
Proposal:
Oak Ridge
Comprehensive
Closure Plan

Submitted to:

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Executive Summary

DOE Oak Ridge Operations (ORO) has developed a plan to accelerate the closure of the Oak Ridge EM Program by 5 years and save over \$2 billion. Two major components of the program, East Tennessee Technology Park (ETTP) and Oak Ridge National Laboratory (ORNL) Melton Valley, will be closed ahead of schedule by 8 years and 9 years, respectively. This acceleration means quicker elimination of the principal release threats. Earlier completion also means that the risk of cost and schedule growth common with drawn-out programs is reduced. This proposal documents that plan.

The Top-to-Bottom Review emphasizes that risk reduction, not risk management, is key to accelerating closure. It suggests that a sense of urgency is needed to accelerate closure. ORO agrees. Therefore, this proposal focuses funding on risk reduction, site closure, and high mortgage reduction work and proposes to make dramatic, accelerated cuts at the high infrastructure costs associated with ETTP. A summary of the benefits of accelerating high-risk work at ORNL Melton Valley and ETTP is shown in Figure E-1.

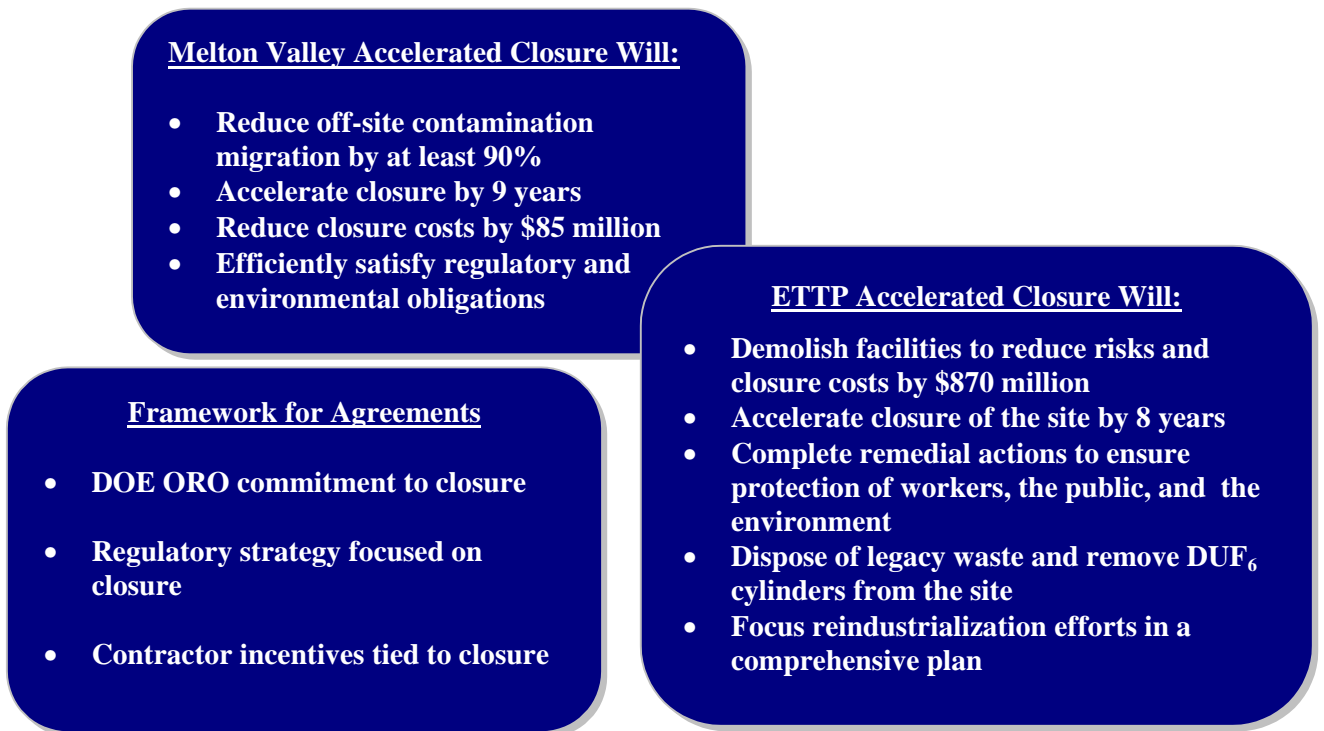


Figure E-1. Accelerated Cleanup Proposal Summary Benefits

Over the last 35 days, DOE and contractor management, project teams, and regulators have critically self-examined the cleanup status of the Oak Ridge EM Program in light of the Top-to-Bottom Review and have developed this plan for accelerated closure.

Executive Summary

Our proposal focuses resources on closure and risk reduction and includes measures to achieve the following results:

- eliminate liabilities associated with the demolition of leased facilities;
- pursue alternative disposition of legacy low-level waste in the Environmental Management Waste Management Facility (EMWMF);
- provide for alternative disposition of process equipment in the EMWMF;
- divest non-EM scope; and
- implement a focused ETTP reindustrialization effort that supports closure.

Figure E-2 shows the schedule acceleration benefits of the accelerated case over the base case.

ETTP

