106, I-131, Cs-137, Ce-144, and transuranics from ORNL; Th-232 and U-238 from the Y-12 Plant; and Tc-99, Np-237, and U-238 from ORGDP. Much less data on releases of metals and organic contaminants exists. However, preliminary screening-level risk analyses based on samples obtained from White Oak Lake and from off-site areas (Hoffman et al. 1984) indicate a variety of contaminants of potential concern (Table 1).

Data on the annual releases of Co-60, Sr-90, and Cs-137 from ORNL and White Oak Lake (WOL) into the Clinch River are listed in Table 2. Approximately 665 curies (2.5×10^{13} Bq) of Cs-137 have been released from WOL into the Clinch River System. Because most of this release occurred between the years 1954 and 1959, and because the half-life of CS-137 for radioactive decay is 30 years, the total decay-corrected amount of CS-137 discharged as of June 1986 is about 335 curies.

Preliminary results of recent investigations indicate that about 85% of the total release of Cs-137 (decay corrected) from the ORR now resides in the sediments of Watts Bar Reservoir. These data demonstrate that Watts Bar Reservoir is a highly efficient trap for particle-reactive contaminants and strongly suggest that other contaminants of concern (Co-60, Pu-239/-240, Hg, PCBs, PAHs, etc.) are also efficiently retained within the reservoir and accumulated in the reservoir sediments.

Investigations by the Oak Ridge Task Force (Turner et al. 1985) and TVA (1986) have indicated that about 110 metric tons of mercury (Hg) may have been released from the Y-12 Plant between 1950 and 1982. Although as much as 80 metric tons of the released Hg may still reside within the floodplain sediments along Each [sic] Fork Poplar Creek, it is estimated that about 0.2 metric tons of Hg may be exported from the Creek each year. Vertical profiles of Hg have been examined in sediment cores collected in off-site areas. These profiles show a strong correlation with the history of Hg releases from the Y-12 Plant and, because the largest releases of Hg from Y-12 were coincidental in time with the largest releases of Cs-137 from ORNL, the sediment profiles of Hg and Cs-137 correspond closely. Extrapolation of the mercury concentration data in these cores indicate that between 50 and 300 metric tons of Hg may have accumulated in off-site areas. In addition to mercury (Hg), levels of arsenic, cadmium, chromium, lead, nickel, silver, and zirconium were found to occur at elevated levels relative to background in the tributaries that drain into the Clinch River.

Recently, fish-sampling efforts by TVA and ORNL have revealed elevated PCB concentrations (i.e., in excess of the FDA tolerance limit of 2 ppm) in channel catfish in Melton Hill Reservoir and in the Clinch River below Melton Hill Dam. ORNL investigators reported that gizzard shad collected in the White Oak Creek embayment also contained high PCB levels, averaging 3.0 ppm (range = 1.8 - 4.8 ppm).

APPENDIX C

Oak Ridge Reservation Remediation Areas

Operable Units

Operable Unit Status Acronyms

RI/FS	Remedial Investigation/Feasibility Study Phase
RD/RA	Remedial Design/Remedial Action Phase
FYR	Five Year Review
NFA	No Further Action

Appendix C

Operable Units

OPERABLE UNITS

OU Description	Area of Concern Affected SWMU No.	Decision Document Date Signed	CERCLA 5-Year Review Date	Action Status
K-25				
K-1070-CD SW31 Seep Collection and Treatment Remedial Action	K-1070-C/D Classified Burial Ground/ R005	ROD 09/30/1992	02/16/1999	Seep collection and treatment *in progress.*
K-1407 B&C Ponds Residual Soils Contamination Remedial Action	K-1407-B Holding Pond/ R004	ROD 09/30/1993		Remedial action complete. Post-remedial action groundwater monitoring in progress. Also closed under RCRA.
	K-1407-C Retention Basin/ R039	ROD 09/30/1993		
Pond Waste Management Project (PWMP) Drum Repackaging Remedial Action	K-1417 Drum Storage Yard/ R033	ROD 09/19/1991	03/02/2000	Remedial action complete.
ORNL				
LLLW Tank WC-14 Contaminated Water Removal Action	Inactive LLLW Collection Tank WC-14/ 1.39E	Action Memo. 02/16/1995		Removal action complete.
MSRE Time-Critical Removal Action	MSRE Reactor Building 7503/ 8A.1D	NA		Stabilization activities in progress.
WAG 1 Corehole 8 Plume Removal Action	Corehole 8	Action Memo. 11/10/1994		Construction completed. Contaminated groundwaer being collected and treated.
WAG 11 Debris Removal Interim Remedial Action	White Wing Scrap Yard (XDO751)/ 11.1	ROD 10/06/1992	09/14/1999	Remedial action complete.
WAG 13 Cesium Plots Soils *Interim Remedial Action*	Cesium-137 Contaminated Field *(0800)*	ROD *10/06/1992*	08/12/1999	
WAG 5 Seep C Collection and Treatment	SWSA South 5 (7802)/ 5.7	Action Memo. 03/30/1994		Construction completed. Seep collection and treatment in progress.
WAG 5 Seep D Collection and Treatment	SWSA South 5 (7802)/5.7	Action Memo. 07/26/1994		
Waste Evaporator Facility (WEF3506) Remedial Action	Waste Evaporator Facility (3506)/ 1.62	Action Memo 07/28/1995		Remedial action workplan in progress.
White Oak Creek Embayment Removal Action	White Oak Lake and Embayment (7846)	Action Memo. 11/09/1990	09/30/1997	Removal action complete.
ORR				
Lower East Fork Poplar Creek Soil Removal	Lower East Fork Poplar Creek/ YS-603	ROD 09/19/1995		Remedial design underway.
Lower Watts Bar Reservoir Remedial Action	Lower Watts Bar Reservoir	ROD 09/29/1995		Annual monitoring ongoing.
South Campus Facility	Swine Waste Lagoons	ROD 12/28/1995		NFA. Bi-annual monitoring *ongoing.*
	Wastewater Treatment Facility (WWTF)/ U002f	ROD 12/28/1995		

OPERABLE UNITS

OU Description	Area of Concern Affected SWMU No.	Decision Document Date Signed	CERCLA 5-Year Review Date	Action Status
Y-12				
Kerr Hollow Quarry Remedial Action	Kerr Hollow Quarry/ YT-012	ROD 09/29/1995		NFA.
Mercury Tanks Interim Remedial Action	Tank 2100-U/ YS-209	ROD 09/26/1991	12/20/1998	Remedial action complete.
	Tank 2101-U/ YS-210	ROD 09/26/1991	12/20/1998	
	Tank 2104-U/ YS-212	ROD 09/26/1991	12/20/1998	
Nitric Acid Pipeline NFA	Abandoned Nitric Acid Pipeline/ YS-601	ROD 09/12/1994		NFA.
Plating Shop NFA	Building 9401-2 East Yard/ YS-351	ROD 09/30/1992		NFA
	Building 9401-2 Polytank/Tanker/ YS-334	ROD 09/30/1992		
United Nuclear Landfill Remedial Action	United Nuclear Landfill/ YD-026	ROD 06/28/1991	09/16/1998	Remedial action complete.

APPENDIX C

Characterization Areas

CHARACTERIZATION AREAS

Grouping	Program	Areas of Concern	SWMU No.	Status
K-25				
	RA	Building 1423 Grease Burial {Site}	C123	
		Demolition Materials Placement Area	C108	
		F-05 Laboratory Burial Ground	C119	
		F-07 Material Warehouse		
		F-08 Laboratory		
		K-1004-J Underground Tank	R074	
		K-1004-J Vaults		
		K-1004-L Recirculating Cooling Water Lines		
		K-1007-P1 Holding Ponds	R044	EE/CA in progress
		K-1035 Acid Pits	R083	
		K-1035 Gasoline Station		
		K-1037 Recirculation Cooling Water Lines		
		K-1064 Drum Storage and Burn Area includes K-1064-G	R007	
		K-1070-A Landfarm	C104	
		K-1070-A Old Contaminated Burial Ground	R001	Focused RI/FS in Progress.
		K-1070-B Old Classified Burial Ground	R002	
		K-1070-C/D Classified Burial Ground K-1070 Pits and K-1070 Pad	R005	Revised RI/FS report in progress
		K-1070-D1, D2, And D3 Storage Dikes	R026	RI/FS report in Progress
		K-1070-G Burial Ground	R054	
		K-1131 Neutralization Pile	C074	
		K-1210 Recirculating Cooling Water Lines		
		K-1232 Chemical Recovery Facility Lagoon		
		K-1401 Acid Line	R013	
		K-1401 Degreasers	C005	
		K-1407-C/K-1417 Soils	R023	
		K-1413 Process Lines		
		K-1413 Treatment Tanks/Process Lines	R015	
		K-1414 Garage Diesel Tank		
		K-1420 Contaminated Drum Storage	C067	
		K-1420 Mercury Recovery Room	R012	
		K-1420 Oil Decontamination Unit	R073	
		K-1420 Process Lines	R016	
		K-1420 Waste Oil Storage Pad	R010	
		K-1700 Stream {Mitchell Branch}		
		K-27/29 Recirculating Cooling Water Lines	C003h	
		K-300 Area Service Station		
		K-31 Recirculating Cooling Water Lines	C003j	
		K-33 Recirculating Cooling Water Lines	C003k	
		K-725 Beryllium Building	C004	EE/CA in progress
		K-732 Switchyard		
		K-762 Switchyard		
		K-792 Switchyard		
		K-802 Gasoline Storage Tank (UST)		
		K-901 South Waste Disposal Area	R077	
		K-901-A North Disposal Area	R081	

CHARACTERIZATION AREAS

Grouping	Program	Areas of Concern	SWMU No.	Status
K-25				
	D&D	K-1004-J Centrifuge Development Laboratory		
		K-1004-L *Pilot Plant*		
		K-1004-N1 Cooling Tower		
		K-1004-N2 Cooling Tower		
		K-1004-Q Centrifuge Laboratory		
		K-101 Compressor Laboratory [Research Building]		
		K-1010 Laboratory, Receiving and Handling		
		K-1023 Laboratory (Includes K-1009, 1050, 1005)		
		K-1024 D&D Offices		
		K-1024-B Storage Area		
		K-1024-C Storage Area		
		K-1024-D Storage Area		
		K-1031-A Building [K-1031 Power and Utilities Storage Facility]		EE/CA in progress
		K-1037 Barrier Plant (partial) [Industrial Research Facility]		
		K-1037-C Smelter House		
		K-1040 Maintenance Shop for K-633		
		K-1045 Valve Shop		
		K-1052 Advanced Machine Develop Laboratory		
		K-1066-B Cylinder Storage Yard, Northeast K-1423		
		K-1066-E Cylinder Storage Yard, North K-832		
		K-1066-J Cylinder Storage Yard, North K-25		
		K-1066-K Cylinder Storage Yard, West K-33		
		K-1131 Feed and Tails [Building] Facility		EE/CA in progress
		K-1132 Hydrogen Fluoride (HF) Storage		
		K-1133 HF Storage		
		K-1134 HF Storage Shed		
		K-1135 HF Storage Control Room		
		K-1200 Centrifuge South Bay		
		K-1210 Centrifuge Test Facility		
		K-1210-A Advanced Engineering Test Facility		
		K-1220 CPDF-2		
		K-1220 Centrifuge Plant Demonstration Facility (CPDF)-1		
		K-1231 Process Building [Facility]		
		K-1231-A Propane Storage		
		K-1231-B Caustic Storage Tank		
		K-1233 Collection Facility		
		K-1233-A Drum Cleaning		
		K-1251 Barge Unloading Area		
		K-1300 Stack [Brick Stack]		
		K-1301 Fluorine Production Facility [Pump Storage Facility]		
		K-1302 Fluorine Storage [Building]		
		K-1303 Fluorine Facility [Research Compressor Facility]		

CHARACTERIZATION AREAS

Grouping	Program	Areas of Concern	SWMU No.	Status
K-25				
	D&D	K-131 Maintenance [Feed Vaporization Building]		
		K-1401-N Converter Re-tubing Area (Northeast)		
		K-1401-NB Basement (Northwest)		
		K-1413 Building [Laboratory Engineering]		
		K-1420 Decontamination Facility		
		K-1420-B Flammable Liquid Storage		
		K-1420-C Gas Cylinder Storage		
		K-1420-D Valve Sprinkler House		
		K-1421 Incinerator [Low Level Waste Incinerator]	R057	
		K-1422 Storage House		
		K-1501-E Coal Crusher and Unloading Station		
		K-1600 Technology Test Facility		
		K-25 Process Building		
		K-27 Process Building		
		K-29 Process Building		
		K-300-C Coolant Storage Area		
		K-300-C-1 Coolant Unloading Building		
		K-300-C-2 Coolant Pump Building		
		K-300-C-3 Coolant Drying System		
		K-31 Process Building		
		K-33 Process Building		
		K-413 Product Withdrawal Facility		
		K-631 Tails Storage [Process Tails]		
		K-633 Test Loop [Facility]		
		K-633-D Test Loop Storage		
		K-704 Main Switch House		
		K-724 Storage Building [Warehouse]		EE/CA in progress
		K-762 Switchyard		
		K-762 Valve Vaults 1 & 2		
		K-792 Switchyard		
		K-797 Electrical Switch Gear Room for K-1004-J		
		K-798 Electrical Switch Gear Room for K-1023		
		K-801 Sample Station		
		K-801-A Water Treatment Facility		
		K-801-AA Valve Vault		
		K-801-B Water Treatment ClarifierTank		
		K-801-BB Valve Vault		
		K-832 Pumphouse [Recirculating Water Pump House]		
		K-832-H Cooling Tower Structure		
		K-833 Cooling Water Return Pumphouse		
		K-896 Recycle Blowdown Facility		
		K-896-A Clarifer Tank		
		K-896-B Clarifier Tank		
		Tielines (Outdoor Process Tielines)		

CHARACTERIZATION AREAS

Grouping	Program	Areas of Concern	SWMU No.	Status
ORNL				
WAG 1	RA	Inactive LLLW Collection Tank W-17	1.42B	
		Inactive LLLW Collection Tank W-18	1.42C	
		Inactive LLLW Collection/Storage Tank TH-4	1.32	Phase I RI completed
		Inactive LLLW Collection/Storage Tank W-1	1.23A	RI completed
		Inactive LLLW Collection/Storage Tank W-10	1.26F	RI completed
		Inactive LLLW Collection/Storage Tank W-11	1.27	RI completed
		Inactive LLLW Collection/Storage Tank W-13	1.25A	RI completed
		Inactive LLLW Collection/Storage Tank W-14	1.25B	RI completed
		Inactive LLLW Collection/Storage Tank W-15	1.25C	RI completed
		Inactive LLLW Collection/Storage Tank W-1A	1.28	RI completed
		Inactive LLLW Collection/Storage Tank W-2	1.23B	RI completed
		Inactive LLLW Collection/Storage Tank W-3	1.24A	RI completed
		Inactive LLLW Collection/Storage Tank W-4	1.24B	RI completed
		Inactive LLLW Collection/Storage Tank W-5	1.26A	RI completed
		Inactive LLLW Collection/Storage Tank W-6	1.26B	RI completed
		Inactive LLLW Collection/Storage Tank W-7	1.26C	RI completed
		Inactive LLLW Collection/Storage Tank W-8	1.26D	RI completed
		Inactive LLLW Collection/Storage Tank W-9	1.26E	RI completed
	D&D	FPDL Inactive Cells(Cells 4,5,6,7, 22, and Service Tunnel - (3517		
		Fan House 3003		
		Filter House 3002 [OGR]		
		Fission Product Pilot Plant (3515) [FPPP]		
		Heat Exchangers (3077)		
		High-Level Chemical Development Lab Filter Pit (4556)		
		High-level Chemical Development Lab (4507)		
		Metal Recovery Facility (3505)		
		Oak Ridge Research Reactor (3042) [ORR-Main Building, Facility,		
		Oak Ridge Research Reactor Heat Exchanger (3087)		
		Stack 3018 [OGR]		
WAG 1 Underground Piping & Storm Drain	RA	FPDL LLLW Transfer Line	1.21	
WAG 1 WOC Floodplain Soils & Sediments	RA	WAG 1 White Oak Creek (WOC) Floodplain Soils and Sediments		
WAG 1 Contaminated Ground Soil	RA	Contaminated Surfaces & Soil From 1959 Explosion - Bldg 3019 Cell		
		Equalization Basin (3524)	1.13	FS completed, PP in progress
		Process Waste Pond (3539)	1.14	FS completed, PP in progress
		Process Waste Pond (3540)	1.15	FS completed, PP in progress
		Waste Holding Basin (3513)	1.12	FS completed, PP in progress
WAG 1 Contaminated Soils	RA	3517 Filter Pit (Fission Product Development	1.20	

CHARACTERIZATION AREAS

Grouping	Program	Areas of Concern	SWMU No.	Status
ORNL				
		Lab)		
		Contamination at Base of 3019 Stack		
		Decomissioned Waste Holding Basin (3512)	1.11	
		Fission Product Pilot Plant (FPPP) Contaminated Soil		
		Graphite Reactor Storage Canal Overflow (3001/3019)	1.8	
		LLLW Lines and Leak Sites - Between W-5 and WC-19	1.5F	
		LLLW Lines and Leak Sites - Between WC-1 and W-5	1.5K	
		LLLW Lines and Leak Sites - Building 3028	1.5M	
		LLLW Lines and Leak Sites - Building 3092 Area	1.5I	
		LLLW Lines and Leak Sites - Building 3503, Ground Contamination	1.5W	
		LLLW Lines and Leak Sites - Building 3518, West	1.5U	
		LLLW Lines and Leak Sites - Building 3525 to a Sump	1.5P	
		LLLW Lines and Leak Sites - Building 4508, North	1.5T	
		LLLW Lines and Leak Sites - East of Building 2531	1.5N	
		LLLW Lines and Leak Sites - East of the Building 3020 Stack	1.5B	
		LLLW Lines and Leak Sites - North of Building 3019	1.5D	
		LLLW Lines and Leak Sites - ORR Water Line (Building 3085)	1.5L	
		LLLW Lines and Leak Sites - SW Corner of Building 3019	1.5E	
		LLLW Lines and Leak Sites - Sewer Near Building 3500	1.5R	
		LLLW Lines and Leak Sites - South of Building 3020	1.5A	
		LLLW Lines and Leak Sites - Underneath Building 3026	1.5J	
		LLLW Lines and Leak Sites - Underneath Building 3047	1.5G	
		LLLW Lines and Leak Sites - Underneath Building 3515	1.5O	
		LLLW Lines and Leak Sites - Underneath Building 3550	1.5Q	
		LLLW Lines and Leak Sites - West of Building 3082	1.5C	
		LLLW Lines and Leak Sites, General Isotopes Area (3037,3038,3034)	1.5H	
		LLLW Lines and Leak Sites-NW of Solid Waste Storage Area (SWSA) 1	1.5V	
		LLLW Lines and leak Sites - Abandoned Line Central Avenue Area	1.5S	

CHARACTERIZATION AREAS

Grouping	Program	Areas of Concern	SWMU No.	Status
ORNL				
WAG 1 Contaminated Soils	RA	Low Intensity Test Reactor (LITR) Ponds (3085W)		
		Mercury Contaminated Soil (Bldg. 3503)	1.1	
		Mercury Contaminated Soil (Bldg. 3592)	1.2	
		Mercury Contaminated Soil (Bldg. 4501)	1.3	
		Mercury Contaminated Soil (Bldg. 4508)	1.4	
		Oak Ridge Research Reactor Decay Tank Rupture Site (3087)		
		Transfer Canal and Dissolver Pit (3505)	1.63	
		Underground Exhaust Ducts 3001-3003		
		WAG 1 Groundwater (Storm Flow)		
	D&D	Graphite Reactor Building 3001		
		Low Intensity Test Reactor (LITR) - (3005)		
WAG 1 SWSA 1	RA	Solid Waste Storage Area (SWSA) 1 - (2624)		
WAG 1 Steel Tank Systems	RA	3001 Storage Canal [OGR]		
		Inactive Filter House Seal Tank 3002-A	1.68	
		Inactive LLLW Collection Tank 3001-B	1.73	Maintenance activity completed. Tank removed
		Inactive LLLW Collection Tank 3003-A	1.74	
		Inactive LLLW Collection Tank 3004-B	1.75	Maintenance activity completed.Tank removed
		Inactive LLLW Collection Tank 3013	1.76	Maintenance activity completed.Tank grouted and stabilized.
		Inactive LLLW Collection Tank 4501-P	1.67C	
		Inactive LLLW Collection Tank H-209	1.71	
		Inactive LLLW Collection Tank LA-104 (F-104)	1.70	
		Inactive LLLW Collection Tank S-424	1.64C	
		Inactive LLLW Collection Tank T-30	1.78	Maintenance action completed.
		Inactive LLLW Collection Tank W-11	1.66	
		Inactive LLLW Collection Tank W-12	1.41	
		Inactive LLLW Collection Tank W-19	1.56A	
		Inactive LLLW Collection Tank W-20	1.56B	
		Inactive LLLW Collection Tank WC-11	1.39B	
		Inactive LLLW Collection Tank WC-12	1.39C	
		Inactive LLLW Collection Tank WC-13	1.39D	
		Inactive LLLW Collection Tank WC-14	1.39E	Tank removal action completed.
		Inactive LLLW Collection Tank WC-4	1.36	
		Inactive LLLW Collection Tank WC-5	1.37A	
		Inactive LLLW Collection Tank WC-6	1.37B	
		Inactive LLLW Collection Tank WC-8	1.37C	
		Inactive LLLW Collection/Storage Tank TH-1	1.31A	
		Inactive LLLW Collection/Storage Tank TH-2	1.31B	
		Inactive LLLW Collection/Storage Tank TH-3	1.31C	
		Inactive LLLW Collection/Storage Tank WC-1	1.29	
		Inactive LLLW Collection/Storage Tank WC-15	1.30A	
		Inactive LLLW Collection/Storage Tank WC-17	1.30B	

CHARACTERIZATION AREAS

Grouping	Program	Areas of Concern	SWMU No.	Status
ORNL				
WAG 1 Steel Tank Systems	RA	Solid Waste Storage Area (SWSA) 2 - (4003)	1.47	
WAG 1 Waste Pile	RA	Former Waste Pile Area (South Of NRWTP)	1.58	
WAG 10	RA	New Hydrofracture Facility (7860)	10.4	RSE for monitoring wells in progress.
WAG 10 Grout	RA	Hydrofracture Experimental Site 1 (HF-S1)		
		Hydrofracture Experimental Site 2 (HF-S2)		
		Hydrofracture Experimental Site 3		
		Hydrofracture Experimental Site 4		
		New HF Grout Sheets	10.04A	
		OHF Grout Sheets (7852)	10.3A	
WAG 11	RA	White Wing Scrap Yard (XDO751)	11.1	
WAG 13	RA	Cesium-137 Contaminated Field (0800)		
		Cesium-137 Erosion/Runoff Study Area (0807)		
WAG 2 Monitoring Program	RA	White Oak Creek and Tributaries (0853)		Completed cleanout of the main weirs.
		White Oak Lake and Embayment (7846)		
WAG 3	RA	Closed Scrap Metal Area (1562)	3.2	
		Contractors' Landfill (1554)	3.3	
		SWSA 3 (1001)	3.1	
WAG 4	RA	Low-Level Waste Line North of Lagoon Road (7800)	4.1	
		SWSA 4 (7800)	4.3	EE/CA for seeps in progress
WAG 5	RA	Drainage 1, 2 in WAG 5		
		Inactive LLLW Tank T-14	5.16	
		Inactive OHF Waste Storage Tank T-1	5.5A	EE/CA in progress
		Inactive OHF Waste Storage Tank T-2	5.5B	EE/CA in progress
		Inactive OHF Waste Storage Tank T-3	5.5C	EE/CA in progress
		Inactive OHF Waste Storage Tank T-4	5.5D	EE/CA in progress
		Inactive OHF Waste Storage Tank T-9	5.5E	EE/CA in progress
		LLLW Line from Valve Box to OHF	5.5F	
		LLLW Lines and Leak Site - OHF		
		LLLW Lines and Leak Site-Bldg. 7852		
		Old Hydrofracture Facility (OHF) Pond (7852A)	5.2	
		Old Landfill (NE edge of SWSA 5)	5.14	
		PWSB Pipeline from PWSB to Process Waste Treatment Plant		
		Process Waste Sludge Basin (7835)	5.6	
		SWSA South 5 (7802)	5.7	
	D&D	OHF Site Surface Facilities (7852)	5.3	
WAG 6 Monitoring & Operations	RA	Emergency Waste Basin (7821)		Monitoring ongoing.
		Explosives Detonation Trench (7822A)	6.3	Monitoring ongoing.
		SWSA 6 (7822)	6.1	Monitoring ongoing
WAG 7	RA	Equipment Storage Area (7841)		
		Homogeneous Reactor Experiment (HRE) Fuel	7.2	

CHARACTERIZATION AREAS

Grouping	Program	Areas of Concern	SWMU No.	Status
ORNL				
		Wells (7809)		
		Hydrofracture Experimental Site 1, Soil Contamination (HF-S1A)		
		LLLW Line Leak Site - Leak at Valve Pit North of Trench 7 (7818)	7.4F	
		LLLW Line Leak Site-Line Between Pit 3 (7807) and Trench 6 (7810)	7.4E	
		LLLW Lines and Leak Sites - Gauging Station NW of Bldg 7852	7.4A	
		LLLW Lines and Leak Sites - Pit 6 SE (Leak Site 1)	7.4B	
		LLLW Lines and Leak Sites-End of Trench 7 Access Rd (leak Site 2)	7.4C	
		Leak in Transfer Line From Decon Facility (7819) to Pit 1 (7805)	7.4D	
		Pit 1 (7805)	7.5	In situ vitrification (ISV) treatability study in progress
		Pit 2 (7806)	7.6A	
		Pit 3 (7807)	7.6B	
		Pit 4 (7808)	7.6C	
		Septic Tank - Building 7819		
		Trench 5 (7809)	7.7	
		Trench 6 (7810)	7.8	
		Trench 7 (7818)	7.9	
	D&D	Shielded Transfer Tank (ST1) (7818 Shed)	7.10A	
		Shielded Transfer Tank (ST2) (7818 Shed)	7.10B	
		Shielded Transfer Tank (ST3) (7818 Shed)	7.10C	
		Shielded Transfer Tank (ST4) (7818 Shed)	7.10D	
		Shielded Transfer Tank (ST5) (7818 Shed)	7.10E	
WAG 8	RA	ARE Contaminated Tool Storage		
		Abandoned Sanitary Waste Pipeline and Septic Tank N of 7917		
		Contractor Spoils Area - Melton Valley, W-SW Of 7900	8.13	
		Hydrofracture Experiment Site 2 (HF-S2A)		
		Inactive LLLW Collection Tank 7503A	8.20	
		LLLW Lines and Leak Sites - 7500 Area	8.3C	
		LLLW Lines and Leak Sites - 7920 Ditch Line	8.3F	
		LLLW Lines and Leak Sites - Bldg 7920 and MV Pumping Station Area	8.3E	
		LLLW Lines and Leak Sites - Lagoon Road & Melton Valley Drive	8.3A	
		LLLW Lines and Leak Sites - Melton Valley Dr & SWSA 5 Access Rd	8.3B	
		LLLW Lines and Leak Sites - The Melton Valley Transfer Line	8.3G	
		LLLW Lines and Leak Sites - West of Melton Valley Pumping Station	8.3D	
		MSRE Storage Well		

CHARACTERIZATION AREAS

Grouping	Program	Areas of Concern	SWMU No.	Status
ORNL				
WAG 8	D&D	MSRE Cooling Tower 7513	8A.1B	
		MSRE Diesel Generator House 7555	8A.1C	
		MSRE Filter Pit [Off-Gas Filter House (7511)]	8A.1F	
		MSRE Office Building (7509)		
		MSRE Reactor Building 7503	8A.1D	Time-critical removal action in progress
		MSRE Stack 7512		
		MSRE Supply Air Filter House Bldg. 7514		
WAG 8 Impoundments	RA	Aircraft Reactor Experiment Surface Impoundment		
		HFIR Cooling Tower Surface Impoundment	8.14	
		HFIR/TRU Waste Collection Basin (7905)	8.1A	
		HFIR/TRU Waste Collection Basin (7906)	8.1B	
		HFIR/TRU Waste Collection Basin (7907)	8.1C	
		HFIR/TRU Waste Collection Basin (7908)	8.1D	
WAG 9	RA	Homogeneous Reactor Experiment (HRE) Pond (7556)	9.1	
		LLLW Collection and Storage Tank 7560	9.2A	
		LLLW Collection and Storage Tank 7562	9.2B	
		Trash Area East of HRE Parking Lot	9.4	
	D&D	Absorber Valve Pit 7559		
		HRE Absorber Pit 7557		
		HRE Cooling Tower 7554	9A.1A	
		HRE Reactor Building 7500		
		Waste Evaporator 7502	9.5	
		Waste Evaporator Loading Pit (HRE) 7558	9.6	

CHARACTERIZATION AREAS

Grouping	Program	Areas of Concern	SWMU No.	Status
ORR				
Clinch River	RA	Clinch River/Poplar Creek		RI/FS in progress.

CHARACTERIZATION AREAS

Grouping	Program	Areas of Concern	SWMU No.	Status
Y-12				
Bear Creek Valley	RA	Bear Creek Burial Grounds	YD-024	RI/FS in progress
		Bear Creek Grndwater,Surface Water,Creek Sedmnt&Flood Plain Soils		RI/FS in progress
		Contaminated Construction Spoil Pile		RI/FS in progress
		DARA Solids Storage Facility	YS-051	
		Decant Treatment Facility {S-3 Liquid Treatment Facility}	YT-044	RI/FS in progress
		Hazardous Chemical Disposal Area & Boneyard-Burnyard	YD-024H	RI/FS in progress
		Oil Landfarm	YT-014	RI/FS in progress
		Oil Landfarm Soils Containment Pad	YS-050	RI/FS in progress
		Oil Retention Pond No. 1	YT-008	RI/FS in progress
		Oil Retention Pond No. 2	YT-009	RI/FS in progress
		Rust Spoil Area {Landfill}	YD-106	RI/FS in progress
		S-3 Ponds	YT-004	RI/FS in progress
		SY-200 Yard	YS-125	
		Sanitary Landfill I	YD-101	RI/FS in progress
		Spoil Area I {Landfill]}	YD-107	
Chestnut Ridge	RA	Chestnut Ridge Borrow Area Waste Pile	YS-042	
		East Chestnut Ridge Waste Pile	YS-043	
		Storm Sewer Sediment Drying Facility	YT-118	
		Temporary Storage Area	YS-126	
Chestnut Ridge Security Pits	RA	Chestnut Ridge Security Pits	YD-023	
		Chestnut Ridge Sediment Disposal Basin	YD-025	
		Filled Coal Ash Pond {McCoy Branch}	YD-112	FS/Proposed Plan in progress
		Rogers Quarry {Lower McCoy Branch}	YD-108	
Upper East Fork Poplar Creek	RA	ACN Drum Yard	YS-015	FS in progress
		Beta-4 Security Pits	YD-100	FS in progress
		Building 81-10 Area {Former Hg Roaster}	YS-117	FS in progress
		Building 9201-2 Transformer & Capacitor Storage Area	YS-128	FS in progress
		Building 9201-5E Northeast Yard Waste Storage Area	YS-322	FS in progress
		Building 9202 East Pad Waste Storage Area	YS-326	FS in progress
		Building 9204-2 West Yard Waste Storage Area	YS-329	FS in progress
		Building 9206 Underground Tank	YS-245	FS in progress
		Building 9215 West Pad Waste Storage Area	YS-333	FS in progress
		Building 9401-1 Old Steam Plant		FS in progress
		Building 9401-3 East Yard Waste Storage Area	YS-335	FS in progress

CHARACTERIZATION AREAS

Grouping	Program	Areas of Concern	SWMU No.	Status
Y-12				
		Building 9404-11 West Yard Waste Storage Area	YS-336	FS in progress
		Building 9409-5 Storage Facility	YS-017	FS in progress
		Building 9418-3 Uranium Vault		FS in progress
		Building 9620-2 West Yard Waste Storage Area	YS-337	FS in progress
		Building 9712 Northeast Yard Waste Storage Area	YS-338	FS in progress
		Building 9720-13 West Yard Waste Storage Area	YS-341	FS in progress
		Building 9720-3 North Yard Waste Storage Area	YS-339	FS in progress
		Building 9720-6 North Polytank Station	YS-340	FS in progress
		Building 9744 North Dock Waste Storage Area	YS-342	FS in progress
		Building 9766 Beryllium Contaminated Ducts		FS in progress
		Chestnut Ridge Mercury Contaminated Gully Soil Pile		FS in progress
		Coal Pile Trench	YD-104	FS in progress
		Cooling Tower Basin 9409-3	YS-124	FS in progress
		Development Incinerator	YT-119	FS in progress
		Garage Underground Tanks	YS-019	FS in progress
		Interim Drum Yard {North/South}	YS-030	FS in progress
		Laundry Sump	YS-242	FS in progress
		Mercury-contaminated Areas	YS-127	FS in progress
		New Hope Pond	YT-010	FS in progress
		Old Steam Plant Storage Area {Building 9401-1}	YS-029	FS in progress
		Polytank Station {Building 9206}	YS-343	FS in progress
		Prenco Incinerator	YT-001	FS in progress
		Ravine Disposal Site	YD-105	FS in progress
		Roofing Waste Pile {former}	YS-122	FS in progress

CHARACTERIZATION AREAS

Grouping	Program	Areas of Concern	SWMU No.	Status
Y-12				
		Rust Construction Garage Area	YS-400	FS in progress
		S-2 Site {waste disposal basin}	YD-103	FS in progress
		Salvage Yard Drum Deheader	YT-109	FS in progress
		Salvage Yard Oil Storage Tanks	YS-018	FS in progress
		Salvage Yard Oil/Solvent Drum Storage Area {East & West}	YS-020	FS in progress
		Salvage Yard Scrap Metal Storage Area	YS-111	FS in progress
		Tank 0074-U {Building 9201-5 W}	YS-200	FS in progress
		Tank 2063-U	YS-204	FS in progress
		Tank 2064-U {Building 9766}	YS-205	FS in progress
		Tank 2077-U		FS in progress
		Tank 2089-U		FS in progress
		Tank 2090-U		FS in progress
		Tank 2091-U		FS in progress
		Tank 2092-U		FS in progress
		Tank 2105-U	YS-213	FS in progress
		Tank 2116-U	YS-214	FS in progress
		Tank 2284-U		FS in progress
		Tank {Building 9204-4}	YS-241	FS in progress
		Tank {Building 9818}	YS-239	FS in progress
		Tanks and Transfer Station {Building 9204-4}	YS-233	FS in progress
		Third Street Soil Pile	YS-116	FS in progress
		Upper East Fork Poplar Creek		FS in progress
		Waste Machine Coolant Biodegration Facility	YT-003	FS in progress
	D&D	Bldg. 9201-3 Coolant Salt Technology Facility		

CHARACTERIZATION AREAS

Grouping	Program	Areas of Concern	SWMU No.	Status
Y-12				
		Bldg. 9201-3 [Molten Salt] Corrosion Loop 1201-3		
		Bldg. 9201-3 [Oil] Storage Tank	15A.4	
		Bldg. 9201-4		

APPENDIX C

Removal Site Evaluation Areas

REMOVAL SITE EVALUATION AREAS

Grouping	Program	Area of Concern	SWMU No.	Status
ORNL				
	NMFS	High Radiation Level Analytical Facility (3019B)		
WAG 1	NMFS	Alpha Handling Facility (3038 AHF)		
	NMFS	Alpha Powder Facility (3028)		
	NMFS	Bulk Shielding Reactor		
	NMFS	Fission Product Development Laboratory (3517)		
	NMFS	Integrated Process Demonstration Facility (7602)		
	NMFS	Isotope Material Laboratory (3038-E)		
	NMFS	Isotope Technology Building (3047)		
	NMFS	Krypton Storage Cubicle (3093)		
	NMFS	Krypton-85 Enrichment Facility (3026C)		
	NMFS	Metal Segmenting Facility (3026D)		
	NMFS	Radioactive Gas Processing Facility (3033)		
	NMFS	Radioactive Packaging and Shipping Facility (3038-M)		
	NMFS	Radioactive Production Laboratory Annex (3033A)		
	NMFS	Radioisotope Production Laboratory – C (3030)		
	NMFS	Radioisotope Production Laboratory – D (3031)		
	NMFS	Radioisotope Production Laboratory – E (3032)		
	NMFS	Radioisotope Production Laboratory – H (3118)		
	NMFS	Radioisotope Services Building (3034)		
	NMFS	Radioisotopes Development Lab (3047)		
	NMFS	Source Development Laboratory (3029)		
	NMFS	Storage Pad (3099)		
	NMFS	Tower Shielding Facility		
WAG 17	NMFS	Tritium Target Preparation Facility (7025)		

APPENDIX C

Remedial Site Evaluation Areas

REMEDIAL SITE EVALUATION AREAS

Grouping	Program	Area of Concern	SWMU No.	Status
K-25				
	RA	518 Main Substation		
		600 Series Oil Storage Area		
		695/687 Oil Storage Operations		
		Blair Road Asphalt Plant		
		Building 523 Grease {Burial Site}	C124	
		Building 526 Heavy Equipment Shop		
		Building 569 Heavy Equipment Shop		
		Building 665 Steam Shed		
		Building F-29 Gasoline Station		
		Duct Island Road		
		Flannagan's Loop Road		
		J. A. Jones Cleaning Area		
		J. A. Jones Disposal Area	C107	
		J. A. Jones Maintenance Complex		
		K- 304-5 Road Spill Area		
		K- 722 Area Roads		
		K-1007 Gas Tank [Residual Contamination]		
		K-1027 Service Station		
		K-1044 Heavy Equipment Repair Shop		
		K-1045-A Waste Oil Burning Pit	C129	
		K-1047 Motor Pool Repair Shop		
		K-1048 Tire And Battery Shop		
		K-1050 Wash, Grease, and Paint Shop		
		K-1055 Gasoline/Diesel Station	C089	
		K-1070-F Construction Spoil Area	R018	
		K-1085 Old Firehouse Burn Area	R043	
		K-1098-C Asphalt Plant	C115	
		K-1099 Blair Quarry	R019	
		K-1206-E Sandblasting Residue		
		K-1217 Metalizing Shop		
		K-1218 Coded Chemicals Storage Facility		
		K-1236 Paint Shop		
		K-1407 Contaminated Debris	C132	RSE in progress
		K-1410 Neutralization Pit	R011	RSE in progress
		K-25 Site Contractor's Spoil Area	C105	RSE in progress
		K-25 Site North Trash Slope	C106	
		K-710 Sludge Beds And Inhoff Tanks	R076	
		K-770 Contaminated Debris		
		K-770 Scrap Metal Yard	R008	
		K-861 Cooling Tower Basin	C003l	
		K-892-G Cooling Tower Basin	C003m	
		K-892-H Cooling Tower Basin	C003n	
		K-892-J Cooling Tower Basin	C003o	
		K-895 Cylinder Destruct Facility		RSE in progress
		K-901-A Holding Pond	R006	RSE in progress
		Poplar Creek Disposal Area		
		Round House Road		
		S-21 Happy Valley Service Station		
		South Plant Area Lab Drain {Lines}	R017	

REMEDIAL SITE EVALUATION AREAS

Grouping	Program	Area of Concern	SWMU No.	Status
K-25				
	RA	T-17 Light Equipment Garage		
		T-21 Oil/Grease Station		
		T-27/T-5 Pipe Welding Shop		
	D&D	K-1004-N Cooling Tower		
		K-1025-E Storage Building		
		K-1410 Plating Facility	C006	EE/CA in progress
		K-701 Boiler House & Fabrication Shop		
		K-702 Turbine Room & Discharge		
		K-703 Fabrication Shop, Bio Laboratory		
		K-705 Crib House		
		K-706 Pump House		
		K-707 Auxiliary Switch House		
		K-709 Switchyard		
		K-712 Fairchild Switchgear Substation		
		K-715 Water Treatment System		
		K-734 Storage Building Breaker House		
		K-735 Storage Building		
		K-735-A Storage Building		
		K-738 Chlorinator House		
		K-740 Paint Storage Warehouse		
		K-766 Sampling Storage Shed		
		K-834 Valve House		
		K-861-J/K-31 Cooling Tower		
		K-861/K-31 Cooling Tower		
		K-862 [K-31 Recirculating Water Pumphouse Area] Pumphouse		
		K-891 Raw Water Pumphouse		
		K-892 Pumphouse Area		
		K-892-G Cooling Tower, Structure Only		
		K-892-H Cooling Tower, Structure Only		
		K-892-J Cooling Tower Structure Only		

REMEDIAL SITE EVALUATION AREAS

Grouping	Program	Area of Concern	SWMU No.	Status
ORNL				
Independent Areas	RA	Abandoned Burn Pit		
		C-14 Allocation In White Oak Trees		
		C-14 Allocation In White Pine Trees		RSE in progress
		C-14 Allocation in Woody Biomass Plantation Species		
		C-14 Efflux In Yellow Poplar Stand		RSE in progress. NFI in progress
		C-14 Maintenance-Respiration Study		RSE in progress
		C-14 Sucrose Inoculation of Oak and Pine Trees		RSE in progress. NFI in progress
		Ca-45 Tagged Forest		
		Ca-45 Tagged Soil and Vegetation		NFI Approved
		Ca-45 Tagged Trees		NFI Approved
		Co-60 and Mn-54 Animal Study		
		Cr-51 Contaminated Grass Plots		
		Cs-134 Contaminated Grasses		
		Cs-134 Contaminated Oak Trees		
		Cs-134 Contaminated Persimmon Tree		
		Cs-134 Contaminated Pine And Oak Seedlings		
		Cs-134 Contaminated Soybean and Sorghum		
		Cs-134 Contamined Lichens and Mosses		
		Cs-134 Tagged Tree		
		Cs-137 Bagged Leaves Study		NFI Approved
		Cs-137 Contaminated Forest Floor		
		Cs-137 Contaminated Forest Understory		
		Cs-137 Contaminated Meadow		
		Cs-137, Co-60 Contaminated Forest Area		
		Cs-137, Fe-59 Contaminated Animal Pens (McNew Hollow)		
		Environmental Restoration Program Office Trailer Site		
		H-3 Contaminated Trees		NFI in progress
		Hg-197 Tagged Stream		NFI in progress
		Hg-203 Tagged Stream		NFI in progress
		Na-22 Contaminated Soil		
		Rb-86 Contaminated Plants		
		Tc-95m Contaminated Soil and Plants		
		Tc-95m Uptake Studies		
		Tc-95m and I-131 Contaminated Pasture		
		Tc-99 and Np-237 Contaminated Soil Lysimeters		
		Thorium Storage Wells		
		West End Dump Site	0.61	
		Zn-65 Tagged Red Oak Seedlings		
WAG 1	RA	Isotopes Ductwork/3110 Filter House		
WAG 12	RA	Closed Contractors' Landfill (7658)	12.1	
WAG 16	RA	Buried Scrap Metal Area	16.3	
		Cesium-137 'Forest' Research Area (7759)		

REMEDIAL SITE EVALUATION AREAS

Grouping	Program	Area of Concern	SWMU No.	Status
ORNL				
WAG 16	RA	Process Waste Basin (7711)		NFI Approved
WAG 17	RA	Abandoned Underground Waste Oil Storage Tank 7002A		
		Waste Oil Storage Tank (7002W)	17.2A	
WAG 18	RA	Paint Solvents Storage Tank (7615)	18.2	
		Waste Retention Basin (7613)		
WAG 19	RA	Explosive and Shock-Sensitive Waste Detonation Area	19.8	
		Reactive Chemicals Disposal Area (7659B)	19.6	
		Soil Injection of Radioactive Gas (7659C)		
WAG 20	RA	Municipal Sewage Sludge Application Site (XF1226)	20.1	NFI Approved
WAG 4	RA	Pilot Pits 1, 2 (7811)	4.2	
WAG 5	RA	Drainage 3 Next to WAG 5		
WAG 6	RA	SWSA 6 TVA Easement		
WAG 9	RA	Soil at HRE Decontamination Pad/Shed (7500)		
		Waste Valve Pit 7561		

REMEDIAL SITE EVALUATION AREAS

Grouping	Program	Area of Concern	SWMU No.	Status
ORR				
Freels Bend	RA	Animal Burial Site I		NFI
		Animal Burial Site II		NFI
		Animal Burial Site III		NFI
		Low Dose Rate Irradiation Facility		
		Variable Dose Rate Irradiation Facility (VDRIF)		NFI

REMEDIAL SITE EVALUATION AREAS

Grouping	Program	Area of Concern	SWMU No.	Status
Y-12				
Upper East Fork Poplar Creek	RA	Scarboro Road Debris Burial	YD-864	

APPENDIX D

STIPULATED FACTS

APPENDIX D

A. Oak Ridge National Laboratory (ORNL)

1. Process Ponds

   a. Fourteen surface impoundments (process ponds) were constructed during the 1940-1978 time period for use in waste management activities at ORNL. These contain residual radioactivity, requiring further evaluation.

   b. There are seven active ponds located in Melton Valley, four active sites in the High-Flux Isotopes Reactor-Transuranium Processing Facility (HFIR/TRU) complex (7905, 7906, 7907, and 7908), one inactive site in the Homogeneous Reactor Experiment (HRE) Area and two inactive ponds in the WAG 5 Area (Old Hydrofracture Pond and 7835 Sludge Pond). The four ponds in the HFIR/TRU complex have served as process liquid waste collection and sampling basins since 1965 and are earth-bermed, clay-lined, and open with gravel riprap on the basin walls.

   c. The HRE Pond served as the retention pond for reactor shield tank water from 1958 to 1961 and in 1970 was filled with earth and capped with asphalt.

   d. The inactive sludge pond (7835) located at SWSA 5 was lined with 30 mil plastic during construction. During operation from 1976 to 1981, sludge was pumped from the PWTP to this basin, sludge was allowed to settle, and the supernatant pumped back to the Equalization Basin.

   e. Another contaminated site is the Old Hydrofracture Facility (OHF) pond used from 1963 to 1980 as an emergency retention basin for grout and equipment washdown wastes.

2. Low-Level Waste Seepage Pits and Trenches

   a. During the period 1951 to 1966, four uncovered seepage pits and three covered seepage trenches were used for disposal of liquid low-level waste (LLLW).

   b. The initial pit was intended to store LLLW; however, an undetermined quantity of liquid waste leaked from the pit during the July-October 1951 time period.

   c. Three additional seepage pits were then constructed for the direct disposal of LLLW.

   d. In 1960, concerns about external radiation exposures to personnel working near these pits and potential for overflow from rainfall led to the design of covered waste trenches into which the LLLW was pumped and allowed to seep into the soil.

   e. During the period of 1951-1966, the amount of LLLW discharged to the pits and trenches is estimated to have been about 16,000,000 gal, containing around 650,000 Ci of Cs-137, and 190,000 Ci of Sr-90, and much lesser amounts of other moderate- to long-lived radionuclides.

   f. The presence of very large inventories of residual radioactivity in Pits 2, 3, and 4 and Trenches 5 and 7, in particular, and continuing releases of radionuclides requires further evaluation.

g. In 1964, seven special auger holes were drilled near the south end of Waste Trench No. 5 for disposal of residual Homogeneous Reactor Test fuel.

h. In 1964, approximately 510 liters of 4 m sulfuric acid solution containing 4,700 g of irradiated, highly enriched uranium and some fission products were disposed in these auger holes. These sites will also require further evaluation.