Accelerating closure of the 5,000-acre ETTP makes sense. Closure specifically means completion of all building demolition, removal of all depleted uranium hexafluoride cylinders, completion of soil remediation, and completion of a Comprehensive Risk Assessment proving that the final end-state is protective of human health and the environment. It further means that no DOE presence exists on-site; DOE has no further cleanup work; and the site has transferred to Long-Term Stewardship.

Degrading 50-year-old gaseous diffusion buildings and support buildings represent the principal threat. Unstable structures, roof integrity failures, intense rainfall events, and other natural phenomena increase the risk of uncontrolled releases of uranium and other contaminants to Poplar Creek, which feeds the Clinch River. The hazards posed to decontamination and decommissioning (D&D) workers also grows every day with advancing building deterioration. Coupled with this risk is the burdensome “hotel load” of infrastructure (utilities, security, fire protection, etc.). Every year that closure is delayed, these non-closure infrastructure activities and costs reduce the funding otherwise available for cleanup. The right thing to do is to quickly demolish the buildings, develop an integrated plan with reindustrialization, and focus on D&D first, followed by soil cleanup, to achieve risk and mortgage reduction (Fig. E-3).

ORNL MELTON VALLEY

The Melton Valley burial grounds at ORNL contain areas with high inventories of radioactive wastes. Approximately 140 acres of unlined waste units (e.g., burial grounds, seepage pits, trenches, and deep-injected waste grout, etc.) have received over 2 million curies of radioactive waste. Melton Valley contributes 90 percent of the strontium and 67 percent of the tritium discharged from DOE property in the Clinch River—a drinking water source and prime recreational area. Interim actions to date have managed this risk, but residential risk levels are currently exceeded immediately downstream of ORNL (Fig. E-4).

Executive Summary

COMPREHENSIVE CLOSURE PLAN FUNDING PROFILE

The \$2.2 billion savings is comprised of the following elements:

- \$870 million - ETTP closure strategy;
- \$85 million - accelerated completion of Melton Valley;
- \$600 million - transition of Waste Operations facilities;
- \$300 million - transition of newly-generated waste scope; and
- \$350 million - acceleration of balance of Oak Ridge Reservation (ORR) cleanup.

Figure E.5 compares the base case funding profile, which is tied to the FY 2003 President's Budget, to the accelerated case, which reflects the strategies presented in this proposal.