3. Solid Waste Storage Areas

a. Since operations at ORNL began in the 1940s, six solid waste storage areas (SWSAs) have been used to dispose of solid low-level radioactive waste (SLLW), principally through shallow-land burial.

b. Data on the quantity and chemical or radiological composition of the SLLW wastes disposed or stored in the first five SWSAs is virtually nonexistent. However, based on the information available, it has been estimated that about 200,000 cubic meters of SLLW containing about 630,000 Ci of radioactivity have been buried in the six SWSAs. Because of reporting limitations, the existing radionuclide inventory for SWSA 6 provides only an order-of-magnitude estimate of the radioactivity disposed; essentially no information exists to document the amount of hazardous chemical wastes disposed of prior to 1986.

c. In the early 1970s, shallow-land burial of TRU wastes was prohibited by DOE Order; and, since that time, solid TRU wastes have been stored retrievably in facilities located in the northern part of SWSA 5.

d. The Closed Contractors' Landfill was utilized from 1950 to 1975 for disposal of uncontaminated construction debris. This site is inactive.

e. ORNL stored contaminated equipment at the White Wing Scrap yard site from 1950 to 1970, at which time the equipment was removed.

f. Retrievable storage of solid TRU wastes was established in the SWSA 5 facilities in 1970, and continues to date.

g. Solid Waste Storage Area (SWSA) 6, opened in 1973 for the disposal of low-level radioactive waste (LLW), is the only currently operating LLW shallow land burial facility at ORNL. Investigations in April 1986 revealed that RCRA regulated waste (F-listed solvents as scintillation fluids, and lead) had been disposed in SWSA 6.

h. In April 1986, DOE revised its RCRA Part A Permit application to reflect the hazardous waste deposited in SWSA 6 since 1980. Procedures were implemented to ensure that RCRA waste was not included in the LLW and operations were resumed for the disposal of LLW in greater confinement disposal systems (concrete vaults or silos).

i. Administrative controls were established in April 1986 to ensure that no hazardous wastes are disposed in either the active portion of SWSA 6 or the new contractors' landfill located in WAG 3 west of SWSA 3.

j. A Closure Plan for SWSA 6 was submitted by DOE to the TDHE in October 1986.

k. A tumulus (above-grade storage facility) was constructed in SWSA 6 in September 1987.

l. A Notice of Deficiency for the SWSA 6 Closure Plan was issued by TDHE and subsequently received by DOE on January 27, 1988. A revised plan was requested to be submitted to TDHE by April 15, 1988.

m. A revised Closure Plan for SWSA 6 was submitted by DOE to TDHE and EPA on April 14, 1988. Included with the Closure Plan was a Post-Closure Permit application.

n. A Notice of Violation (NOV), Closure Plan - SWSA 6, was issued to DOE by TDHE on July 5, 1988. A Response to the NOV was submitted in August 1988. As agreed upon at a meeting on July 27, 1988, at Oak Ridge between TDHE, EPA, and DOE, a separate Closure Plan (excluding the Post-Closure permit information) was prepared and submitted by August 22, 1988.

o. On September 28, 1988, DOE was notified by the TDHE that the Closure Plan, as modified by the TDHE after public comments, was approved.

p. Closure of SWSA 6 was initiated on November 4, 1988, by implementation of the Interim Corrective Measures (ICM) Program as outlined in the approved Closure Plan.

4. Inactive Hydrofracture Injection Wells

a. Four different sites in Melton Valley were used in the development and full-scale application of hydrofracturing.

b. The initial experimental injection (HF-1) was accomplished in 1959 using a 300 ft cased well and leased pumping equipment. Near the end of the injection, grout slurry was observed to be exiting through a uncapped observation well near the injection well and the injection was halted. The estimated discharge of radioactivity was less than 0.1 Ci, resulting in localized surface contamination at the site.

c. The second experimental injections (HF-2) were conducted in 1960 in a new well located about 6000 ft southeast of HF-1. There were no reports of spills or leakage during either of these injections; this injection well is currently covered by a road.

d. In 1963, a full-scale experimental facility (named the Old Hydrofracture Facility or OHF) was constructed to allow experimentation with an integrated solids storage, handling, mixing and grout injection facility. Five underground LLLW storage tanks, an emergency waste pond, and a waste pit were installed. The facility was used for seven experimental and 18 operational injections from 1963 to 1980. A total of 1,430,000 gal of LLLW were injected during this period containing 604,000 Ci of Cs-137, 39,000 Ci of Sr-90, and lesser amounts of other radionuclides. Injections were made at depths ranging from 792 to 872 ft.

e. In 1982, the New Hydrofracture Facility (NHF) was completed. Between 1982 and 1984, a total of 8,475,000 gal of LLW containing 645,000 Ci of Sr-90, 83,000 Ci of Cs-137, and approximately 23,000 Ci of other radionuclides (including Cm-244 and transuranic radionuclides) were injected at depths ranging from 990 to 1069 ft. Injections of grout were discontinued and in 1986 the DOE decided not to pursue a permit required for continued operation of the facility. Plans for a remedial investigation covering all of the injection sites have since been developed.

5. Hazardous Waste Sites

a. Most ORNL facilities for management or storage of RCRA-hazardous chemical wastes are either new or have operated for a short period of time under stringent monitoring requirements. Thus, no known releases have occurred from these facilities since 1984.

b. Four Hg-contaminated sites have been identified in facilities which were constructed during 1950-1960 (portions of Buildings 3502, 3592, 4501, and 4508) and three of these have known releases. The amounts of Hg used in the laboratory and pilot-scale processes in these buildings ranged from a few pounds to several thousand pounds, but no accurate estimates of the amounts of Hg spilled or lost are available. Soil contamination in the vicinity of three of the buildings requires further evaluation.

c. A 4500 gallon capacity underground tank (7860A) located east of Building 7863 at the New Hydrofracture Facility (NHF) primarily contains waste oil derived from lubrication of the pumps used in the hydrofracturing process. It also received organic solvents transferred from SWSA 3 in the process of cleaning up a drum storage area. The waste oil is thus contaminated with a variety of solvents and some radionuclides. This tank was used from approximately 1981-1985.

6. Environmental Research Areas

a. In 1954, a radiation ecology program was initiated to study the environmental behavior and effects of radioactive materials, including fallout from nuclear weapons, through both laboratory and field studies.

b. As part of this research, a wide assortment of radionuclides, generally in tracer quantities, were purposefully applied to 37 field sites from 1960 through 1984.

c. At six study sites, grouped into three areas (Cs-137-contaminated fields in the 0800 Area, Cs-137-contaminated forest sites in the Health Physics Research Reactor Area, and the Cs-137- and Co-60-contaminated forest area on Chestnut Ridge), residual radioactive contamination is significant enough to warrant further evaluation and continued institutional control, along with possible remedial action.

7. White Oak Creek Watershed

a. The Main Plant Area and the SWSA 3 Area are sources of continuing radioactive and hazardous releases to White Oak Creek in Bethel Valley.

b. Releases from ORNL operations since 1943 have resulted in radionuclide and hazardous chemical contamination of sediments in White Oak Creek and White Oak Lake. (Cerling, T. E. and B. P. Spalding, 1982, Distribution and Relationship of Radionuclides to Streambed Gravels in a Small Watershed. Environ Geol. 4, 99-16; RFA ORNL/RAP-12/V1 (pp. I-37, I-39).

c. White Oak Dam, located approximately 1 km above the junction of White Oak Creek with the Clinch River, was built in the fall of 1943 to form White Oak Lake for the purpose of providing a dilution and settling basin for ORNL effluents. The largest single accumulation of contaminants in the White Oak Creek system is in White Oak lake sediments. (Sherwood, C. B. and J. M. Loar, 1987. Environmental Data for the White Oak Creek/White Oak Lake Watershed, ORNL/TM-10062, pp. 8-11).

d. The principal radioactive contaminants in White Oak Creek/Lake are Cs-137 and Sr-90; significant chemical contamination is associated with Cr and polychlorinated biphenyls. (RFA ORNL/RAP-12/V1 (pp. I-37, I-39)).

8. Groundwater Monitoring

a. Groundwater quality monitoring wells were installed according to RCRA specifications as outlined in the RCRA Groundwater Monitoring Technical Enforcement Guidance Document (TEGD) around seven ORNL surface impoundments Basins 3523, 3539, 3540, 7905, 7906, 7907, and 7908 in 1985. Quarterly sampling was initiated in September 1985. Additional samples were collected in December 1985, March 1986, and June 1986. Upon completion of quarterly sampling, samples were collected semiannually for one (1) year and then annually.

b. The RCRA groundwater monitoring wells were initially installed around the surface impoundments in order to assess the possible contaminant releases from surface impoundments.

c. Further testing of the effluent and sludge contained in the surface impoundments revealed that they did not contain RCRA hazardous waste. On July 9, 1987, the TDHE informed DOE that the seven surface impoundments, since they were not receiving nor storing hazardous waste, were not subject to RCRA permitting requirements.

9. Inactive Low Level Liquid Waste (LLLW) Storage Tanks

a. There are 33 "*inactive*" LLLW storage tanks which are typically grouped in tank farms and were interconnected to provide flexibility in operations; tanks/transfer lines are located in waste area groupings (WAGS) 1, 4, 5, 7, 8, and 9. Several tank farms contain both active and "inactive" tanks.

b. Tanks vary in age and construction design, with the majority being gunite (12) or stainless steel (16) and >30 years old; all are of single-containment design; 1000- to 170,000-gal. capacity (median 4000 gal.).

c. Interconnecting, singly contained transfer piping is of similar age and design variability; tens of miles of piping with 35 known leak sites.

d. Before 1974, 18 tanks were taken out of service; 15 after 1974; 15 tanks have evidence of past leakage (5 generated known soil contamination and 10 collect groundwater/surface water) and 3 others may have leaked.

e. Three tanks are empty (W-19, W-20, and 7560); sampling of 3 others was delayed till 1989 because of access problems (WC-1, WC-15, TH-2).

f. Most (>95%) of the waste volume (400,000 gal.) and radionuclide inventory (30,000 curies; primarily Sr-90 and Cs-137) are in 13 tanks located in 3 tank farms; nearly all contain transuranic (TRU) waste sludges and all appear to contain mixed wastes.

g. The current surveillance program emphasizes the monitoring of these 13 tanks.

h. Incomplete analytical results from sampling 27 "inactive" tanks in 1988 indicate that 11-14 have TRU-waste sludges and 24 contain mixed waste liquids/sludges (Cr, Pb, Hg, Cd, and some organics); there is wide variation in levels/types of constituents and homogeneity of contents.

10. Active Low Level Liquid Waste (LLLW) Tanks

a. There are 36 active LLLW tanks which are typically grouped in tank farms (often with "inactive" tanks) and interconnected to provide flexibility in operations.

b. Tanks vary in age and construction design, with the majority of the collection tanks being 20 to 30 years old and of single-containment design; 500- to 15,000-gal capacity (median <2000 gal.).

c. Evaporator service tanks and Melton Valley Storage Tanks (MVSTS) [sic] are doubly contained; 50,000-gal. capacity each.

d. Interconnecting transfer piping is of similar age and design variability, with the majority of the collection tanks served by singly contained lines.

e. LLLW system upgrade is currently being addressed through a series of line item and GPP projects.

f. The active tank systems are covered by a TDHE permit by rule, utilizing the wastewater treatment system exemption from RCRA regulation, until replaced and deactivated via the system upgrade projects.

11. General

a. The Remedial Action Program (RAP) was established in 1985 to comply with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) [DOE Order 5480.14.]

b. By letter of December 20, 1985, the EPA requested of DOE information concerning DOE's plans for remedial investigation and corrective action at the DOE facilities. DOE replied to this request by letter on February 24, 1986, by outlining the five (5) phases of DOE 5480.14. After reviewing the response of February 24, 1986, the EPA submitted comments and questions in a letter dated April 17, 1986.

c. By letter of May 2, 1986, EPA informed the DOE of its intent to enforce regulatory requirements for ORNL remedial actions through the authority of the section 3004(u) RCRA of the 1984 Hazardous and Solid Waste Amendments (HSWA) as part of the RCRA permit for ORNL's Hazardous Waste Storage Facility - Building 7652.

d. On June 23, 1986, DOE/ORO submitted a response to the EPA letter of April 17, 1987, which provided preliminary schedule information concerning implementation of the ORNL RAP. A table listing all known active and inactive waste management areas, contaminated facilities, and potential sources of continuing releases was attached. In this correspondence DOE/ORO proposed the concept of Waste Area Grouping (WAG) for use in remedial investigations. DOE transmitted this information along with a topographic map showing the location of the WAGs.

e. On July 16, 1986, DOE submitted information concerning the technical and regulatory basis for WAGs to the EPA in response to a request by the EPA on May 16, 1986, for additional information and clarification concerning the WAG concept.

f. In August 1988, DOE submitted to the EPA a map showing the location and boundaries of all WAGS [sic] and eight (8) detailed maps showing the location of SWMUs within each WAG.

g. A HSWA RCRA permit was issued by the EPA in conjunction with the Hazardous Waste Permit (Tennessee Department of Health and Environment - TDHE) for ORNL's Hazardous Waste Storage Facility Building 7652 that became effective October 25, 1986. The permit contained schedules for submission of a RCRA Facilities Assessments (RFA) and RCRA Facility Investigation Plans (RFIs).

h. In January 1987, DOE submitted an updated SWMU list to the EPA and TDHE.

i. According to conditions outlined in the RCRA HSWA Permit, DOE submitted the following SWMU identification/characterization reports to EPA.

   a. RFA, Volumes 1 and 2 (April 20, 1987)
   b. RFA, Volume 3, Addendum (August 24, 1987)
   c. RFA, Volume 4, Container Storage Areas (October 28, 1987)

The RFA was structured according to the WAG concept and presented preliminary schedules for the submittal of WAG specific RFI plans. It also contained recommendations that no further action was deemed necessary for WAGs 14, 16, 18, and 20. WAGs 1-10 were recommended for remedial investigation while the remainder were deemed to need additional assessment before a final determination of RFI status.

j. DOE submitted an updated list of ORNL SWMUs to EPA and TDHE on February 3, 1988. The submittal contained a list of SWMUs that DOE recommended as requiring no additional assessment/investigation.

k. Discussions between the EPA, TDHE, and DOE personnel were held in August 1988 concerning the assessment status of all ORNL SWMUs. Agreement was reached as to which SWMUs required remedial investigations, additional assessment, or no further assessment.

l. In late 1988 a document control program was implemented resulting in the re-issuance of WAG RFI plans.

Copies of the following RFI Plans were submitted to EPA, TDHE, and DOE Headquarters as follows:

WAG 1 - January 25, 1989
WAG 3 - December 30, 1988
WAG 6 - January 10, 1989
WAG 7 - December 30, 1988
WAG 8 - December 30, 1988
WAG 10 - January 25, 1989
WAG 17 - December 30, 1988

m. By letter on October 28, 1988, the TDHE in conjunction with the EPA notified DOE of intent to modify the RCRA HSWA Permit by public notice on November 3, 1988. Significant modifications included schedules for submittal of RFI plans and the additional requirement to implement corrective action beyond the facility boundary [RCRA HSWA, Section 3000(v)].

n. DOE submitted an updated ORNL SWMU list in January 1989. The updated list reflects those SWMUs that do not require additional assessment as agreed upon at the August 1988 meeting between the EPA, TDHE, and DOE.

12. Oak Ridge Associated Universities (ORAU)

a. The Comparative Animal Research Facility (CARL) was operated by the University of Tennessee from 1948 to 1981. ORAU assumed operations of the Comparative Animal Research Facility in October 1981.

b. Purpose of the facilities is to study the long-range biological effects of radiation, radioactive entrance and transport in the food chain, and study of human risks from toxic materials.

c. Potential local remedial action sites include the Laboratory Road Facility, RE/ACTS Facility, Vance Road Facility, and Turnpike Facility.

d. Potential remedial action sites at Scarboro Facility include Surgery Building, nutrition facility, NECROSCOPY building, large animal containment building, pony barn, maintenance/storage facility, general storage shed, carpenter shop, isolated barn, serine facilities, biochemistry laboratory, buried septic tanks, and previously removed USTs.

e. Potential remedial action sites at the Freels Bend Facility include the Low Dose Rate Facility, Variable Dose Rate Irradiation Facility, Animal Burial Sites I, II, and III, and UST.

B. Y-12 Plant

1. Tennessee Eastman Corporation was operating contractor for the Y-12 Plant from 1942 until May 1947, when they were replaced as operating contractor by Union Carbide.

2. In 1951, use of the abandoned Kerr Hollow Quarry (KHQ) was started for the treatment of water-reactive materials, potentially explosive chemicals, and empty compressed gas cylinders. Wastes received at KHQ were defined as hazardous only by the characteristics of reactivity, corrosivity, or ignitability.

3. In 1951, the S-3 Ponds (4 unlined surface impoundments) were constructed in the west end of the Y-12 Plant as a disposal site for liquid wastes.

4. In 1952, the S-2 Pond was closed, neutralized, and filled.

5. The first trench in Burial Ground A [first phase of the Bear Creek Burial Grounds (BCBG)] was excavated in 1955 for the disposal of solid wastes.

6. In 1955, an earthen dam was constructed across the northern tributary of McCoy Branch, south of Chestnut Ridge which runs along the southern boundary of the Y-12 Plant. The dam and resulting impoundment (Coal Ash Pond) were designed to provide settlement pond storage for ash sluice water pumped from the Y-12 Steam Plant.

   By 1967, the Coal Ash Pond had filled with coal ash. The ash sluice water began flowing across the filled pond, into McCoy Branch, and eventually into Rogers Quarry where sedimentation of the ash occurred.

7. In July 1959, the Atomic Energy Commission authorized the Y-12 Plant to begin using BCBG for the disposal of liquid wastes.

8. In 1962, New Hope Pond was constructed near the eastern boundary of the Y-12 Plant. This unlined settling basin was intended to remove suspended sediments from Upper East Fork Poplar Creek prior to its discharge from the Y-12 Plant.

9. In 1962, Burial Grounds B and C were opened. Burial Ground B was used for the disposal of depleted uranium metals and oxides. Burial Ground C was opened for the disposal of beryllium, beryllium oxide, thorium, and solid wastes contaminated with these materials; also disposed of were materials contaminated with enriched uranium.

10. Burial Ground D was opened in 1968 for the disposal of depleted uranium metals and oxides after Burial Ground B had reached capacity.

11. Operation of Sanitary Landfill I was started in 1968. Prior to 1968, sanitary wastes were burned.

12. Oil leakage was first observed from Burial Ground A in 1970.

13. Oil Retention Pond (ORP) #1 was constructed in May 1971 to collect and contain oils that had leached into a surface stream flowing along the western edge of Burial Ground A.

14. In May 1972, Oil Retention Pond #2 was constructed at the northeast corner of Burial Ground A. ORP #2 was also built to collect and contain oils that had leached from the burial ground.

15. Accumulated sediments were dredged from New Hope Pond in 1973 and placed in the Chestnut Ridge Sediment Disposal Basin.

16. In 1973, operations at the Oil Landfarm were started. This EPA-approved project was used for the biological degradation of waste oil and machine coolants via landfarming, a process involving application of waste oils and coolants to nutrient-adjusted soil during the dry months of the year (April through October).

17. The first National Pollutant Discharge Elimination System (NPDES) permit was issued to the Y-12 Plant in February 1975. This permit was for East Fork Poplar Creek (New Hope Pond), Bear Creek, and Rogers Quarry.

18. Operations were ceased at the Oil Landfarm in 1982.

19. Operations were ceased at Sanitary Landfill I in 1983.

20. In March 1983, Sanitary Landfill II, a facility permitted by the Tennessee Department of Public Health (now Tennesssee Department of Health and Environment), was opened.

21. On May 26, 1983, a Memorandum of Understanding (MOU) was agreed upon by the DOE, U.S. EPA, and TDHE concerning compliance with pollution control standards at the Y-12 Plant. To carry out the intent of the MOU, DOE agreed to take action with respect to each of the areas of the Y-12 Plant described in the March 8, 1983 TDHE Notice of Noncompliance; summarized as follows:

    Upper East Fork Poplar Creek (UEFPC) - DOE agreed to submit to EPA and TDHE a report describing all Y-12 discharges to UEFPC and interim treatment/control measures for the same. Also agreed to was an assessment of coal storage and steam plant management plans, including the water quality impacts of the same.

    New Hope Pond (NHP) - DOE agreed to take steps to eliminate NHP as a NPDES discharge point. Included in this was a report containing a characterization of NHP sediments, assessments of active sources of mercury contamination, plans and specifications of the NHP by-pass and its use for spill prevention and control, and plans and specifications for cleaning out NHP.

New Hope Sludge Disposal Area - DOE agreed to submit results of leachability tests as well as a report evaluating site suitability and management practices.

S-3 Ponds - the defined objective of the MOU was to cease all contributions to the S-3 Ponds and to eliminate the S-3 Ponds as sources of contamination to surface and groundwater. This objective was to be accomplished by DOE by following these four major objectives:

(1) Elimination of waste contributions to the S-3 Ponds;
(2) Close out of S-3 Ponds;
(3) Upon elimination of the S-3 Ponds as a source of contamination to surface waters, submit a plan and schedule for rehabilitation of Upper Bear Creek; and
(4) Establish a monitoring point at the S-3 Ponds' discharge and establish parameters to be monitored.

Burial Ground Oil Pond - DOE agreed to submit reports that would (1) characterize wastewaters discharged from the pond; (2) inventory the wastes deposited in the pond watershed; and (3) assess the sediment, inventory existing contamination, and present biological information regarding the area. An NPDES application was to be submitted for the pond discharge. DOE also agreed to take further appropriate action, which could include a plan for elimination of sources of pollution to the pond and ultimate cleanup and closure of the pond.

Isolation Area - DOE agreed to submit an inventory of waste deposited in the area.

Disposal Pits - DOE agreed to submit a schedule for closure, including plans for alternate disposal.

Oil Landfarm - DOE agreed to implement a plan for preventing material from reaching "waters of the State and United States;" submit a description of site runoff; submit an evaluation of alternative actions at this site, including submission of a NPDES permit application, if applicable; and submit a report that included an inventory material deposited in the area and an inventory of existing contamination.

Contamination of East Fork Poplar Creek and Bear Creek - EPA, TDHE, and DOE agreed to establish a Task Force for the purpose of studying contamination and formulating a remedial plan if it is determined that one is necessary.

Groundwater Study for Y-12 Facility - DOE agreed to award a contract to investigate the hydrologic characteristics of the Bear Creek Valley disposal areas, the S-3 ponds, and the New Hope Pond sludge disposal basin to evaluate the groundwater flow, monitoring data, and the adequacy of the existing Y-12 groundwater monitoring program.

Master Monitoring Plan - DOE agreed to submit a master monitoring plan for groundwater and surface waters of the entire Y-12 Facility, indicating all sampling locations and all analytical parameters.

22. On September 15, 1983, a Complaint and Order was issued by the TDHE against DOE concerning discharges into UEFPC. Agreed to were the items outlined below:

a. DOE would submit a report describing the discharges from the Y-12 Plant into UEFPC;

b. DOE would provide an effluent sampling proposal, including analytical parameters, as well as NPDES permit applications for the steam plant, laundry, and cooling towers;

c. DOE would implement a sampling proposal, submit NPDES applications, and implement management plans for area source and process source discharges, including the laundry, steam plant, and cooling towers; and

d. DOE would submit reports characterizing waste deposited, site suitability, and management practices for the New Hope Sludge Disposal Area and the United Nuclear Corp. (UNC) site.

23. The TDHE issued a Complaint and Order in December 1983 concerning Bear Creek Valley. In particular, the Order addressed the following areas:

- o S-3 Ponds;
- o Burial Ground Oil Pond and Burial Ground Disposal Pits; and
- o Oil Land Farm, Isolation Area, and Stand Pipe Area.

Agreed to were the items outlined below:

a. DOE would cease the disposal and/or discharge into the S-3 Ponds of all materials except those materials necessary for the treatment of the S-3 Ponds.

b. DOE would cease disposal of solid wastes in the existing Burial Ground Disposal Pits.

c. DOE would submit a plan and schedule for rehabilitation of Bear Creek.

d. DOE would submit a report characterizing wastewater discharged from the Burial Ground Oil Pond and submit an NPDES permit application for the same.

e. DOE would submit a report consisting of (1) an inventory of waste deposited in the Burial Ground Oil Pond watershed, (2) a sediment assessment of the area, (3) an inventory of existing contamination, and (4) biological information regarding the area.

f. DOE would submit a proposal for remediation of the Bear Creek watershed area.

24. Discharges into the S-3 Ponds were terminated in March 1984.

25. Martin Marietta Energy Systems, Inc. was awarded the contract for operations of the Y-12 Plant in April 1984.

26. On May 10, 1984, the TDHE issued an amendment to the 12/83 Complaint and Order with respect to the remediation of the Bear Creek watershed area. The information required for the remediation proposal was amended to include:

a. A definitive statement on existing and potential impact(s) to surface and groundwaters from Bear Creek disposal areas;

b. An assessment of imminent environmental hazards, with a description of interim remedial measures;

c. A preliminary assessment of applicable long-term remedial action alternatives;

d. Identification of additional information needed to effect evaluation of long-term remedial action alternatives; and

e. An implementation schedule for progressing to a final decision with respect to long-term remedial action alternatives.

27. An Order of Correction was issued by the TDHE on December 6, 1984 against DOE concerning the management of hazardous and mixed waste at treatment, storage, and disposal facilities of the Y-12 Plant. The Order directed DOE to:

a. Comply with the interim status standards for all mixed waste facilities;

b. Comply with hazardous waste permits and conditions thereon issued by TDHE; and

c. Submit a schedule for submittal of all Part B Permits.

28. A second Order of Correction was issued on December 6, 1984 by TDHE concerning the S-3 Ponds, New Hope Pond, Bear Creek Burial Grounds, and the Oil Landfarm at the Y-12 Plant. The Order directed DOE to:

a. Submit a Hazardous Waste Permit application for each of the four facilities; and

b. Submit closure and post-closure plans for each of the four facilities.

29. In March 1985, a Federal Facility Compliance Agreement (FFCA) was entered into between the U.S. EPA and DOE to assure compliance by the Y-12 Plant with the Clean Water Act.

Included in the Agreement were compliance schedules, funding requests, reporting requirements, conflict resolutions, and sanctions. Attachment "A" of the Agreement specified construction schedules for planned construction of treatment facilities. Category III (Process Wastewaters) discharge elimination plans were outlined in Attachment "B".

30. An amendment to the March 1985 FFCA was issued in March 1986. This amendment was made necessary by the following two items:

a. An extension to the schedule for the Central Pollution Control Facility (CPCF II); and

b. Establish a schedule for the proper control and disposal of fly ash from the steam plant.

31. A 'comprehensive' NPDES Permit was issued to the Y-12 Plant effective May 25, 1985. This permit covered all known surface water discharges from the plant including New Hope Pond, UEFPC, Bear Creek, Kerr Hollow Quarry, Rogers Quarry, etc.

32. In September 1986 the FFCA was amended to address the following three items:

    a. Revised schedule for CPCF II;

    b. Revised schedule for West End Treatment Facility; and

    c. Revised conditions of operation for the S-3 Ponds Liquid Treatment Facility.

33. During April 1988, the construction of the West Borrow Area [a part of the Y-12 Closure and Post-Closure Activities (CAPCA) Program] was started.

34. Construction of Lake Reality, intended to serve as a replacement for New Hope Pond, was started in May 1988.

35. Dewatering of the impoundments of the S-3 Ponds and placement of sediments from the upper portion of Bear Creek, known as Blue Lagoon, into the S-3 Ponds were completed in June 1988.

36. The construction of the East Borrow Area for the Y-12 CAPCA Program was started in July 1988.

37. Backfill of S-3 Ponds' impoundments was completed and construction of multi-layer cap started in September 1988.

38. Draining of water from the Oil Retention Ponds was initiated and construction of ORP soil storage facilities started during September 1988.

39. Preliminary CAPCA work (e.g. clearing of vegetation, installation of soil erosion control devices, etc.) started on the Bear Creek Burial Grounds in October 1988.

    East Borrow Area was completed in October 1988.

40. In November 1988, closure of Burial Ground A was started under the Y-12 CAPCA Program.

41. Construction of a Soil Storage Vault, a part of the RCRA closure of the Oil Landfarm, was started in October 1988.

42. Disassembly of equipment and other facilities at Kerr Hollow Quarry was started in October 1988.

43. The first PCB-contaminated (>50 ppm) soil from the Oil Landfarm was placed in the Soil Vault in November 1988.

44. West Borrow Area construction was completed during November 1988.

45. The closure of New Hope Pond under the Y-12 CAPCA Program was started in November 1988 by diverting UEFPC into Lake Reality.

46. Treatment/disposal operations at Kerr Hollow Quarry were ceased in November 1988.

47. Lake Reality was completed in December 1988.

48 The last of the PCB-contaminated soil from the Oil Landfarm was placed in the Soil Vault in January 1989.

49. The following data is taken in its entirety from an unclassified document entitled Mercury at the Y-12 Plant - A Summary of the 1983 UCC-ND Task Force Study, Document Number Y/EX-23.

- o Between 1951 and 1955, between 100,000 and 120,000 pounds of mercury were spilled in three separate incidents involving pilot plant operations in Building 9201-2. Approximately 95,000 pounds of the spilled mercury were lost to the ground and were not recovered.

- o On January 1, 1956, a couplings broke on a pump in Building 9201-5, releasing between 113,000 and 170,000 pounds of mercury. Of the amount released, approximately 70,000 pounds of the mercury were lost to the ground and were not recovered.

- o On July 17, 1956, a valving error was responsible for the release of 22,500 - 90,000 pounds of mercury at a ramp north of Building 9201-5. Of this amount, approximately 85,000 pounds of mercury were lost to the ground and were not recovered.

- o In the summer of 1956, a valving error between Buildings 9204-4 and 9201-5 was responsible for the release of 22,500 - 90,000 pounds of mercury. Of this amount, approximately 85,000 pounds of mercury were lost to the ground and were not recovered.

- o On November 15, 1956, a Colex column in building 9201-5 plugged, causing the release of an estimated 22,500 - 45,000 pounds of mercury. Of the amount released, approximately 40,000 pounds of mercury were lost to the ground and were not recovered.

- o On March 28, 1966, a "sight glass" tube broke on a tank in Building 9201-5, releasing an estimated 105,000 pounds of mercury. Of this amount, approximately 49,800 pounds of mercury were lost to the ground and were not recovered.

50. In a report published in 1983 by the Union Carbide Corporation entitled Mercury at the Y-12 Plant - A Summary of the UCC-ND Task Force Study, Document Number Y/EX-23, unclassified, the following estimated mercury losses by the Y-12 Plant were reported.

Lost to air	51,300	pounds
Lost to East Fork Poplar Creek	238,944	pounds
Lost to New Hope Pond sediment, Chestnut Ridge	6,629	pounds
Lost to New Hope Pond sediments now in place	8,475	pounds
Lost to ground, Building 9201-5 spill accident	49,853	pounds
Lost to ground, seven other spills	375,000	pounds
Lost to ground, Building 81-10 operations	3,000	pounds
Lost Total	733,201	pounds

51. On November 3, 1983, DOE authorized the Tennessee Valley Authority (TVA) to prepare a technical work plan for an Instream Contaminant Study on EFPC which involved sampling of instream water, sediment, fish, and the floodplain. The primary purpose of the TVA Instream

Contaminant Study was to provide water, sediment, and fish data for identifying off-site contaminants and assessing potential public health risks.

52. An Instream Contaminant Study was initiated by TVA in April 1984.

53. Results indicated that total mercury concentrations were at or above the Tennessee Water Quality Criteria for Protection of Aquatic Life (0.2 ug/L) (1200-4-3-.03(3)) and the EPA Interim Primary Drinking Water Standard (0.002 ug/L) during the storm events. In addition, dissolved mercury concentrations were slightly above the analytical detection limit of 0.2 ug/L (TVA 1985a).

54. ORAU, at the request of DOE and the ORTF, has been involved in efforts to define the extent of contamination within the Oak Ridge community. The general ORAU sampling effort through 1985 focused on (1) sampling of private residences, (2) a rapid scan of the entire length of the Oak Ridge Turnpike, (3) participation in an interim cleanup effort at the Oak Ridge Civic Center, (4) cleanup of two small contaminated areas in the city, (5) removal of contaminated soil from a private residence, (6) a rapid scan for preliminary determination of the contamination distribution in the EFPC floodplain, (7) monitoring for radioactivity and other contaminants in municipal wastewater, and (8) sampling of a salvage yard to determine the composition and distribution of contamination on that property (Energy Systems 1986).

55. Most recent references containing information regarding mercury contamination in EFPC include: Martin Marietta Energy Systems, Inc. 1986. Environmental Surveillance of the Oak Ridge Reservation and Surrounding Environs During 1985. ORNL-6271. Oak Ridge National Laboratory, Oak Ridge, Tennessee; Tennessee Valley Authority. 1985a. Oak Ridge Task Force, Instream Contaminant Study-Task 1: Water Sampling and Analysis. Tennessee Valley Authority, Office of natural [sic] Resources and Economic Development and Tennessee Valley Authority. 1985b. Oak Ridge Task Force, Instream Contaminant Study - Task 2: Appendices, Volume 2. Tennessee Valley Authority, Office of natural [sic] Resources and Economic Development.

C. Oak Ridge Gaseous Diffusion Plant (ORGDP)

1. Burial Grounds - The K-1070-C/D Classified Burial Ground, which is currently in use, has been in operation since the 1970s. The burial ground has been used for disposal of organic wastes and currently is used for disposal of classified radioactive waste. The other burial grounds at ORGDP, which are no longer in use, began operation between 1940 and 1970, and operation ended in the mid 1970's. Included in the wastes buried at these sites are low level radioactive solid waste, mixed chemical waste, radioactive and nonradioactive classified materials, and construction and renovation rubble.

   These burial grounds include: K-1070-A Contaminated Burial Ground, K-1070-C/D Classified Burial Ground, K-1070-F Old Contractors Burial Ground, K-1070-G Burial Ground, K-1070-B Classified Burial Ground, and K-901-A Waste Disposal Area.

2. Surface Impoundments - Surface impoundments subject to RCRA 3004(u) include sites which were used for settling and/or diluting of chemical waste discharges, metal hydroxide sludges and sludge storage. Sources of sludge include the ORGDP laboratory area, treated recirculated cooling water system blowdown, and neutralized waste streams from K-1407-A. Sludges from the chemical wastes

contain a large number of different hazardous materials from the laboratory operations. Cooling water sludges primarily contain chromium hydroxide precipitates. The neutralized waste contains precipitates from the cleaning of nickel plated materials in addition to small quantities of radioactive materials. The K-901-A pond contains approximately 6,500 cubic yards of chromium (Cr^{+3}) and iron hydroxide sludge from the recirculating cooling water treatment process. the K-1007-B pond contains approximately 200 cubic yards of sludge containing chromium, copper, lead, mercury naphthalene, and zinc which was deposited from laboratory drains. The K-1407-B pond contains approximately 12,400 cubic yards of metal laden (F006) sludge generated from neutralization and decontamination activities. the K-1407-C Basin contains approximately 13,200 cubic yards of sludge which was dredged from the K-1407-B pond as well as some potassium hydroxide.

3. Various underground tanks at ORGDP contained a variety of wastes including low level waste from cleaning operations; solutions from backwash and regeneration of steam plant water softening resins; corrosive solutions from plating facilities. Most of these facilities have been in operation since the 1940's and are suspected of leaking these liquids into the ground.

   The specific underground tanks that require further investigation and potentially require remediation are: K-1410 Neutralization Pit, K-1503 Neutralization Pit, K-1413 Neutralization Pit, K-1085 Old Firehouse Burn area, K-1407-A Neutralization Pit, and K-1004-L Vaults.

4. Several storage facilities were used for the storage of radioactively contaminated materials, paint wastes, and other organic wastes including PCBs. Radioactively contaminated wastes stored at the sites include waste oils, PCBs, mercury, asbestos, and incidental scrap metals.

   The storage facility sites are: K-1064 Burn Area/Peninsula Storage, K-770 Scrap Metal Yard and Contaminated Debris, and K-1420 Oil Storage Facility.

5. Treatment facilities listed in this plan are used for the recovery of metals and the treatment of wastes before discharge from the plant. Metals include mercury and nickel, along with other heavy metals, as well as small amounts of uranium. Waste are nitrate and non-nitrate wastes with small amounts of organics. The treatment facilities include: K-1420 Mercury Recovery Room, K-1232 Treatment Facility, K-1421 Incinerator, and K-1410 Nickel Plating Facility.

6. Process lines were used to transport wastes to and from the K-1407-A Neutralization facility and from the K-1004 lab area. In addition there are several large underground cooling water lines running to the gaseous diffusion process buildings from the cooling towers. Some of the lines are known to have had leaks which may have allowed hazardous materials to escape into the environment. Other lines not having known leaks will be evaluated since they contained hazardous chemicals. Suspected contaminants include radioactive materials, metal hydroxides, corrosives (acids), and chromates.

   The process line sites are: K-1401 Acid Line, K-1413 Process Lines, Cooling Towers and Process Lines (10 units), and D-1004 Area Lab Drain.

7. Buildings K-1031 and K-1095 are used not only as painting facilities, and also as storage for paints, solvents, thinners, and various other associated paint materials (brushes, rags, etc.). Due to the nature of these materials, the contaminants of concern are semi-volatile and volatile organics.

8. A number of other RFI sites exist at the ORGDP which do not fall into any of the previous categories. These sites are unique due to the source of contamination and/or history of the facility. Hazardous materials in these sites will include heavy metals, organics, PCBs, and radioactivity. Each site is being evaluated separately to determine the exact source, type and potential risk due to the hazard(s).

   The miscellaneous sites are: K-720 Fly Ash Pile, K-725 Beryllium Building, K-1099 Blair Road Quarry, K-1700 Stream, and ORGDP Switchyards (4 units).

9. In addition to a major scale research and development (R&D) effort for support of the operating uranium enrichment cascade and the Cascade Improvement and Uprating Program (CIP/CUP), the R&D efforts for developing alternatives to the diffusion process for uranium isotope separation were initiated at ORGDP.

10. The ORGDP was placed in standby in September 1985. At the same time, work at ORGDP on two other uranium enrichment development programs (GCEP and AVLIS) were terminated. In 1988, it was decided that the gaseous diffusion process in Oak Ridge would not be restarted, and the gaseous diffusion cascade was shutdown permanently.

11. The ORGDP Groundwater Protection Program and Storm Drain Characterization Program were initiated in 1985.

12. Solid Waste Management Units (SWMUs) suspected of releasing contamination to the environment were identified and reported in the ILA.1 report submitted to [sic] by DOE to EPA in March 1987. Additional SWMUs have since been identified and have been reported to EPA.

13. Preparation of RCRA Facility Investigation (RFI) Plans for SWMUs began in 1987. About 25% of the plans were submitted in 1987, and the remainder of the plans were submitted by December 1988 (for sites identified previous to July 1988) in compliance with an EPA mandated schedule.

14. The closure plan for the K-1407-B Pond was submitted to Tennessee Department of Health and Environment (TDHE) April 1988, and the K-1407-C Pond closure plan was submitted to TDHE in May 1988.

15. RFI field activities began in January 1989 at the K-1070-A and K-1070-C/D Burial Grounds. Field activities include soil sampling to bedrock and analysis for inorganics, organics, and radioactivity.

D. Clinch River Study (Offsite)

1. The impounded Clinch River (i.e., Melton Hill Reservoir, impounded on the Clinch River in 1963, and the upper portion of Watts Bar Reservoir, impounded on the Tennessee River in 1942) bounds the Oak Ridge Reservation on the south and west for a distance of approximately 63 km from CRK 79 to CRK 16.

2. Tributaries of the Clinch River drain the Oak Ridge Reservation on which the Y-12 Plant, ORNL, and ORGDP are located.

3. The Clinch River flows into the Tennessee River system of mainstream multipurpose impoundments at Watts Bar Reservoir near Kingston, Tennessee, 34 km downstream from the Oak Ridge complex.

4. A variety of contaminants (radionuclides, metals, organics) have been released from the Oak Ridge facilities to on-site tributaries of the Clinch River and to the Clinch River directly from 1943 to present.

5. As a result of the issuance of the RCRA 3004(u) permit for the Oak Ridge Reservation, DOE accepted responsibility for evaluating off-site contamination in the Oak Ridge area (13 Feb 1987 letter from J. La Grone to K. Jarmolow).

6. A preliminary survey has indicated that particle-reactive contaminants have accumulated in the sediments of Watts Bar Reservoir. (Loar, J. M. et al., 1987, First Annual Report on ORNL Biological Monitoring and Abatement Program, ORNL/TM-10395; Loar, J. M. et al, Second Annual report on ORNL Biological Monitoring and Abatement Program (1989 Draft). Turner, R. R., C. R. Olsen, and W. J. Wilcox, Jr., Fate of Hg and Cs-137 Discharged from the Oak Ridge Facilities, pp. 329-338.)

7. A RCRA Facility Investigation plan to address off-site contamination is now being prepared by DOE. The Clinch River RFI will be conducted in compliance with RCRA/HSWA Section 3004(v) which addresses requirements for releases of hazardous wastes or constituents beyond the boundaries of RCRA-permitted facilities.

C. L. Stair
7/10/89
Rev. 8/17/89

APPENDIX E

TIMETABLES AND DEADLINES

Department of Energy

Oak Ridge Operations Office
P.O. Box 2001
Oak Ridge, Tennessee 37831—

September 19, 1997

Mr. Ed Carreras, FFA Manager
U. S. Environmental Protection Agency,
Region 4
Atlanta Federal Center
61 Forsyth Street
Atlanta, Georgia 30303-3104

Mr. Doug McCoy, FFA Manager
Tennessee Department of Environment
and Conservation
DOE Oversight Division
761 Emory Valley Road
Oak Ridge, Tennessee 37831

Gentlemen:

FFA MILESTONE EXTENSION REQUEST, UPPER EAST FORK POPLAR CREEK REMEDIAL INVESTIGATION REPORT, Y-12, OAK RIDGE, TENNESSEE

Inherent in the accelerated approach used for the Upper East Fork Poplar Creek (UEFPC) characterization area is the heavy reliance of the Remedial Investigation (RI) on historical, rather than current RI work plan data. Although this approach greatly reduces the schedule and cost, currently approximately $6.6 million, it also results in higher levels of uncertainty in the evaluation results. The likelihood of important data gaps in the UEFPC RI was minimized by adherence to the Data Quality process during the planning phase and proactive uncertainty management during the data collection and evaluation phase.

Because of the schedule constraints on completion of the UEFPC RI Report, preparation of the D1 version (currently due on September 30, 1997) of the RI Report proceeded without access to the RI specific field data. Although most of the RI specific field data collection and analyses have been completed, most of the analytical data had not been validated in time to include in the D1 version. The D2 RI Report, currently due on March 5, 1998, will incorporate all RI specific data outlined in the RI Sampling and Analysis Plans (Enclosure 1). Incorporation of this data, approximately 20,000 records, will require that all risk, ecological and human health, be recalculated and associated summaries, tables, graphs, and text be revised.

Because of the above mentioned constraints associated with the missing field data, which could result in alternation of the human health and ecological risk assessment conclusions, the Department of Energy (DOE) is requesting an extension to the D1 Federal Facilities Agreement (FFA) milestone date to March 5, 1998. This extension will not affect the FFA Milestone dates for the Proposed Plan and Record of Decision as proposed by DIE as recently as September of 1997.

If you have any questions or require additional information pertaining to this request, please call Gary Bodenstein at (423) 576-9429.

Sincerely,

Mildred S. Ferre, Team Leader
Upper East Fork Poplar Creek Team

Margaret Wilson

Margaret Wilson,
Federal Facilities Agreement
Remediation Management Group

Enclosure

cc w/o enclosures:
S. Bowder, SAIC
P. Halsey, DOE, EW-92
V. Turner, LMES, 7078-F, MS-6402

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

'97 OCT 7 AM 10 22

September 30, 1997

Ms. Margaret Wilson
DOE FFA Project Manager
PO Box 2001
Oak Ridge TN 37831-8540

Dear Ms. Wilson

TDEC Concurrence Letter
FFA MILESTONE EXTENSION REQUEST, UPPER EAST FORK POPLAR CREEK REMEDIAL INVESTIGATION REPORT
Y-12 Plant, Oak Ridge, Tennessee
September 19, 1997

The Tennessee Department of Environment and Conservation, DOE Oversight Division (TDEC/DOE-O), due to the reasons listed in your letter dated September 19, 1997, concurs with the FFA milestone extension request for the D1 version of the Remedial Investigation Report for Upper East Fork Poplar Creek. It is understood that the D1 milestone date will now be March 5, 1998, and this extension will not affect the FFA Milestone dates for the Proposed Plan and Record of Decision.

The State would like to express concern over the time and funding involved in the preparation of the incomplete D1. The D1 document should not have been prepared to such a full extent if all data was not available to be incorporated.

Questions or comments concerning the contents of this letter should be directed to Jeff Henninger at the above address or by phone at (423) 481-0995.

Sincerely,

R. Doug McCoy, Manager
Environmental Restoration Program

cc Ed Carreras - EPA
Pat Halsey - DOE
Mildred Ferre - DOE

er839.01

97-51903

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 4
ATLANTA FEDERAL CENTER
100 ALABAMA STREET, S.W.
ATLANTA, GEORGIA 30303-3104

OCT 14 1997

4WD-FFB

Ms. Margaret Wilson
FFA Project Manager
U.S. Department of Energy
Oak Ridge Operations
P.O. Box 2001
Oak Ridge, Tennessee 37831-8540

SUBJ: Extension Request for the
Upper East Fork Poplar Creek
Remedial Investigation Report
Oak Ridge Reservation, Oak Ridge, Tennessee

Dear Ms. Wilson:

The Environmental Protection Agency approves the the Department of Energy's request to extend the submittal date for the subject document to March 5, 1997. If you have any questions regarding this matter please call (404) 562-8547 and ask for me, or contact me via voice mail at (404) 562-4300 extension 2-8547.