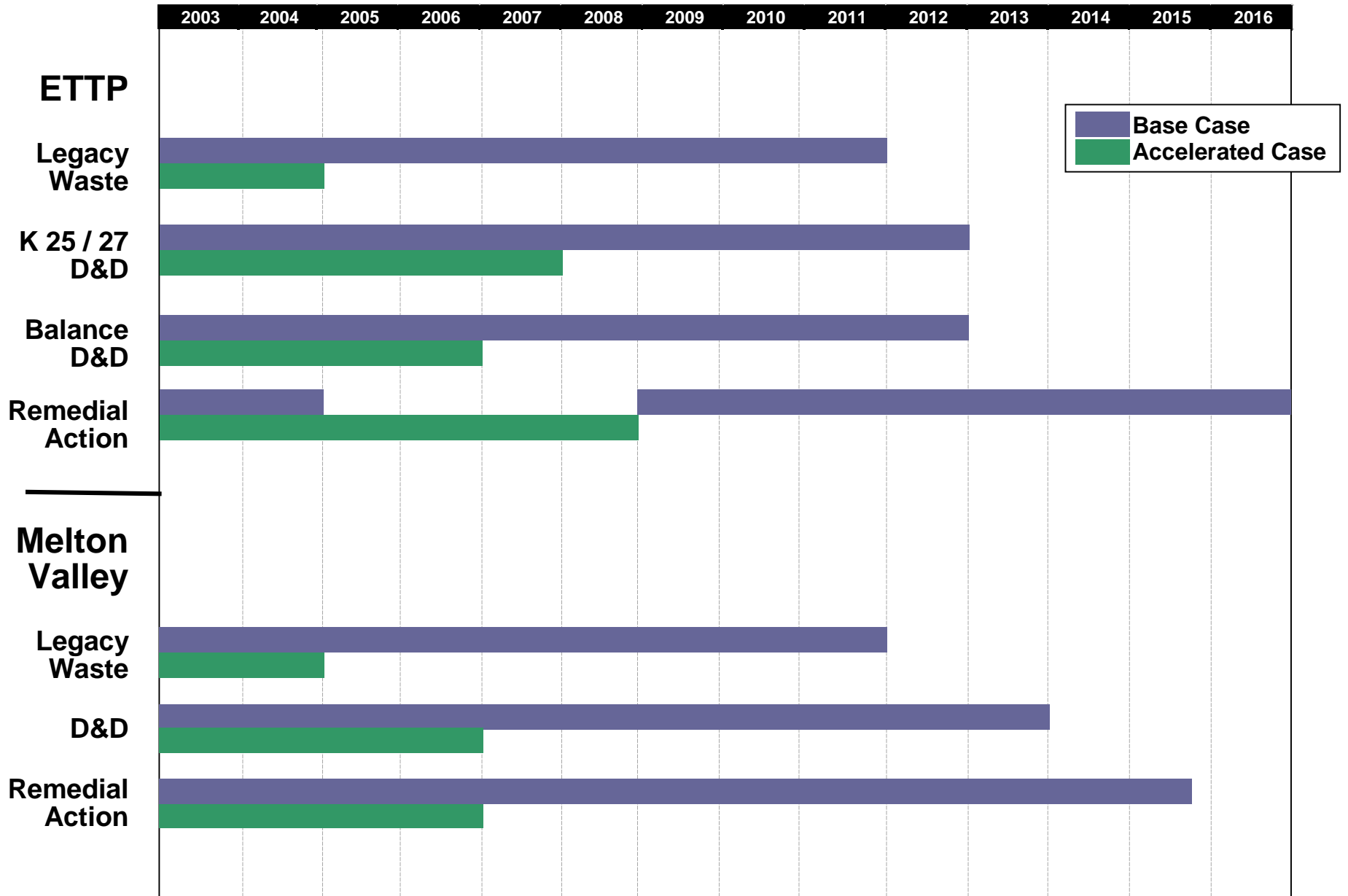


Figure E.2 Accelerated Cleanup Proposal Schedule Comparison

ETTP - Focus on Closure

Current Conditions



- ◆ High infrastructure costs
- ◆ Large inventory of legacy waste
- ◆ K-33/31/29 D&D - moderate risk
- ◆ Multi-focused mission - reindustrialization / closure