Sincerely,

Victor L. Weeks
ETTP & Y-12 Sites Project Manager
Federal Facilities Branch
Waste Management Division

'97 OCT 15 PM 4 06

cc: Mr. Doug McCoy, TDEC
Ms. Pat Halsey, DOE-OR

97-5215

Federal Facility Agreement Milestones
Appendix E

Site	Watershed Waste Stream	PBS	*Subproject*	FY 1997 Milestones		FY 1998 Milestones		FY 1999 Milestones	
K-25 Site	K-25	K-25 RA	K-1070-A Contaminated Burial Ground	RI/FS	4/7/97	PP ROD	11/11/97 9/9/98	RD/WP RDR RAWP	2/17/99 3/17/99 8/20/99
			K-901A Holding Pond K-1007 P1 Pond	AM	**6/25/97**	RmAWP	3/15/98	RmAR	5/15/99
			K-25 Sitewide ROD	RIWP	6/12/97			RI/FS PP	1/31/99 8/31/99
			K-1400 French Drain Plume			EE/CA AM RmAWP	4/6/98 8/11/98 9/19/98	RmAR	8/10/99
			K-1070-C/D and Mitchell Branch Plumes	EE/CA AM RmAWP	3/6/97 7/11/97 8/19/97	RmAR	7/10/98		
			K-1070-C/D G Pit and Contaminated Pad	ROD RDWP	2/17/97 8/17/97	RDR/RAWP	11/2/97	RAR	7/1/99
			K-27/29 Groundwater Source Control[Storm Drain Discharge]			EE/CA AM	5/6/98 9/11/98	RmAWP RmAR	11/19/98 9/30/99

Federal Facility Agreement Milestones
Appendix E

Site	Watershed Waste Stream	PBS	Subproject	FY 1997 Milestones	FY 1998 Milestones	FY 1999 Milestones
K-25 Site	K-25	K-25 Site RA	K-1401 Acid Line [Sumps]	**AM 6/6/97**	RmAWP 12/97	RmAR 12/98
K-25 Site	K-25	K-25 D&D	KAFDP Group I Building Demolition		RmAWP 6/1/98	
K-25 Site	K-25	K-25 Process Eq. D&D	Process Equipment D&D (K-29,-31,&-33)	EE/CA 3/12/97 AM 7/25/97 RmAWP 10/3/97		

Federal Facility Agreement Milestones
Appendix E

Site	Watershed Waste Stream	PBS	Subproject	FY 1997 Milestones	FY 1998 Milestones	FY 1999 Milestones
ORNL	White Oak Creek	WOC RA	White Oak Creek Watershed ROD	FS 9/30/97	PP 7/30/98	ROD 12/19/98 RDWP 7/19/99
			SWSA 4 Seep Control	RmAR 12/31/96		
			Old Hydrofracture Facility Tanks	RmAWP 11/30/97	RmAR 9/30/98	
			Old Hydrofracture Facility Pond		EE/CA 9/30/98	AM 1/29/99 RmAWP 5/30/99
			ORNL RA S&M [3001 Canal]	AM 10/22/96 RmAWP 4/1/97 RmAR 7/31/97		
ORNL	White Oak Creek	WOC D&D	Old Hydrofracture Facility			EE/CA 6/30/99
			MSRE D&D [Reactive Gas]	RmAR 8/1/97		
			MSRE D&D [Uranium Deposit Removal]			RmAWP 2/15/99 RmAR 6/26/99
			MSRE D&D [Fuel Salt]	FS 2/28/97 PP 8/14/97	ROD 1/22/98 RDWP 6/30/98 RDR/RAWP 8/31/98	

Federal Facility Agreement Milestones
Appendix E

Site	Watershed Waste Stream	PBS	Subproject	FY 1997 Milestones	FY 1998 Milestones	FY 1999 Milestones
ORNL	Low Level Waste	LLW Treatment	FFA LLW Tank Compliance	Stuct.Int.Assmt Cat C Tanks & Lines 9/30/97 Imp Plans & Schedules 6/30/97	Stuct.Int.Assmt CatC Tanks&Lines 9/30/98 Imp Plans & Schedules 6/30/98	Stuct.Int.Assmt Cat C Tanks & Lines 9/30/99 Imp Plans & Schedules 6/30/99
ORNL	Bethel Valley Watershed	BVW RA	Bethel Valley Watershed ROD		RIWP 12/1/97	RI/FS 4/15/99
			Corehole 8 Plume Source		EE/CA 1/28/98 AM 4/3/98	RmAWP 2/28/99
			Gunite and Associated Tanks [Sludge Removal]	ROD **6/20/97** RDR/RAWP 7/15/97		
			ORNL Main Plant Surface Impoundments	ROD 8/1/97	RDWP 11/1/97 RDR/RAWP 6/30/98	
			ORNL Main Plant Inactive Tanks [WC-14]	AM 6/30/97	RmAR 9/30/98	
ORNL	Bethel Valley Watershed	BVW D&D	Waste Evaporator Facility	RAR 12/30/96		

Federal Facility Agreement Milestones
Appendix E

Site	Watershed Waste Stream	PBS	Subproject	FY 1997 Milestones	FY 1998 Milestones	FY 1999 Milestones
ORNL	Bethel Valley Watershed	BVW D&D	Fission Product Pilot Plant			EE/CA 6/30/99

Federal Facility Agreement Milestones
Appendix E

Site	Watershed Waste Stream	PBS	Subproject	FY 1997 Milestones		FY 1998 Milestones		FY 1999 Milestones	
Y-12	Bear Creek Valley	BCV RA	BCV Watershed ROD	FS	4/28/97	PP	11/19/97	ROD RDWP	10/1/98 4/7/99
			BCV Floodplain and Sediments [Floodplain Hotspot Removal]			EE/CA AM	4/15/98 8/15/98	RmAWP	10/30/98
			BC Burial Grounds [Surface/Ground Water Diversion]	AM	6/15/97	RmAWP	10/15/97	RmAR	10/15/98
			BCV Tributary Interception [S-3 Plume]			EE/CA AM RmAWP	2/27/98 6/30/98 8/30/98	RmAR	8/30/99
Y-12	Upper East Fork Poplar Creek	UEFPC RA	Filled Coal Ash Pond/Upper McCoy Branch	RAR	5/15/97				
			Y-12 Decommissioning S&M [Alpha 4 Outside Piping]	AM RmAWP	3/5/97 4/24/97	RmAR	12/30/97		

Federal Facility Agreement Milestones
Appendix E

Site	Watershed Waste Stream	PBS	Subproject	FY 1997 Milestones	FY 1998 Milestones	FY 1999 Milestones
Y-12	Upper East Fork Poplar Creek	UEFPC RA	UEFPC Watershed ROD [Union Valley]	Interim ROD 3/26/97		
			UEFPC Watershed ROD	RIWP 12/15/96	RI Report **3/5/98**	FS 12/29/98 PP 7/6/99
			UEFPC Soil Remediation			EE/CA 1/30/99 AM 5/30/99
			UEFPC Soil Remediation [Firing Range]	AM 8/30/97	RmAWP 11/5/97	RmAR 11/1/98
			UEFPC Shallow GW [Shallow Maynardville Containment]		EE/CA 1/30/98 AM 5/30/98	RmAWP 10/30/98
			UEFPC East End DNAPL Plume		EE/CA 6/30/98	AM 11/30/98 RmAWP 3/15/99

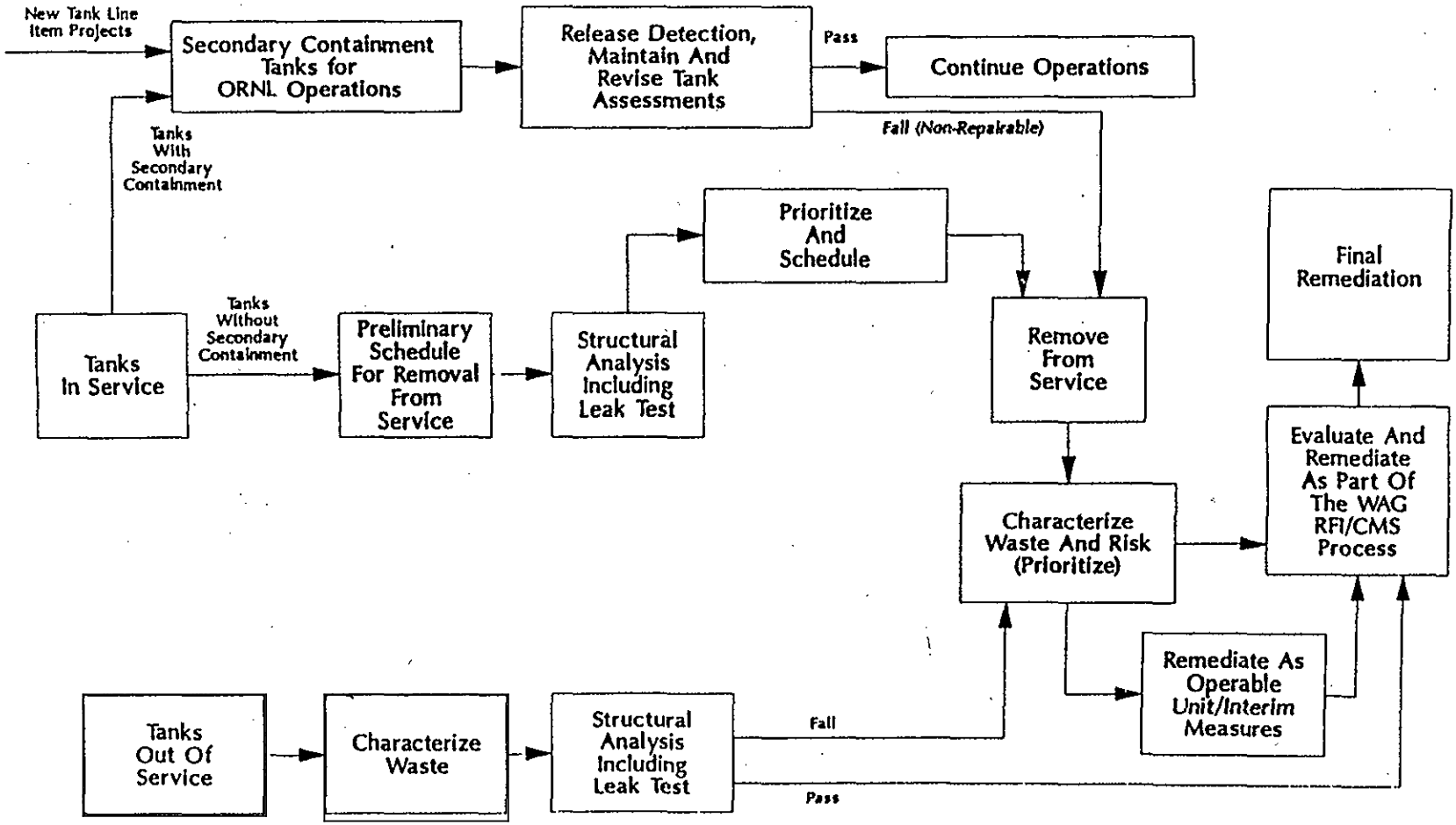
Federal Facility Agreement Milestones
Appendix E

Site	Watershed Waste Stream	PBS	Subproject	FY 1997 Milestones	FY 1998 Milestones	FY 1999 Milestones
Oak Ridge	Oak Ridge	Off-Site RA	Lower East Fork Poplar Creek		RAR 4/30/98	
			Clinch River & Poplar Creek	ROD 4/8/97 RAR 9/8/97		
			[Post-Decision Monitoring] IWQP	Remediation Effectiveness Report (RER) 2/28/97	RER 2/27/98	RER 2/28/99
			On Site Waste Management Facility	RI/FS 8/30/97	PP 10/30/97 ROD 4/15/98	RDR 2/1/99
			[ORR Strategy]	MAP 3/15/97	MAP 3/15/98	MAP 3/15/99
			[ORR Public Involvement Plan]	PIP 1/15/97	PIP 11/16/97	PIP 11/15/98

APPENDIX F

LOW-LEVEL RADIOACTIVE WASTE TANK SYSTEMS

ORNL TANK LOGIC DIAGRAM



A. STANDARDS FOR INTEGRITY ASSESSMENT FOR TANK SYSTEM(S)

The DOE's structural integrity submittals for each tank system shall include all available information for the following:

1. Design standards, including as-built specifications, if available, for the tanks and ancillary equipment such as sumps, cut-off valves, and piping to cut-off valves;

2. Generic descriptions of the hazardous or radioactive substance(s) that have been and will be handled on a non tank-specific basis;

3. Existing corrosion protection measures, if any;

4. Documented age (if unavailable, an estimated age) of the tank system(s); and

5. Results of leak tests conducted utilizing the volume balancing method for transfer lines and liquid level trends analysis for tanks (together with all supporting data or information). The DOE shall propose alternate method(s) of leak detection that ensures the accuracy of the method(s) as applied to each tank system, if applicable.

B. STANDARDS FOR DESIGN/INSTALLATION OF NEW OR REPLACEMENT TANK SYSTEMS

1. The design/installation assessment for each new or replacement tank system(s) design shall include, at a minimum, the following information:

   (a) Design standard(s), including available as-built specifications, according to which tank(s) and/or the ancillary equipment are constructed;

   (b) Hazardous characteristics of the hazardous and/or radioactive substance(s) to be handled (on a tank-specific basis);

   (c) For new or replacement tank system(s) in which the external shell of a metal tank or any external metal component(s) of the tank system(s) will be in contact with the soil, moisture, or other precipitation a determination by a corrosion expert of:

      (i) Factors affecting the potential for corrosion, including but not limited to:
         (A) Soil moisture content;
         (B) Soil pH;
         (C) Soil sulfides level;
         (D) Soil resistivity;

(E) Structure to soil potential;
(F) Influence of nearby underground metal structures (e.g., piping);
(G) Existence of stray electric currents;
(H) Existing corrosion-protection measures (e.g., coating, cathodic protection), and

(ii) The type and degree of external corrosion protection that are needed to ensure the integrity of the tank system(s) during the use of the system(s), consisting of one or more of the following:

(A) Corrosion-resistant materials of construction such as special alloys, fiberglass reinforced plastic, etc.;
(B) Corrosion-resistant coating (such as epoxy, fiberglass, etc.) with cathodic protection (e.g., impressed current or sacrificial anodes); and
(C) Electrical isolation devices such as insulating joints, flanges, etc.

(d) For underground tank system components that are likely to be adversely affected by vehicular traffic, a determination of design or operational measures that will protect the tank system against potential damage; and

(e) Design considerations to ensure that:

(i) Tank foundations will maintain the load of a full tank;

(ii) Tank systems will be anchored to prevent flotation or dislodgment where the tank system is placed in a saturated zone, or is located within a seismic fault zone which has had displacement during the Holocene period; and

(iii) Tank systems will withstand the effects of frost heave.

2. The DOE shall ensure that proper handling procedures are adhered to in order to prevent damage to tank system(s) during installation. Prior to covering, enclosing, or placing a new tank system in use, a qualified installation inspector who is trained and experienced in the proper installation of tank systems or components, shall inspect the system for the presence of any of the following items:

(a) Weld breaks;
(b) Punctures;
(c) Scrapes of protective coatings;
(d) Cracks;
(e) Corrosion;
(f) Other structural damage or inadequate construction or installation.

All such discrepancies shall be remedied before the tank system is covered, enclosed, or placed in use.

3. The DOE shall obtain and maintain copies of all inspection reports relating to the fabrication, construction, installation, and testing of tank system(s). These reports shall be completed by welding inspectors certified by the American Welding Society.

4. New tank system(s) that are placed underground and that are backfilled shall be provided with a backfill material that is a noncorrosive, porous, homogenous substance and that is installed so that the backfill is placed completely around the tank and compacted to ensure that the tank and piping are fully and uniformly supported.

5. All new tanks and ancillary equipment shall be tested for tightness prior to being covered, enclosed, or placed in use. If a tank system is found not to be tight, all repairs necessary to remedy the leak(s) in the system shall be performed prior to the tank system being covered, enclosed, or placed into use.

6. Ancillary equipment shall be supported and protected against physical damage and excessive stress due to settlement, vibration, expansion, or contraction.

7. The DOE shall provide the type and degree of corrosion protection recommended by a qualified corrosion expert, based on the information provided under Subsection 1(c), above, or other corrosion protection if the EPA/TDHE determines other corrosion protection is necessary to ensure the integrity of the tank system during use of the tank system. The installation of a corrosion protection system that is field fabricated shall be inspected by a qualified DOE (or DOE-contractor) corrosion expert to ensure proper installation.

8. The DOE shall ensure that a qualified corrosion expert has provided design guidance during the design of the tank system(s). A qualified corrosion expert shall verify the use of this guidance before construction of the tank system(s) and prior to startup of the tank system(s).

9. The DOE shall maintain at its facility the information or written statements by those persons required to certify the design of the tank system(s) and review the installation of the tank system(s) in accordance with the requirements of B.1. through B.9. of this Subsection, that shows that the tank system(s) was properly designed and installed and that repairs, pursuant to B.2 and B.5. of this Subsection, were performed.

C. STANDARDS FOR CONTAINMENT/RELEASE DETECTION

1. At a minimum, secondary containment system(s) shall be:

   (a) Constructed of or lined with materials that are compatible with the waste(s) or substance(s) to be placed in the tank system and shall have sufficient strength and thickness to prevent failure owing to pressure gradients (including static head and external hydrological forces), physical contact with the waste(s) or substances to which it is exposed, climatic conditions, and the stress of daily operation (including stresses from nearby vehicular traffic);

   (b) Placed on a foundation or base capable of providing support to the secondary containment system, resistance to pressure gradients above and below the system, and capable of preventing failure due to settlement, compression, or uplift;

   (c) Provided with a leak-detection system that is designed and operated so that it shall detect the failure of either the primary or secondary containment structure or the presence of any measurable release of hazardous or radioactive constituents, hazardous substances, or accumulated liquid in the secondary containment system within 24 hours, or at the earliest practicable time if the DOE can demonstrate that existing detection technologies or site conditions will not allow detection of a release within 24 hours; and

   (d) Sloped or otherwise designed or operated to drain and remove liquids resulting from leaks, spill, or precipitation. Liquids may be allowed to accumulate in a secondary containment system sump for up to one week. Spilled or leaked substances and accumulated precipitation that exceed the capacity of the secondary containment system sump shall be removed from the secondary containment system within 24 hours, or in as timely a manner as is possible to prevent harm to human health and the environment, if the DOE can demonstrate that removal of the released substances or accumulated precipitation cannot be accomplished within 24 hours.

   (e) Secondary containment for tanks shall include one or more of the following devices:

      (i) a liner (external to the tank);
      (ii) a vault;
      (iii) a double-walled tank;
      (iv) an equivalent device approved by EPA.

(f) In addition to the above requirements, secondary containment systems shall satisfy the following requirements:

(i) External liner systems shall be:

(A) Designed or operated to contain 100 percent of the capacity of the largest tank within its boundary;

(B) Designed or operated to prevent run-on or infiltration of precipitation into the secondary containment system unless the collection system has sufficient excess capacity to contain run-on or infiltration. Such additional capacity shall be sufficient to contain precipitation from a 25-year, 24-hour rainfall event;

(C) Free of cracks or gaps; and

(D) Designed and installed to surround the tank completely and to cover all surrounding earth likely to come into contact with the substances if the substances are released from the tank(s) (i.e., capable of preventing lateral as well as vertical migration of the substance(s).

(ii) Vault systems shall be:

(A) Designed or operated to contain 100 percent of the capacity of the largest tank within its boundary;

(B) Designed or operated to prevent run-on or infiltration of precipitation into the secondary containment system unless the collection system has sufficient excess capacity to contain run-on or infiltration. Such additional capacity shall be sufficient to contain precipitation from a 25-year, 24-hour rainfall event;

(1) Constructed with chemical-resistant water stops in place at all joints (if any);

(2) Provided with an impermeable interior coating or lining that is compatible with the stored waste and that will prevent migration of waste into the concrete;

(C) Provided with a means to protect against the formation of and ignition of vapors within the vault, if the substances being stored or treated:

(1) Meets the definition of ignitable waste under 40 C.F.R. § 261.21; or

(2) Meets the definition of reactive waste under 40 C.F.R. § 261.23, and may form an ignitable or explosive vapor.

(D) Provided with an exterior moisture barrier or be otherwise designed or operated to prevent migration of moisture into the vault if the vault is subject to hydraulic pressure.

(iii) Double-walled tanks shall be:

(A) Designed as an integral structure (i.e., an inner tank completely enveloped within an outer shell) so that any release from the inner tank is contained by the outer shell.

(B) Protected, if constructed of metal, from both corrosion of the primary tank interior and of the external surface of the outer shell; and

(C) Provided with a built-in continuous leak detection system capable of detecting a release within 24 hours, or at the earliest practicable time, if the DOE can demonstrate that the existing detection technology or site conditions would not allow detection of a release within 24 hours.

(iv) Ancillary equipment shall be provided with secondary containment (e.g., trench, jacketing, double-walled piping) that meet the requirements of this Agreement except for:

(A) Aboveground piping (exclusive of flanges, joints, valves, and other connections) that are visually inspected or evaluated for leaks on a daily basis;

(B) Welded flanges, welded joints, and welded connections, that are visually inspected or evaluated for leaks on a daily basis;

(C) Sealless or magnetic coupling pumps, that are visually inspected or evaluated for leaks on a daily basis; and

(D) Pressurized aboveground piping systems with automatic shut-off devices (e.g., excess flow check valves, flow metering shutdown devices, loss of pressure actuated shut-off devices) that are visually inspected or evaluated for leaks on a daily basis.

D. DISPOSITION OF LEAKING TANK SYSTEM(S)

1. For each tank system(s) that is determined to be (or may be) leaking, the DOE shall comply with the following requirements:

   (a) The DOE shall immediately stop the flow of hazardous or radioactive substances into the tank system(s) or secondary containment system(s) and evaluate the system(s) to determine the cause of the release. If leaks are from gasketed joints within the secondary containment system, operations may continue and repairs shall be made within two weeks.

   (b) If the release(s) was from the tank system, the DOE shall, within 24 hours after detection of the leak, or if the DOE demonstrates that it is not possible, at the earliest practicable time, remove as much of the hazardous/radioactive substance as is necessary to prevent further release of hazardous or radioactive substances to the environment.

   (c) If the material released was to a secondary containment system(s), all released materials shall be removed within 24 hours or in as timely a manner as is possible to prevent harm to human health and the environment.

2. The DOE shall, as soon as practicable, conduct an evaluation of the release and, based upon that evaluation prevent further migration of the leak or spill to the air, soils, or surface or ground water. Any visible contamination of the soil or surface water shall be removed and properly disposed of.

3. Any release to the environment shall be reported to the EPA and TDHE within 24 hours of its detection. If the release has been reported pursuant to 40 C.F.R. Part 302, that report will satisfy this requirement.

4. A leak or spill of hazardous waste shall be reported pursuant to 40 C.F.R. Part 302, if applicable. If not reported under 40 C.F.R. Part 302, then a leak or spill shall be immediately reported to EPA and TDHE under this Agreement.

5. Within thirty (30) days of detection of a release to the environment, a report containing the following information shall be submitted to EPA and TDHE:

   (a) Likely route of migration of the release;

   (b) Characteristics of the surrounding soil (soil composition, geology, hydrogeology, climate);

(c) Results of any monitoring or sampling conducted in connection with the release (if available). If data are unavailable within 30 days, these data must be submitted as soon as they become available.

(d) Proximity to downgradient drinking water, surface water, and populated areas; and

(e) Description of response actions taken or planned.

6. Unless the DOE satisfies the requirements of paragraphs (6)(a) through (d) of this Subsection, the tank system shall be decommissioned in accordance with Section IX.D or IX.E. as appropriate, of this Agreement.

(a) If the cause of the release was a spill that has not damaged the integrity of the system, the DOE may return the system to service as soon as the released constituent/substance is removed and repairs, if necessary, are made. Exceptions to the requirements of this Subsection may be granted on a case by case basis upon approval by EPA and TDHE.

(b) If the release occurred from the primary tank system into the secondary containment system, the system shall be repaired prior to returning the tank system to service.

(c) If the source of the release was a leak to the environment from a component of a tank system without secondary containment, the DOE shall provide the component of the system from which the leak occurred with secondary containment that satisfies the requirements of Section C (Containment/Release Detection) herein before it can be returned to service, unless the source of the leak is an aboveground portion of a tank system that can be inspected visually. If the source of the leak is an aboveground portion of a tank system that can be inspected visually, the component shall be repaired and may be returned to service without secondary containment as long as the requirements of subsection (d) of this Section are satisfied. If a component is replaced to comply with the requirements of this subsection, that component shall satisfy the requirements for new tank systems/components in Section B (Design/Installation) and Section C (Containment/Release Detection). Additionally, if a leak has occurred in any portion of a tank system component that is not readily accessible for visual inspection (e.g., the bottom of an inground or onground tank), the entire component shall be provided with secondary containment in accordance with Section C (Containment/Release Detection) prior to being returned to service. Exceptions to the requirements of this Subsection may be granted on a case by case basis upon approval by EPA and TDHE.

(d) If the DOE has repaired a tank system in accordance with subsection (6) of this section, and the repair has been extensive (e.g., installation of an internal liner; repair of a ruptured primary containment or secondary containment vessel), the tank system shall not be returned to service unless the DOE has obtained a certification by a qualified, registered, professional engineer that the repaired system is capable of handling hazardous/radioactive substances without release for the intended life of the system. This certification shall be submitted to the EPA within seven (7) days after returning the tank system to service.

A. New or replacement tank system(s) with secondary containment:

Tank	Location	Capacity (gal)
NONE		

B. Existing tank system(s) with secondary containment:

Tank	Location	Capacity (gal)
W-21	Evaporation Facility	50,000
W-22	Evaporation Facility	50,000
W-23	Evaporation Facility	50,000
W-24	Melton Valley Storage Tank	50,000
W-25	Melton Valley Storage Tank	50,000
W-26	Melton Valley Storage Tank	50,000
W-27	Melton Valley Storage Tank	50,000
W-28	Melton Valley Storage Tank	50,000
W-29	Melton Valley Storage Tank	50,000
W-30	Melton Valley Storage Tank	50,000
W-31	Melton Valley Storage Tank	50,000
T-13	North Hydrofracture Facility	4,000
C-1	Evaporation Facility	50,000
C-2	Evaporation Facility	50,000
N-71	Cell 7 of Building 3019	240
P3	Cell 6 of Building 3019	197
P4	Cell 6 of Building 3019	197
S-223	Pit N of building 3517	2,500
S-324	Pit N of building 3517	1,000
S-523	Pit N of building 3517	1,000
L-11	Inside building 3544	400
B-2-T	Building 7930 Radiochemical Engineering Development	1,870
B-3-T	Building 7930 Radiochemical Engineering Development	1,870
C-6-T	Building 7930 Radiochemical Engineering Development	700
F-111	Building 7920 Radiochemical Engineering Development	125
F-126	Building 7920 Radiochemical Engineering Development	1,200

C. Existing tank system(s) without secondary containment:

Tank	Location	Capacity (gal)
WC-3	S of building 3025	1,000
WC-20	Radiochemical Engineering Development	10,000

C. Existing tank system(s) without secondary containment:

Tank	Location	Capacity (gal)
WC-9	S of building 3503	2,140
HFIR	HFIR	13,000
T-1	HFIR	15,000
T-2	HFIR	15,000
WC-10	Isotope Circle	2,300
WC-2	Isotope Circle	1,000
WC-19	ORR/BSR	2,250
W-16	South Tank Farm	1,000
F-201	S of building 3525	50
F-501	S of building 3525	200

D. Existing tank system(s) without secondary containment that are removed from service:

Tank	Location	Capacity (gal)
3002A	S side of building 3002	1,600
WC-4	W of building 3026-C	1,700
W-11	Under the floor of building 3028	500
WC-5	S of building 3503	1,000
WC-6	S of building 3503	500
WC-8	S of building 3503	1,000
S-424	Pit N of building 3517	500
WC-11	S of building 3587	4,600
WC-12	S of building 3587	1,000
WC-13	S of building 3587	1,000
WC-14	S of building 3587	1,000
4501-P	Under floor of building 4501	140
T-14	New Hydrofracture surface facilities	48,500
W-12	South Tank Farm	700
W-17	South Tank Farm	1,000
W-18	South Tank Farm	1,000
3001-B	S of building 3001	75
3003-A	Building 3003	16,000
3004-B	Building 3004	30
3013	S of building 3013	400
WC-1	Near 3037	2,150
TH-4	SW of building 3500	14,000
LA-104	Under floor West end of building 3047	296
2026A	NW of building 2026	500
WC-7	S of building 3504	1,100

D. Existing tank system(s) without secondary containment that are removed from service:

Tank	Location	Capacity (gal)
TH-1	S of building 3503	2,500
TH-2	S of building 3503	2,400
TH-3	S of building 3503	3,300
H-209	W of building 3517	2,500
W-19	N of building 3517	2,250
W-20	N of building 3517	2,250
WC-15	S of building 3587	1,000
WC-17	S of building 3587	1,000
T-30	SW of building 4507	825
7560	SE of building 7500	1,000
7562	SE of building 7500	12,000
7503-A	NW corner of building 7503	11,000
W-1	North Tank Farm	4,800
W-13	North Tank Farm	2,000
W-14	North Tank Farm	2,000
W-15	North Tank Farm	2,000
W-1A	North Tank Farm	4,000
W-2	North Tank Farm	4,800
W-3	North Tank Farm	42,500
W-4	North Tank Farm	42,500
T1	Old Hydrofracture surface facilities	15,000
T2	Old Hydrofracture surface facilities	15,000
T3	Old Hydrofracture surface facilities	25,000
T4	Old Hydrofracture surface facilities	25,000
T9	Old Hydrofracture surface facilities	13,000
W-10	South Tank Farm	170,000
W-11	South Tank Farm	1,500
W-05	South Tank Farm	170,000
W-06	South Tank Farm	170,000
W-07	South Tank Farm	170,000
W-08	South Tank Farm	170,000
W-09	South Tank Farm	170,000

APPENDIX G

PRIORITIZATION OF ENVIRONMENTAL RESTORATION APPENDIX E MILESTONES FOR THE OAK RIDGE RESERVATION

FEDERAL FACILITY AGREEMENT
FOR THE
OAK RIDGE RESERVATION

APPENDIX G FY 1992

Submitted By: _____
S. P. Riddle, ORNL Program Manager
Environmental Restoration Division
DOE Oak Ridge Field Office

Approved By: _____ Date: 2/12/92
W. N. Lingle, FFA Project Manager
Environmental Restoration Division
DOE Oak Ridge Field Office

_____ Date: 2/13/92
D. McCoy, FFA Project Manager
DOE Oversight Division
Tennessee Department of Environment and Conservation

_____ Date: 2/13/92
C. Brown, FFA Project Manager
Federal Facilities Branch
U. S. Environmental Protection Agency Region IV

Federal Facilities Agreement - Appendix G

Prioritization of Environmental Restoration Appendix E Milestones for the Oak Ridge Reservation

Introduction

The prioritization of all Appendix E milestones to be conducted by the Environmental Restoration Program will be performed to assist in allocating resources. The objective of prioritization is to identify milestones that reduce the most significant risks or provide the most value in achieving the overall Environmental Restoration Program mission, thus focusing resources on the projects that provide the greatest return on investments. Following is a description of the prioritization approach used by the Parties to the FFA.

Approach

The prioritization process is a risk-based methodology to evaluate and compare milestones on a common scale to establish their relative adverse impacts. Prioritization is conducted qualitatively by evaluating all milestones in terms of the magnitude and likelihood of impacts anticipated in three impact categories. These categories are public health, environmental protection, and site personnel safety. Other modifying impact categories such as compliance, mission, cost-effectiveness, and social/cultural/economic considerations may also be evaluated, as appropriate.

The prioritization process involves the following activities:

Identification/Evaluation of Appendix E Milestones: Proposed Appendix E milestones are identified and evaluated through collaboration of program/project managers, technical experts, regulators, and baseline planning information. Each milestone will be evaluated and with respect to the impact categories based on adequate and up-to-date information.

Development of a Priority List: The results of the milestone evaluation process will be utilized to prioritize the ORR Environmental Restoration projects. Annually a project Priority List is produced by DOE-OR and provided to the EPA and TDEC to assist in establishing Appendix E milestones.

The requirements of Section XVIII. Scoping Work Priorities of the FFA will be used to establish Appendix E milestones.

Public Involvement

During the prioritization process for the Reservation, public workshops will include discussions of the DOE planning process and site-specific activities related to prioritization. Attendees at these workshops may include members of the public, public officials, U.S. EPA representatives, and state regulators. These workshops provide background information on the proposed list of activities and on the site's ER program in general. The members of the public will have access to prioritization results and be provided opportunities to comment on the process.

APPENDIX H

LETTER FROM DEPARTMENT OF JUSTICE TO TDHE

U.S. Department of Justice

Washington, D.C. 20530

December 18, 1990

Commissioner J.W. Luna
Tennessee Dept. of
Health & Environment
344 Cordell Building
Nashville, Tennessee 37247-0101

Dear Mr. Luna:

This letter is in response to the inquiry by the State of Tennessee concerning the Justice Department's views on the enforceability of the Federal Facility Agreement for the Oak Ridge Reservation ("draft"), which is being negotiated by the U.S. Environmental Protection Agency ("EPA"), the U.S. Department of Energy ("DOE") and the Tennessee Department of Health and Environment ("TDHE"). By letter of August 16, 1990, the Justice Department reiterated its views that such agreements are subject to enforcement pursuant to federal statutes, and provided a copy of a 1989 letter to the same end (both are attached). We were subsequently asked to respond to the same question in regard to the draft Oak Ridge agreement, which was provided to us by the DOE on December 4, 1990. A copy of this document, which we have reviewed, is attached for your convenience.

It is our view that DOE and EPA have the authority to enter into the draft agreement and that the agreement, if executed, would be binding and enforceable, subject to and in accordance with its terms and conditions, particularly the provisions of Sections I, IV, XXVI, XLII, and XLV, by the TDHE and any other affected citizen pursuant to section 310 of the Comprehensive Environmental Response, Compensation and Liability Act ("CERCLA"), 42 U.S.C. § 9620. Section 310 provides for suit against persons who violate "any provision of an agreement under [CERCLA] section 120, relating to Federal facilities."

We commend and support the efforts of all concerned parties to resolve environmental concerns at Oak Ridge through the agreement process. In letters and testimony to congressional committees, this Department has repeatedly stated that Federal Facility Agreements provide an excellent mechanism by which EPA, other Federal agencies and the States can develop comprehensive,

workable and fully enforceable mechanisms for addressing cleanup of Federal facilities.

Sincerely,

Assistant Attorney General
Environment and Natural Resources Division

By: Margaret N. Strand
Margaret N. Strand
Chief, Environmental Defense Section

Enclosure

cc: William Dennison
Tyler Przybylek
Michael D. Pearigen

Environment & Natural Resources Divis...
Environmental Defense Section
P O Box 23986
Washington, D.C. 20026-3986
(202)(FTS 368) 514-2219
Fax # 514-2548

MNS JSR

Washington, D.C. 20530
August 16, 1990

Mr. Charles S. Przybylek
Deputy Chief Counsel
U.S. Department of Energy
Oak Ridge Operations Office
PO Box 2001
Oak Ridge, TN 37831-8510

Re: Oak Ridge Three Party FFA

Dear Mr. Przybylek:

I received your letter requesting an opinion from the Justice Department on the enforceability of the proposed three party Federal Facility Agreement under CERCLA section 120 ("FFA"), at the Oak Ridge Reservation. It is my understanding that the proposed FFA utilizes enforceability provisions similar in substance to the enforceability provisions in the EPA/DOE "Model" FFA.

As is the case with other kinds of interagency agreements, the Justice Department does not routinely participate in those negotiations, nor do we review or opine upon final agreements. Nevertheless, because of the importance of FFA's in the CERCLA process, Acting Assistant Attorney General Carr set forth the Department's view of the enforceability of CERCLA section 120 FFA's in his letter to EPA of August 7, 1989, a copy of which is attached. This position remains unchanged and should be sufficient to satisfy any legitimate questions concerning the Department's view on enforceability of FFA's.

If I may be of any further assistance, please feel free to call.

Sincerely yours,

Assistant Attorney General
Environment & Natural Resources
Division

By:
J. STEVEN ROGERS
DIVISION COUNSEL for
Federal Environmental Compliance

U.S. Department of Justice
Land and Natural Resources Division

Office of the Assistant Attorney General

Washington D.C. 20530

August 7, 1989

Jonathan Z. Canon
Acting Assistant Administrator
Office of Solid Waste and Emergency Response
U.S. Environmental Protection Agency
401 M Street, S.W.
Washington, D.C. 20460

Dear Jon:

This letter is in response to your request for the Justice Department's views on the enforceability of agreements developed under Section 120 of the Comprehensive Environmental Response, Compensation, and Liability Act ("CERCLA"), 42 U.S.C. § 9601 et seq.

It is the considered view of this Department that such agreements are enforceable against the United States. This conclusion is based on Section 310 of CERCLA, 42 U.S.C. § 9659, which expressly provides for suit against persons who violate ". . . any provision of an agreement under section 120, relating to Federal facilities."

We have also reviewed the model language for "Federal Facility Agreements Under CERCLA Section 120," and have determined that agreements utilizing the model enforceability language and the other model provisions are likewise enforceable against the United States pursuant to Section 310.

In letters and testimony to various congressional committees, representatives of this Department have repeatedly stated that Federal Facility Agreements provide an excellent mechanism by which EPA, other Federal agencies and the States can develop comprehensive, workable, and fully enforceable settlements for addressing cleanup of Federal facilities.

We fully support EPA's efforts to address Federal facility cleanups through the Federal Facility Agreement process.

Sincerely,

Donald A. Carr
Acting Assistant Attorney General

APPENDIX I

OPERATING INSTRUCTIONS

I-1 Appendix E Extension Request Operating Instructions

The following delineates the operating instructions to be followed by the operable unit project managers when they are requesting extension approval for a Federal Facility Agreement (FFA) Appendix E milestone. FFA Section XXX, "Extensions," is understood to be the basis for each extension request, and these operating instructions are supplied to support that section.

1. As soon as the need to revise an Appendix E milestone is identified, it should be communicated to the appropriate Tennessee Department of Environment and Conservation (TDEC) and Environmental Protection Agency (EPA) program manager either by conference call or at a working group meeting.

2. DOE will follow up this verbal request with a written request to the EPA and TDEC FFA Project Managers. The written request should contain (a) the document and date requiring the extension, (b) the new proposed date if it can be determined, (c) justification supporting the extension (Section XXX.B), and (d) any related schedule changes that would be affected by the extension.

3. TDEC and EPA must respond in writing within 14 days of receipt of the written request. Failure by EPA or TDEC to respond within the 14-day period shall be deemed to constitute concurrence with the requested extension.

   If consensus is not received with respect to the justification or the scheduled extension, any of the parties may seek and obtain a determination through the dispute resolution process. The parties have 14 days in which to invoke dispute resolution once a statement of nonconcurrence with the requested extension is received.

4. Upon concurrence of the extension, work proceeds to the new schedule. As specified in the FFA, if dispute resolution is invoked, any applicable stipulated penalties will be tolled until a decision is reached on whether the requested extension is approved. If the extension is denied, penalties may be assessed and may accrue from the date of the disputed schedule.

5. The DOE, EPA, and TDEC FFA Project Managers will formally approve the change to the FFA Appendix E and/or address the disputed extension request at the next scheduled FFA Project Managers' meeting.

I-2 Document Transmittal Operating Instructions

The Oak Ridge Reservation Federal Facility Agreement (FFA) text modification was approved at the April 13, 1993, FFA Project Managers' meeting to reflect new regulatory review periods and the use of "D1," "D2," etc., in the document numbering convention. This modification will identify the first volume sent for review by the Tennessee Department of Environment and Conservation (TDEC) and the Environmental Protection Agency (EPA) to be the "D1" document and the second as the "D2" document. For these reasons, the following operating instructions should be used when a document is transmitted for regulatory review:

1. The FFA "D1"documents should be transmitted to the regulatory parties on or before the FFA Appendix E date. The stipulated fines associated with late delivery of the FFA document will apply if TDEC does not receive the document and DOE transmittal letter on the FFA-specified date (by mail or courier) or if EPA does not receive the document and DOE transmittal letter on the next working day following the specified date (by regular mail or express mail registered on or before the FFA specified date).

2. Covers of FFA documents carry the DOE seal and have the appropriate title, format, and DOE document number. The DOE document number can be obtained from the Administrative Record Information Assistant at (576-6477) and must end with the correct "D" designation. If there are questions concerning the document cover and title page format, refer to the *Annotated Outlines for Documents Required by the FFA and CERCLA for Oak Ridge Reservation Sites, DOE/OR/01-1077.*

3. The DOE transmittal letter to the regulators must identify the FFA document title, document number, and the current status of the document (i.e., DOE/OR/nn-nnnn&D1 for initial regulator review; DOE/OR/nn-nnnn&D2 for the second regulator review, reflecting the resolution of comments received from the regulators and/or DOE Headquarters; etc.). Also include the date you expect comments to be returned. Unless accelerated review times have been agreed to and formally approved by the FFA Project Managers the regulators' review return dates should be based upon the review times stipulated by the FFA. For all documents after the initial review, include with the transmittal letter an enclosure that lists all comments and the resolutions of those comments.

4. Changes in documents created in response to regulator comments should be electronically highlighted (in WordPerfect, use the redline feature); this will support the approved thirty day second regulatory review phase of these documents. If an entire chapter has undergone significant modification, instead of highlighting, which could impede readability, include a note at the beginning of the chapter indicating that the entire chapter was revised to address comments. The highlighted copy of the document can be the copy reviewed and approved by the regulators and retained in the Administrative Record.

I-3 Referencing Classified Documents Operating Instructions

Department of Energy Order 1430.2B, Attachment IV-3 paragraph 2, excludes "Reference(s) to classified (national security information, restricted data, formerly restricted data) reports in unclassified, unlimited, scientific and technical reports." In accordance with the Department of Energy's current desire to provide as much information as possible to the public regarding environmental restoration at the Oak Ridge Reservation, the following policy will be implemented as of February 4, 1994 (letter from David Hamrin, Energy Systems Scientific and Technical Information Program Manager to Energy Systems Technical Information Officers dated February 4, 1994).

> *For unclassified documents containing information related to the environment, health, and Safety of employees, former employees, subcontractors, visitors, or the public (e.g., information concerning health studies, environmental restoration, waste management, decontamination and decommissioning, the discovery process used by grand juries and litigation, and Freedom of Information Act requests), the documents themselves and references identified in the documents may give reference to classified reports, internal documents, or any other documents as needed to logically communicate the necessary paper trail to related data. Any such references must use unclassified titles and may not convey classified information beyond the fact of the existence of the classified document. If a classified report is requested, the appropriate classified office will determine its releasability based on classification requirements and procedures set by the DOE Office of Intelligence and National Security.*

Effective February 4, 1994, Environmental Restoration documents prepared in compliance with the Federal Facility Agreement may reference classified documents that provide essential information not available in unclassified documents. The information presented in the document and the reference itself must still comply with all other classification guidelines. When a classified reference is used in an unclassified report, the following statement will be added to the cover page in the location and format of a "Preliminary Notice" :

> NOTICE: This document contains unclassified information extracted from classified source documents.

Document Preparation Guide, ORNL/IRO-1, Section 4 and Appendix C, provides guidance for the content and format of classified references and preliminary notices.

This instruction is intended to give environmental restoration authors the freedom to extract unclassified information from classified reports and reference the classified reports. Extraction of unclassified information from classified reports should be conducted with the written approval of the classification office. If classified information is an integral part of the report, the classified document will be labeled appropriately and either sanitized for release to the public or an additional publicly available abstract will need to be developed.

I-4 Remedial Investigation Scoping Workshop Operating Instructions

The following delineates the Federal Facility Agreement (FFA) operating instructions to ensure active communications prior to initiating the remedial investigation (RI) phase for any operable unit (OU) identified at the Oak Ridge Reservation. The purposes of the operating instructions are to (1) establish the quality and quantity of data required for clearly linking the data collection efforts with decision required for problem resolution early in the RI Work Plan development phase and (2) provide a framework for managing uncertainty and facilitating decision making throughout the environmental restoration process. The following FFA operating instruction will be used for any OU/Waste Area Grouping (WAG) entering into the RI Work Plan phase and should be considered for any OUs/WAGs currently in the RI phase for which an RI report has not yet been produced.

1. Upon the identification of the DOE contractor project team, the DOE program manager will schedule a project scoping workshop with Tennessee Department of Environment and Conservation (TDEC) and Environmental Protection Agency (EPA) team members.

2. Pertinent OU/WAG data should be identified, located and documented in an initial OU document list. Historical environmental monitoring data should be compiled and summarized by media. A copy of the document list and data summary should be sent to EPA and TDEC prior to the scheduled scoping meeting (30 days is recommended).

3. The appropriate Technical Information Officer will be contacted to ascertain whether there are classification issues concerning the OU. If classification issues will be a factor in the field work and documents to be produced, the scoping-workshop team will determine the FFA document format to be developed and whether regulatory comments will be a clearance issue.

4. In general a 2- to 5-day workshop will be held to scope the RI/FS. This scoping workshop entails planning the project and should include a site visit. Specifically, this meeting includes:

   - assessment of existing data to develop a conceptual site model
   - identification of preliminary remedial action objectives and likely response actions
   - preliminarily identifying ARARs
   - determining the type of decisions to be made, and the type, quantity and quality of data needed to support those decisions (defining data quality objectives)
   - identifying the need and schedule for treatability studies
   - designing the data collection program (sampling approaches and analytical methods)
   - defining the RI and FS Tasks

5. It shall be the goal of the meeting to reach consensus among the participants (DOE, EPA, TDEC) on the RI/FS scope. If a consensus cannot be achieved on all key issues, issues in dispute will be referred to the FFA Project Managers for resolution.

I-5 Operable Unit Information Assessment Operating Instructions

In order to document the process by which all classified information is identified and handled on the Oak Ridge Reservation and to insure the Federal Facility Agreement (FFA) parties of the completeness of the information used for the development of the Record of Decision, a *Operable Unit Information Assessment* document will be developed as a secondary document for each operable unit (OU). This document will, in some cases, contain classified information and in all cases be developed for every OU (excluding Interim RODs for OUs completed prior to October 30, 1993).

The OU activities are as follows:

I. REQUIREMENTS

Upon approval of this operating instruction or the initiation of CERCLA activities at an OU, the OU project manger will make the project team aware of the requirement for the generation of the *Operable Unit Information Assessment* document that contains, as a minimum, the following information:

A. Selection Process and Criteria

1. An explanation of the process used to identify all related OU information: classified and unclassified. This includes the project team involved in the information search, how interviewees were identified, where literature searches were performed, etc.

2. An explanation of the process used by the project team to identify and select the relevant OU information to be used to support the activities leading to the Record of Decision (ROD).

B. Classified Document/Material list

1. The project team will perform interviews of any individuals with knowledge of historical and present operations within the boundaries of the OU. The person(s) and nature of all interviews will be recorded for potential use at the Remedial Investigation (RI) scoping workshop or at routine project working meetings. Any classified interviews will be included in the *Operable Unit Information Assessment* document list.

2. The project team will perform an exhaustive literature search for documents/materials related to the OU. All classified and unclassified documents/materials containing information related to the OU will be identified in the *Operable Unit Information Assessment* document list. All information determined to be pertinent is to be identified for potential use at the RI scoping workshop.

C. Relevance of the Classified Information to CERCLA

1. Provide rationale for any item in the *Operable Unit Information Assessment* document list (see I.B.) determined to be unnecessary or irrelevant to the performance of the OU Remedial Investigation/Feasibility Study activities. For classified compounds of concern eliminated from consideration, provide detailed information, including analytical analysis processes and the pathway screening steps (including location(s), potential for release, quantities, material accountability procedures, and applicable references/interviewees) followed to support removal of the compound as a concern to the environment.

2. For relevant classified compounds of concern in the *Operable Unit Information Assessment* document, identified during the C.1 screening process, provide detailed information including analytical analysis processes and the pathway screening steps (including location(s), potential for release, quantities, material accountability procedures, and applicable references/interviewees) followed to support the CERCLA required objectives.

3. For any item in the *Operable Unit Information Assessment* document list determined to be necessary and relevant to the CERCLA activities performed at the OU, provide an explanation of how this classified information will be addressed in the documents generated and whether a sanitized version or an abstracted version of the primary documents will be provided for unclassified review purposes.

4. Relevant information from classified sources used in FFA primary or secondary documents will comply with the *Referencing Classified Documents Operating Instructions.*

II. IMPLEMENTATION

A. For new OU activities (prior to RI scoping workshop), the unclassified documentation generated in the performance of steps I.A. and I.B. above will be provided to the FFA parties prior to the workshop along with the environmental monitoring data summary as required in step 2 of the *Remedial Investigation Scoping Workshop Operating Instructions.* During the RI scoping workshop, the classified information in the *Operable Unit Information Assessment* document will be made available, at an appropriate location, to those personnel with the proper clearance level and determined to have a 'need to know'. The *Operable Unit Information Assessment* document will be maintained and updated until the signing of the ROD.

B. For OUs past the RI scoping workshop phase, the *Operable Unit Information Assessment* document will be developed, in accordance with the requirements in I. above pertaining to classified information, and will be maintained and updated until the signing of the ROD.

III. AVAILABILITY

A. The maintained *Operable Unit Information Assessment* document for each OU will be available at the site upon request by the FFA parties' staff with appropriate level of clearance. The *Operable Unit Information Assessment* document will be incorporated into the OU Administrative Record file.

I-6 Document Scheduling Operating Instructions

The document review protocol (p. I-6d through I-6g) will be followed for the development of Federal Facility Agreement (FFA) primary, secondary, and removal action documents produced for the Oak Ridge Reservation (ORR) Environmental Restoration Program. The scheduling operating instructions will be instituted to support the generic CERCLA schedule. The generic schedules in this instruction show four scheduling options. The Type I option (p. I-6h) would be used for projects which require significant investigation and alternative screening. The Type II option (p. I-6i) would be for smaller projects with fewer areas requiring sampling. The Type III option (p. I-6j) is for projects with sufficient data to base the alternative selection process. The fourth option (p. I-6k) is for non-time critical removal actions.

The D1 and D2 documents are defined within the FFA Section II. FFA Section XXI.C&D provides the ORR listing of primary documents and a listing of secondary documents examples. The Environmental Protection Agency (EPA) and Tennessee Department of Environment and Conservation (TDEC) document review periods for D1 and D2 documents are specified in the FFA Section XXI.G.2, with DOE's response to comments period specified in Section XXI.G.5. Removal Actions are addressed in the FFA Section XIII.

Scheduling Operating Instructions:

- The technical work performed during field work activities, laboratory analysis and interpretation, and the scope of the project will directly affect the time required to develop the report initiating the review cycle protocol. The technical complexity of the site should be initially established at the project scoping workshop performed under the Remedial Investigation Scoping Workshop Operating Instructions.

- The Remedial Investigation Report and the Feasibility Study should either 1) be developed for delivery as one document or 2) if two documents are produced, the Feasibility Study (D1) should be scheduled for delivery within one month after the Remedial Investigation Report (D2) is developed in response to EPA and TDEC comments.

- The Proposed Plan (D1) should be scheduled for delivery to EPA and TDEC closely (within one to two months) following the transmittal of the Feasibility Study (D2) document, unless dispute is invoked on the D2 FS.

- The Record of Decision (D1) should be scheduled for delivery to EPA and TDEC within one month, unless significant public comment requires an extension request, following the completion of the public review period of the Proposed Plan. Within the first month following the public review period, the three parties will meet to discuss the public's comments and the comment resolutions.

- Post Record of Decision primary documents will not be scheduled for delivery for EPA and TDEC review prior to the EPA signature date of the ROD.

- The Remedial Design Work Plan (RDWP) will be scheduled for delivery within one month of the three (3) Parties signing the ROD. The Remedial Design report(s) will be scheduled for delivery to EPA and TDEC within 2 months of the submittal of the D1 RDWP. The Remedial Action Plan(s) (RAWP) (D1) will be scheduled for transmittal with the appropriate D2 RD report(s).

- The procurement process for selection of the Remedial Action construction contractor will be initiated upon receipt of DOE-OR's approval of the D0 RD report and the D0 of the RAWP to ensure compliance with the CERCLA stipulated requirement to start construction 15 months after signing of the ROD by EPA.

- The Remedial Action (RA) Report or Removal Action (RmA) Report will be scheduled for delivery within 3 months of the completion of the remedial action activities. The RA (RmA) Report will address the complete work defined in the decision document. (Note: The only circumstance where a RA Report may not address the complete work defined by a ROD is where phased remedies are specified by the ROD. In these cases the RA Report will address all work within each phase for which the report was prepared). The EPA approval date of this document will be the date upon which the CERCLA five-year review is determined for the work defined in the RA (RmA) Report.

Removal Action Scheduling Operating Instructions:

- Once adequate information has been evaluated to determine the need for a removal action, occasionally requiring investigatory field characterization work, the rationale supporting the performance of an Emergency, Time Critical or Non-Time Critical Removal Action will be documented and transmitted to the Regulators in a Notification Letter from DOE.

- Time Critical Removal Actions: The D1 version of the Action Memorandum (AM) should be submitted to EPA/TDEC within 6 months of their receipt of the Notification Letter. The removal action activities should be underway within 6 months of the identification of the time-critical removal action. This document is reviewed by EPA/TDEC and significant comments may be incorporated into a D2 DOE signed document and/or in a comment resolution package transmitted back to the EPA/TDEC along with the Public notice responsiveness summary. There is a thirty-day public review of the Action Memorandum. Any comments received from the public are documented and resolved for inclusion in the Administrative Record with the AM and transmitted to EPA/TDEC.

- Non-Time Critical Removal Actions: The D1 version(s) of the EE/CA and the associated Public Notice format should be transmitted to EPA/TDEC within 9 months of their receipt of the Notification Letter. This document is reviewed by EPA/TDEC and significant comments may be incorporated by DOE. A revised EE/CA document (D2) is signed and/or comment resolution package is transmitted back to the EPA/TDEC. There shall be a thirty-day public review of the EE/CA. Any comments received from the public shall be documented and resolved for inclusion in the Action Memorandum.

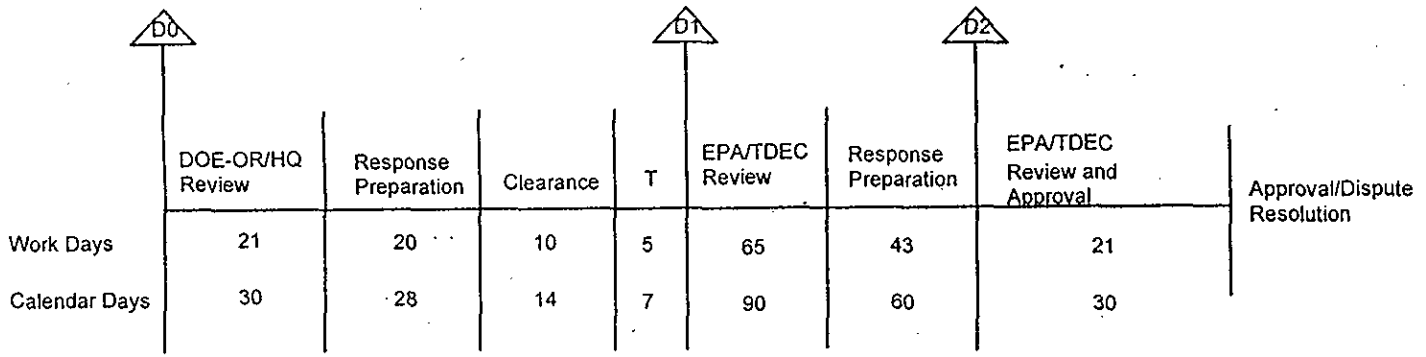
  The Action Memorandum is submitted to the EPA/TDEC for review following the comment resolution of the public review. This document is reviewed by the EPA/TDEC and comments may be incorporated into a D2 DOE signed document and transmitted back to the EPA/TDEC for agreement.

- Removal Action Work Plans are to be provided to EPA/TDEC for review subsequent to the contractor selection. Formal review of this document, based on the simplicity of the work being performed, may be determined unnecessary. This determination will be formally documented and agreed to by the three parties.

- Removal Action Reports are necessary for all types of Removal Actions and are considered a primary FFA document (serves the same purpose as the Remedial Action Report). The Review Cycle Protocol and CERCLA Generic Schedule for the Remedial Action Report primary document is to be followed.

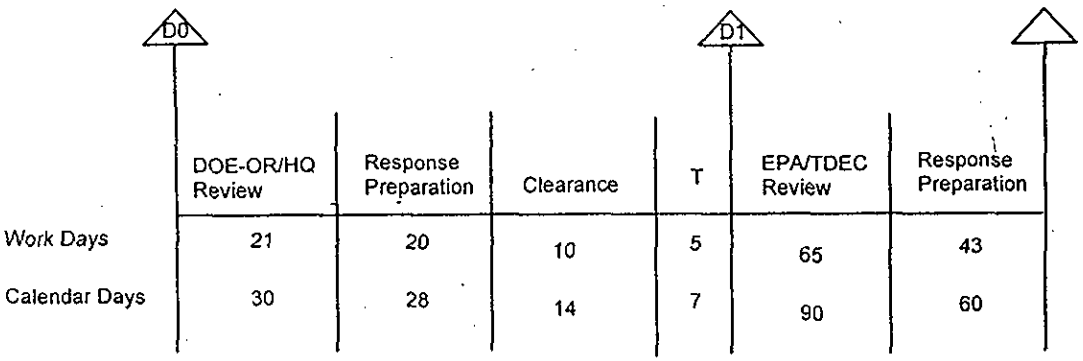
Review Cycle Protocol
FFA Primary and Secondary Documents

Primary (except for Proposed Plan and ROD)



259 Calendar Days
185 Work Days
T = Transmittal Period

Secondary

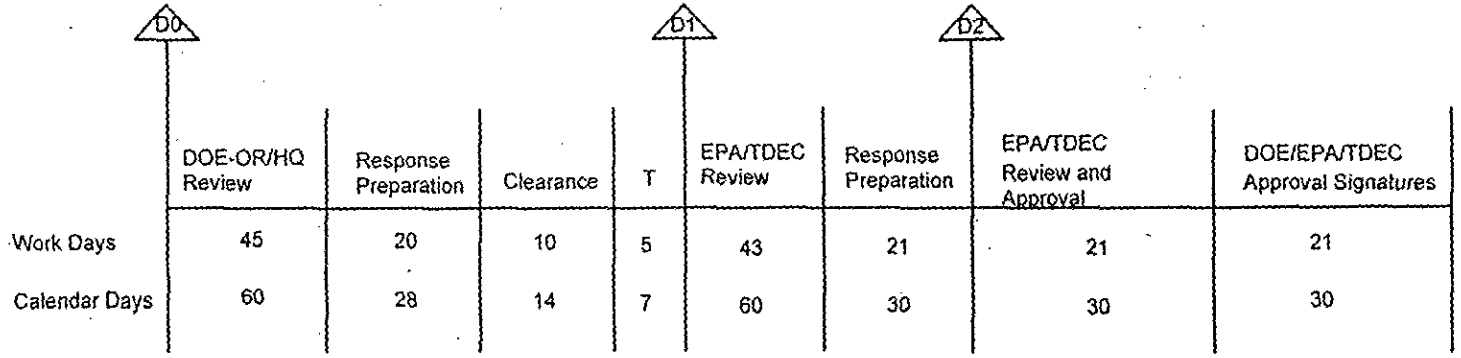


229 Calendar Days
164 Work Days
T = Transmittal Period

I-6d

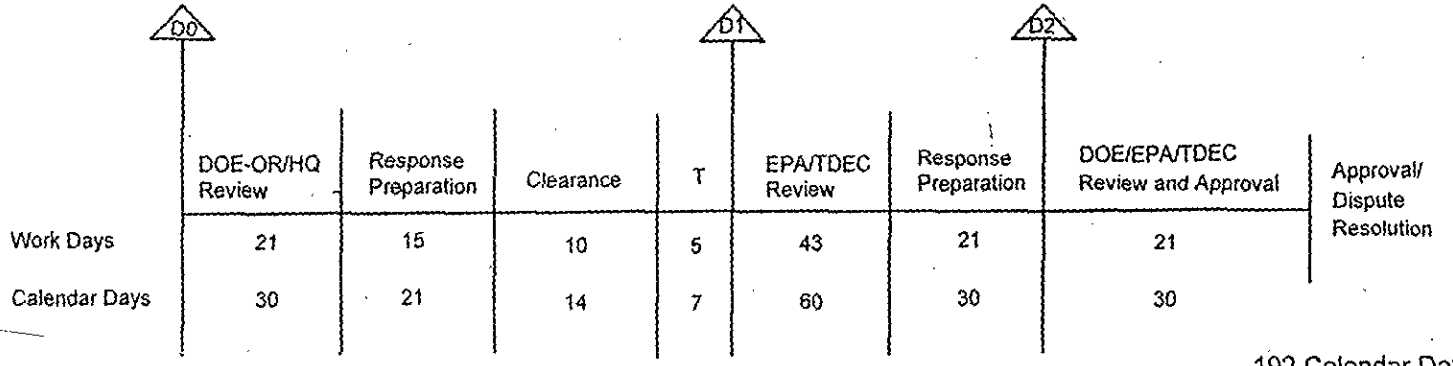
Review Cycle Protocol
FFA Record of Decision Documents

Record of Decision



259 Calendar Days
186 Work Days
T = Transmittal Period

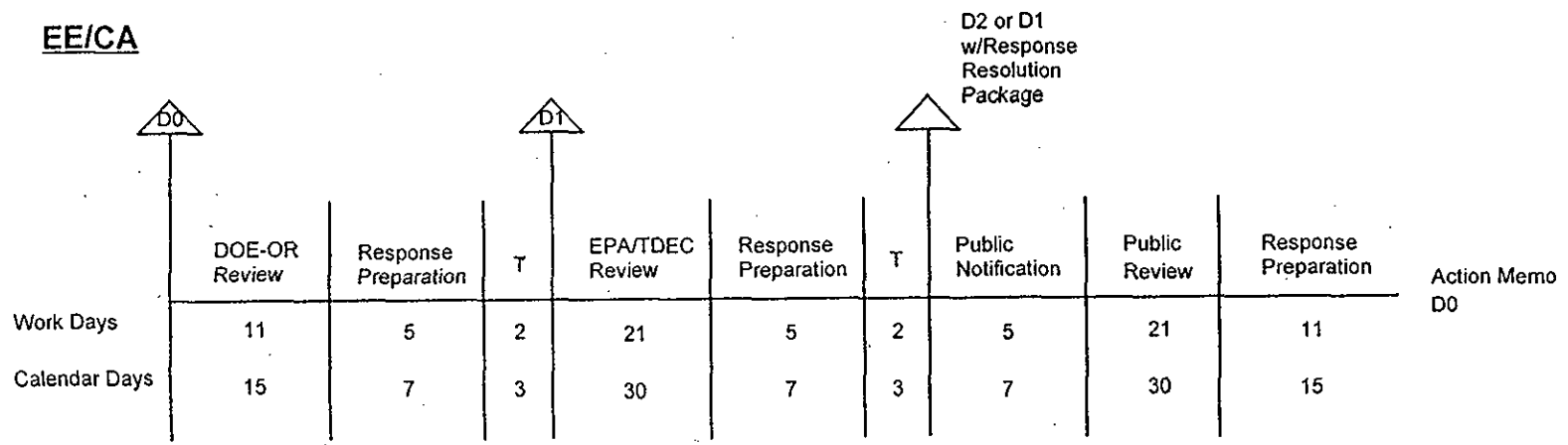
Proposed Plan



192 Calendar Days
136 Work Days

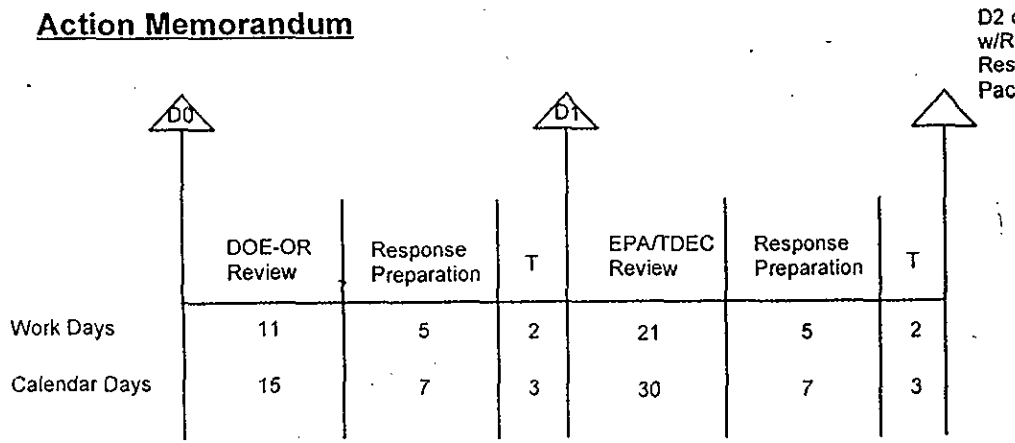
Review Cycle Protocol
FFA Non-Time Critical Removal Action Documents

EE/CA



117 Calendar Days
83 Work Days
T = Transmittal Period

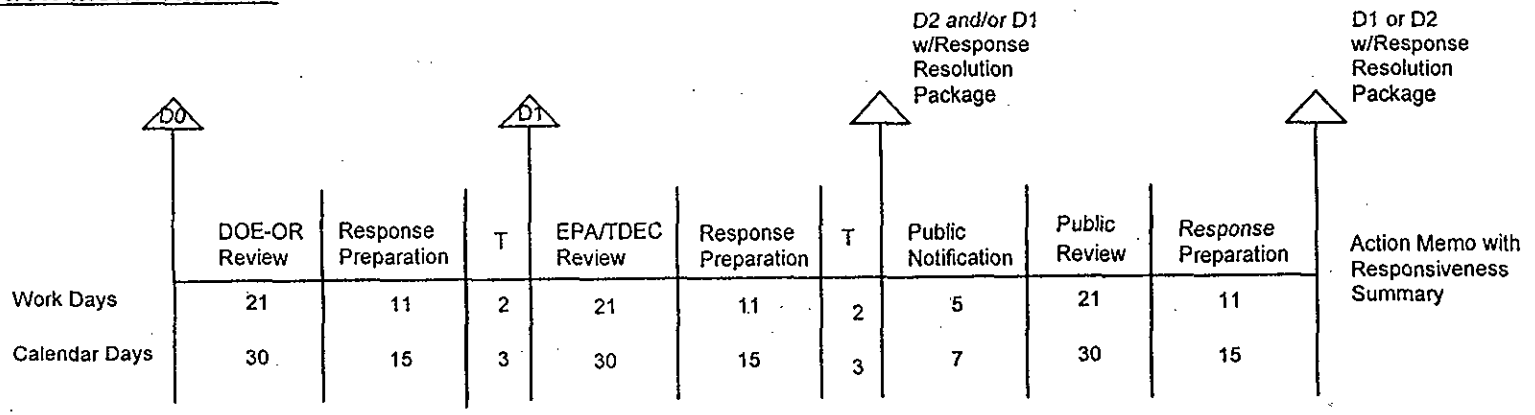
Action Memorandum



65 Calendar Days
46 Work Days
T = Transmittal Period

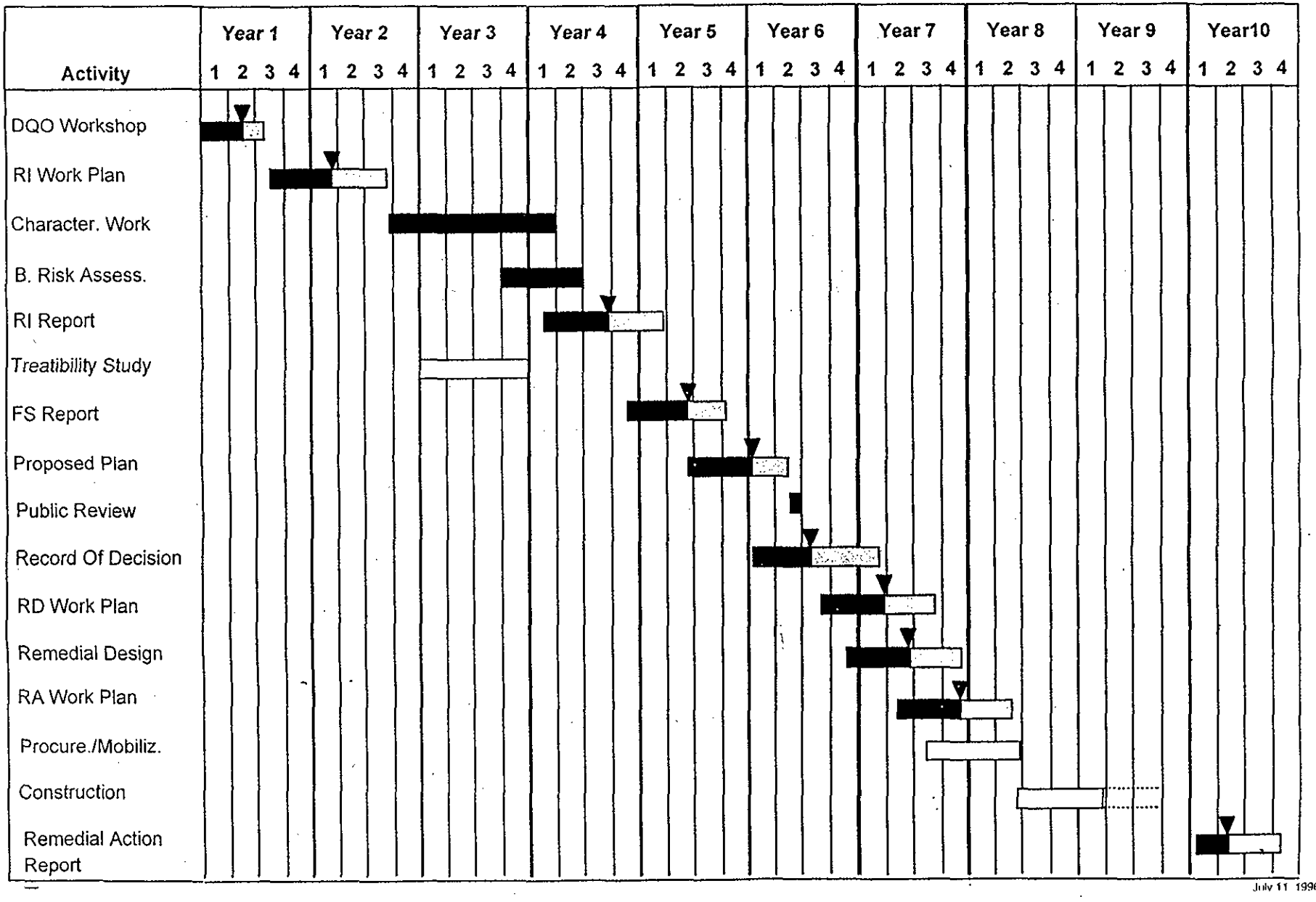
Review Cycle Protocol
FFA Time Critical Removal Action Document

Action Memorandum



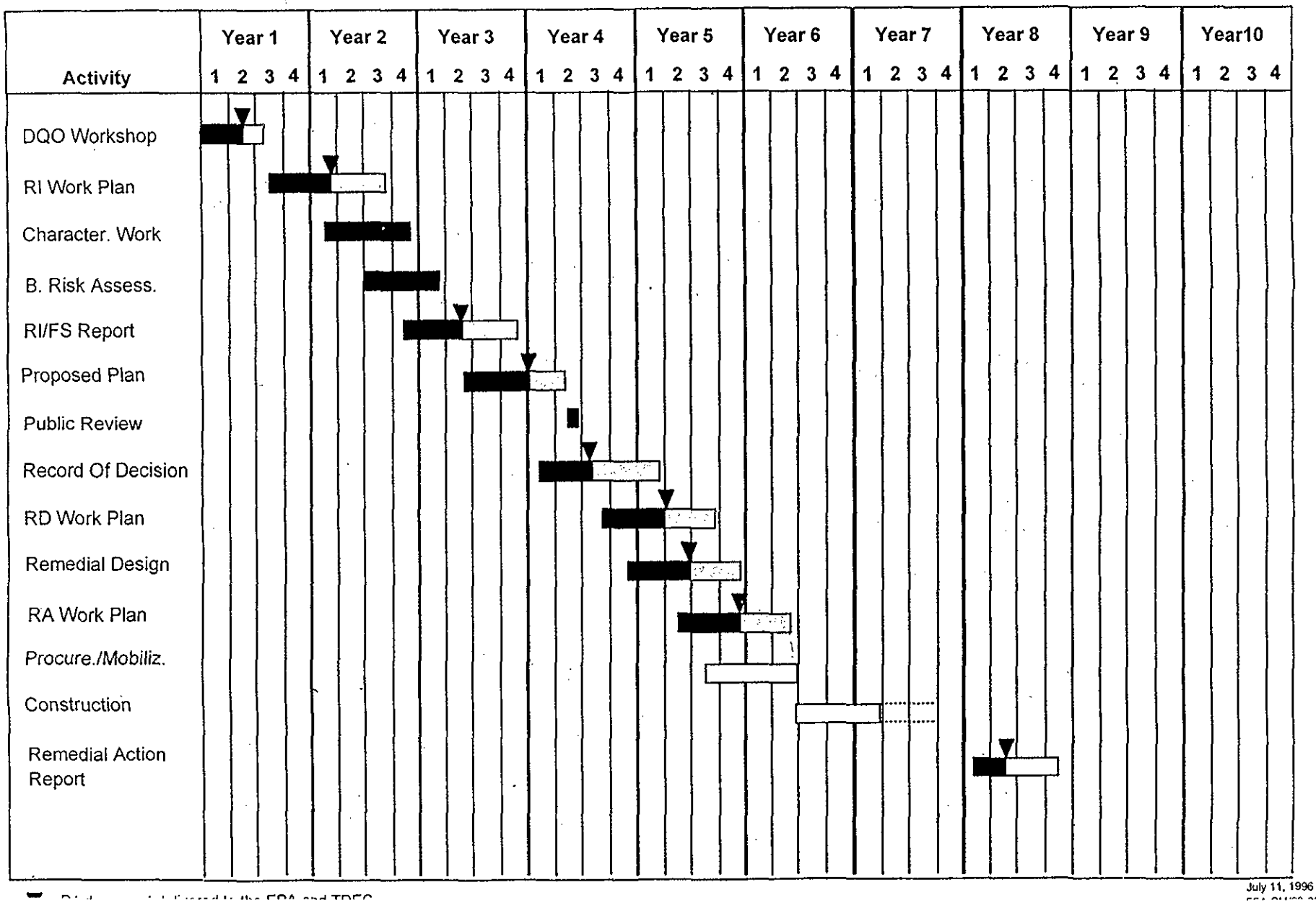
148 Calendar Days
105 Work Days
T = Transmittal Period

Generic Schedule (Type I)



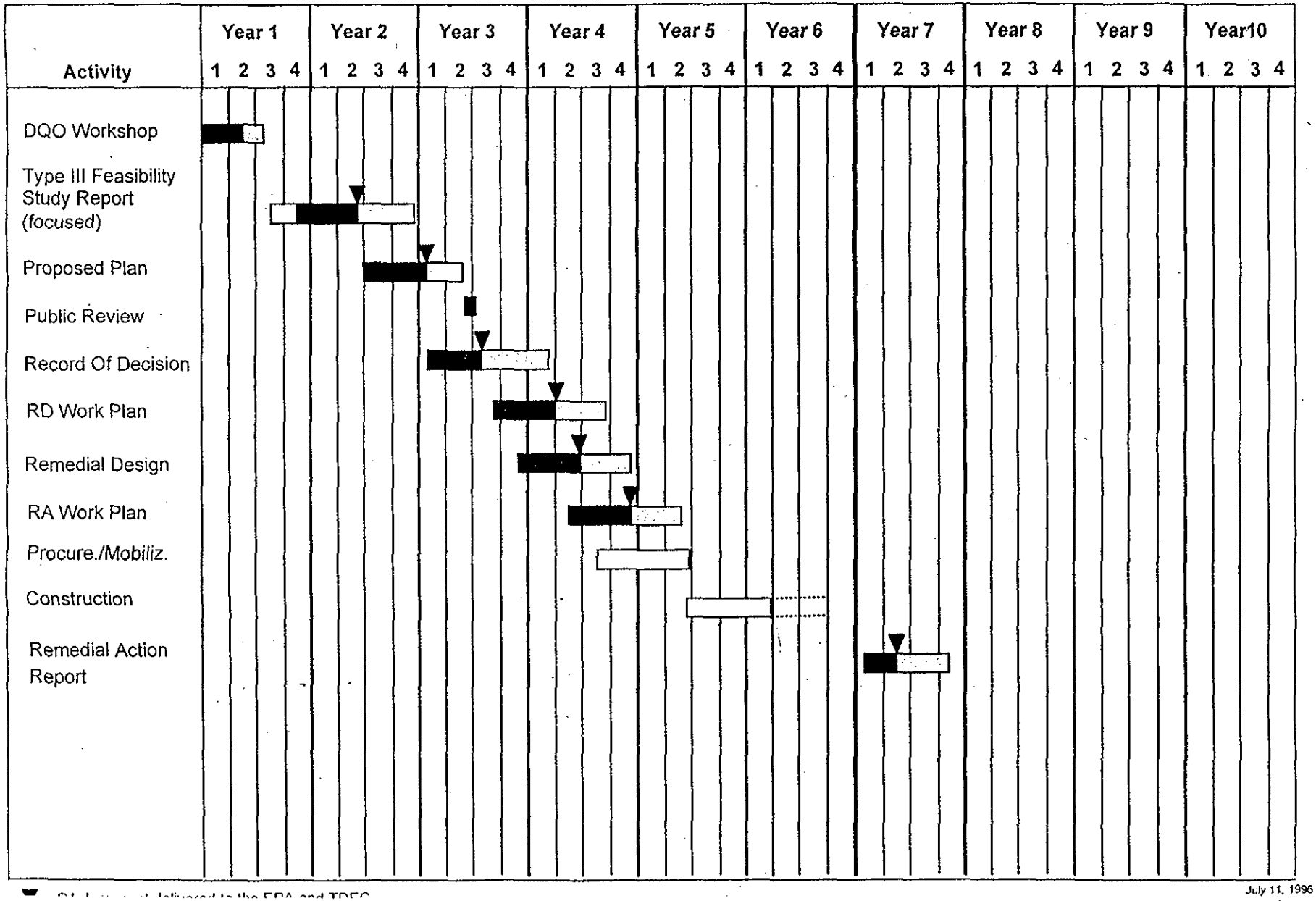
July 11 1996

Generic Schedule (Type II)



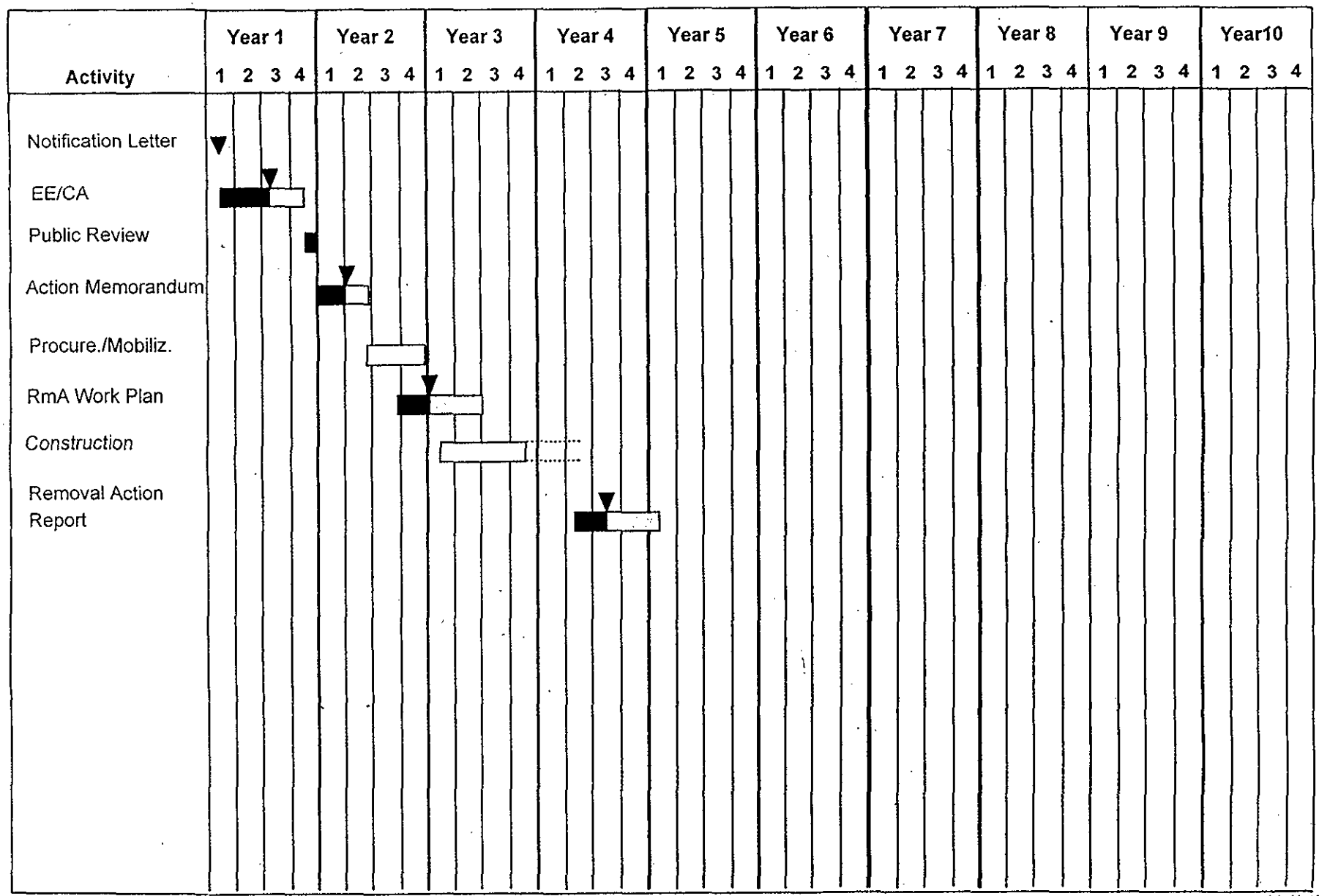
July 11, 1996

Generic Schedule (Type III)



July 11, 1996

Non-Time Critical
Removal Action Generic Schedule



▼ = D1 document delivered to the EPA and TDEC

July 11, 1996
EEA-PM/96-003

I-7 Operating Instruction for Recurring Routine Transfer of Category D Liquid Contents

1. DOE initiated teleconference between DOE, EPA and TDEC to inform TDEC and EPA of proposed recurring routine transfer operations and tank system(s) to be included in written request.

2. DOE submits written request for the recurring routine tank operations for specific tank system(s). Written request shall include the following information at a minimum:

   - Proposed period covered (not to exceed 12 months);
   - Tank System(s) to be transferred from;
   - Assessment of need for recurring transfers;
   - History of previous recurring transfers;
   - Proposed methods for future transfers;
   - Assessment of the conditions of inactive LLLW components to be utilized including quantitative information if available;
   - Operating procedures to prevent and/or mitigate any resulting releases during transfer operations utilizing inactive components;
   - Assessment of chemical characteristics of the liquid to be transferred and its compatibility with the active LLLW system;
   - Assessment of the applicability of other waste handling requirements (i.e. RCRA, TSCA);
   - Proposed method for documenting transfer operations;

3. TDEC will respond to the written request for approval of recurring routine transfers for a period of time not to exceed 12 months within 14 days of receipt of DOE's request. TDEC will clearly document approval of the proposed recurring routine transfers or disapproval and the specific reasons for disapproval.

4. DOE shall document recurring routine transfer operations annually in submittals to TDEC and EPA. The documentation shall include the following information as a minimum:

   - Date of transfers;
   - Tank system transferred from;
   - Volume of liquid transferred;
   - Volume of contents remaining in the tank;
   - Destination, for the transferred liquids.

I-8 Operating Instruction for Non-Recurring Routine Transfer of Category D Liquid Contents

1. DOE initiate teleconference between DOE, TDEC, and EPA to inform TDEC and EPA of proposed transfer operation.

2. DOE submit written request for the transfer operation. Written request shall include the following information at a minimum:

   - Proposed date (s) of transfer;
   - Tank System to be transferred from;
   - Volume of liquid to be transferred;
   - Volume of contents to remain in the tank;
   - Destination, interim and final, for the transferred liquids;
   - Inactive components to be utilized during the transfer;
   - Assessment of the conditions of any inactive components to be utilized including quantitative information if available;
   - Operational procedures to prevent and/or mitigate any resulting releases during transfer operations utilizing inactive components;
   - Assessment of the chemical characteristics of the liquid to be transferred and its compatibility with the active LLLW system;
   - Determination of applicability of other waste handling requirements (i.e., RCRA, TSCA)
   - Proposal for method of transfer operations documentation;

3. TDEC will respond to written requests within 14 days of receipt of DOE's request. TDEC will clearly document approval of the transfer or disapproval and the specific reasons for the disapproval.

I-9 DOE Facility Operating Instruction

The purpose of this instruction is to clarify the manner in which DOE facilities are to be addressed within the Oak Ridge Reservation (ORR) Federal Facilities Agreement (FFA). This instruction addresses those shut down, contaminated facilities within the scope of the ORO EM-60 Nuclear Material and Facility Stabilization Program and the EM-40 Decontamination and Decommissioning (D&D) Program, including those at the Oak Ridge National Laboratory, the Y-12 Plant, and the K-25 Site.

The following instructions have been established to address DOE ORO facilities:

1. Facilities in the EM-60 Nuclear Material and Facility Stabilization Program and the EM-40 D&D Program are included in the FFA Appendix C.

2. For facilities in the EM-60 Nuclear Material and Facility Stabilization Program, a Removal Site Evaluation report will be submitted from DOE to TDEC and EPA documenting the current status of the facility and any recommendations for immediate removal actions. The status of the EM-60 facilities will be maintained in the FFA Appendix C, Removal Site Evaluation Section, until final disposition for the facility has been determined by DOE.

3. Individual D&D projects are to be included as separate items in the overall ORO project prioritization listing.

4. Planning for D&D projects is to be addressed in a coordinated manner with other related Environmental Restoration activities to ensure that the relationships to related remedial investigation and remedial action activities are clearly defined. This coordination is to include and be consistent with land use and facility reuse planning for the reservation.

5. Planned D&D projects are to be reviewed with FFA Project Managers prior to the initiation of the detailed project planning. These reviews are to reach agreement on the overall scope of the project, the nature and extent of regulator involvement, and the type of documentation required. It is anticipated that the majority of D&D projects will be conducted as non-time-critical removal actions unless the circumstances at the facility make it inappropriate.

6. D&D projects which are determined to be non-time-critical removals will include the following documentation:

    a. A notification letter will be submitted by DOE to TDEC and EPA documenting the decision to address decommissioning of the facility as a non-time-critical removal action under CERCLA. The notification letter will identify the facilities to be removed and will describe the overall time frame and approach to the removal action.

    b. An Engineering Evaluation/Cost Assessment (EE/CA) will be submitted by DOE to TDEC and EPA documenting the alternatives considered in the engineering studies for the D&D project. Since the alternative approaches available to conduct D&D projects typically are clear and very limited, it is recognized that the EE/CA will normally be at a summary level and will not normally include the more detailed analysis of alternatives required for remedial actions.

c. After completion of the public comment period, an Action Memorandum will be submitted by DOE to TDEC and EPA documenting DOE's selected alternative.

d. Upon completion of the non-time-critical removal action, a Removal Action Report will be submitted by DOE to TDEC and EPA as a primary document.

7. Facilities in the D&D Program are maintained in accordance with a DOE-managed Surveillance and Maintenance (S&M) Program. The S&M Program includes activities to perform routine surveillance inspections; routine and corrective maintenance; facility management activities associated with health, safety, and environmental compliance; and facility stabilization or deactivation activities to reduce environmental, health, and safety risks or to effect cost reductions in the S&M Program. The S&M Program activities include routine actions to remove hazardous materials, clean-up spills, or implement actions to limit public or personnel exposure to hazardous materials or areas with safety implications. These S&M Program activities can be conducted as maintenance actions and will not require CERCLA documentation. The S&M Program activity progress will be tracked through the FFA Quarterly Reports and/or the Annual S&M Reports.

Emergency removal actions (beyond those routine, planned actions described above) are to be managed as removal actions under the CERCLA regulations. Such emergency removal actions are to be documented and notification provided to the FFA Project Managers utilizing the attached Emergency Removal Notification form. Information regarding these actions under the S&M Program are to be included in the annual S&M Program report, which will be provided to the FFA Project Managers.

DOE ORO Surveillance and Maintenance Program
FFA Emergency Removal Notification

Identification Number (e.g. Y12-RA-95-001): _____

Facility No. and Title: _____

Description (Describe what was removed [quantity, material, contaminants, etc.] and why. Include description of how material or condition was identified:

_____
_____
_____
_____
_____

Date of Removal: _____

Disposition (Where did we put the material?): _____
_____
_____
_____
_____

Assessment (What was the significance of the release to the environment?): _____
_____
_____
_____
_____
_____
_____

LMES Point of Contact: _____ **Phone:** _____ **Location:** _____

Distribution: *DOE FFA Administrator (Pat Halsey)*
DOE S&M Program Manager
S&M Program File (Site S&M Manager)
ER Document Center
LMES FFA Administrator (L.V. Asplund)

Note: DOE FFA Administrator to make distribution to FFA Project Managers.

I-10 Administrative Record Index Transmittal Operating Instructions

FFA Section XXXIII, requires the DOE to submit the proposed AR Indexes to the Environmental Protection Agency (EPA) and the Tennessee Department of Environment and Conservation (TDEC) with the D1 Record of Decision (ROD) or the Action Memorandum (AM) document for each CERCLA response action. Specific transmittal information relevant to this section is provided:

1. The DOE will transmit a hard copy proposed AR Index to the regulatory parties with the D1 ROD and AM for review. The DOE transmittal letter to the EPA and TDEC will identify the inclusion of the proposed AR Index.

2. The EPA and the TDEC will review the proposed AR Index and will notify the DOE, in the D1 comment letter, of any comments concerning recommendations to the contents of the AR Index. The DOE will give full consideration to all written comments on the proposed AR Index. If the AR Index is modified, the DOE will transmit the revised proposed AR Index to EPA and TDEC with the D2 ROD or AM response document. If recommendations or comments are not received, the AR Index will be approved with the approval of the decision document.

3. Upon final approval of the ROD or AM document, DOE will establish the AR and will provide the EPA and TDEC with an electronic and hard copy official AR Index.

I-11 Appendix C Operating Instructions

Appendix C is an annually updated compilation of areas of concern (AOCs) to be addressed by U.S. Department of Energy (DOE) under the Federal Facility Agreement (FFA). DOE will transmit the update to the Tennessee Department of Environment and Conservation (TDEC) and the Environmental Protection Agency (EPA) for their review and approval by October 1 each year. These AOCs are divided into four categories that reflect their current status relative to Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) activities at the Oak Ridge Reservation (ORR). The four categories are identified and defined in the following table. The "status" column for each AOC shall be maintained and updated with the annual revision.

Category	Criteria for AOC in Category
Operable Units (OUs)	CERCLA actions have been defined in approved decision documents [e.g., Record of Decision (ROD), Action Memorandum].
Characterization Areas (CAs)	Sufficient information exists to recognize that additional CERCLA action is appropriate.
Remedial Site Evaluation (RSEs) Areas	Some historical information exists to conclude that the area has a high potential of being contaminated, however, insufficient information exists to determine if further CERCLA investigation or remediation is warranted.
Removal Site Evaluation (RmSEs) Areas	The AOC meets criteria for evaluation to be considered under CERCLA (i.e., area is inactive and hazardous substances have been released or a threat of release exists), but insufficient information exists to determine if a removal or remedial action is necessary.

1. Removal Site Evaluation Areas

   AOCs in the RmSE Areas category must be evaluated to determine for the need for a removal action by conducting a RmSE. Following this evaluation and with the approval of the FFA Project Managers, a RmSE Report is completed and AOCs may be transferred to either the RSE Areas or CA category, or they may remain in the RmSE Areas category with the status identified as no further investigation (NFI) recommended in the RmSE report and approved by the FFA Project Managers. Note, for NFI determinations, a completed NFI form (see Figure 1) must be signed by the FFA Project Managers.

   It is important to recognize that RmSEs are considered complete whenever it is possible to make and support a decision that (1) unacceptable risks do exist that require a removal action and a notification submitted by DOE to EPA, (2) conditions at an AOC present a risk that require addition investigation either under an RSE or as a CA (RI/FS) depending upon available data, or (3) unacceptable risks requiring action under CERCLA do not exist and an NFI determination is appropriate. If the FFA Project Managers determine during the RmSE that release(s) or the potential for release(s) to the environment from an AOC warrants a removal action, the documentation of this determination will be in lieu of a removal action notification letter. The AOC will remain in the RmSE category until the Action Memorandum has been approved by DOE. All RmSE Reports must be completed and approved by the FFA Project Managers prior to moving an AOC to another Appendix C category.

For AOCs that are included in the Nuclear Material and Facility Stabilization (NMFS) Program, two scenarios are possible. If DOE determines that the facility will be used for additional programmatic activities, the AOC will be removed from Appendix C; if it is determined that the AOC will not be used for any additional purpose, it will then be moved to the RSE category of Appendix C to be handled by the D&D Program.

2. Remedial Site Evaluation Areas

AOCs listed in the RSE Areas category must be evaluated by conducting a RSE. Following the evaluated, an RSE report must be prepared recommending the AOC either (1) should be classified as a CA requiring additional CERCLA activities or (2) requires no further investigation. If the RSE report recommends additional CERCLA action, the AOC will be added to the CA category upon approval of the RSE Report by the FFA Project Managers. If it is determined by DOE that no further investigation is required at the AOC, an NFI form will be completed and forwarded to the FFA Project Managers for review and approval. In the case of an NFI determination, the AOC will remain in the RSE Areas category and the designation NFI will be added to the status column associated with the AOC in Appendix C. It is important to recognize that RSEs are considered complete whenever it is possible to make and support a decision that (1) unacceptable risks exist that require additional action, or (2) unacceptable risks requiring action under CERCLA do not exist and an NFI determination is appropriate. A RSE Report must be completed and approved by the FFA Project Managers prior to moving an AOC to another Appendix C category.

3. Characterization Areas

AOCs in the CA category have been identified as candidates for CERCLA action. AOCs shall remain in the CA category until a decision document is approved by the FFA Project Managers regardless of actions taken or ongoing at the AOC. Upon approval of the Action Memorandum or ROD, the appropriate CA(s) shall be moved to the OU category of Appendix C.

It is not appropriate for an NFI determination to be made for AOCs listed in the CA category. If a No Action (NA) or No Further Action (NFA) determination is made as a result of the RI/FS process, the AOC(s) with this status shall be added to the OU category upon approval of the ROD by the FFA Project Managers.

For AOCs in the CA category, some additional information gathering prior to the data quality objectives (DQO) process may be necessary. Refer to I-5 Operating Instruction for details on Information Assessment Reports.

4. OU AOCs

The OU category consists of a list of actions, or no action as appropriate, taken at AOCs under approved RODs or Action Memoranda. Ultimately, all AOCs will have been transferred to the OU category, except for those in the RmSE or RSE categories for which an NFI determination has been documented. In some cases, remedial actions taken at AOCs may not address all environmental concerns associated with the AOC. When this occurs, the AOC(s) shall be listed in more than one Appendix C category, in the OU plus the CA category, until all environmental concerns are addressed as required under CERCLA.