Current Conditions

- ◆ Examples of annual infrastructure costs: fire protection \$6.6M; utilities \$15.5M; real property management \$14.1M; power operations \$7.1M; S&M \$10.1M; ES&H \$5.2M
- ◆ 20,554 m³ of legacy waste stored at ETTP; 18,684 m³ outside

Cleanup Status

- ◆ To date: 88 facilities demolished (600,000ft²)
- ◆ Remaining for D&D: 463 facilities (6.8 million ft²)

Endpoint Under Current Plan



- ◆ Completion date: 2016
- ◆ Total Cost: \$2.4B (includes cost for eventual D&D of reindustrialized facilities)
- ◆ End-state: self-sustaining private industrial park

Current Plan

- ◆ High cost of infrastructure/mortgage costs dilutes cleanup funds and delays facility D&D until 2015 and Zone 1 Groundwater ROD scope until 2018
- ◆ Certain facilities earmarked for reindustrialization and categorized as future environmental liabilities (\$400+M) demolished after 2015
- ◆ Full suite of landlord services provided for reindustrialization through 2014
- ◆ Majority of Legacy LLW disposition deferred until funding available

Endpoint Under Closure Plan



- ◆ Completion date: 2008
- ◆ Total Cost: \$1.5B
- ◆ No DOE liabilities remain for later facility D&D
- ◆ End-state: private industrial park

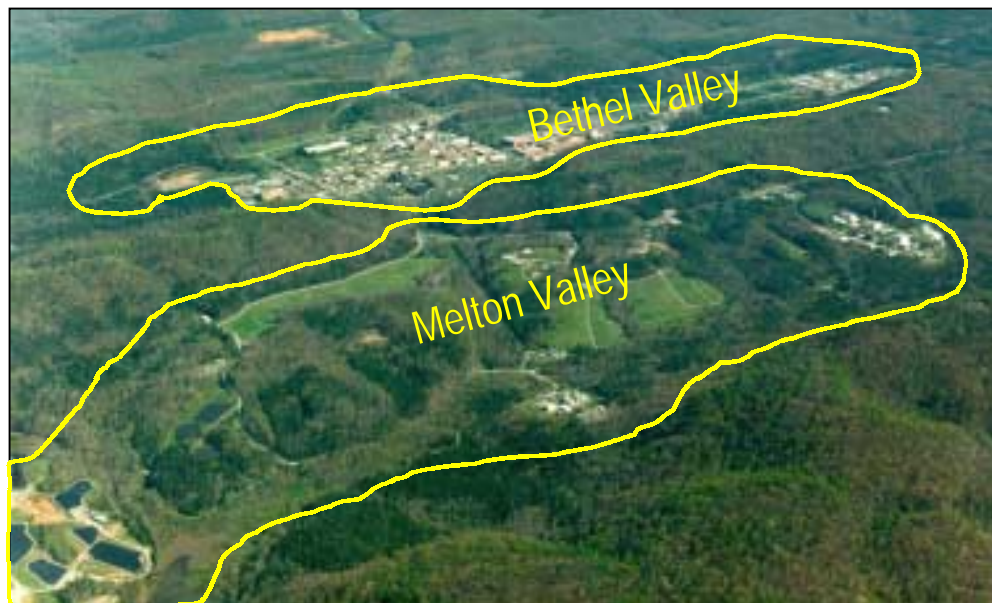
Closure Plan

- ◆ Closure includes demolition of all facilities including those categorized as future environmental liabilities and Zone 2 ROD scope addressing risks from groundwater contamination sources
- ◆ Reindustrialization integrated with closure and may result in additional savings to EM program
- ◆ K-25 / K-27 Buildings D&D completed 1½ years early
- ◆ Approximately 4000 acres de-listed for future industrial use
- ◆ DUF6 cylinders shipped for conversion expeditiously
- ◆ Legacy LLW dispositioned by 2004
- ◆ Savings reinvested in accelerated closure and cleanup

Figure E.3 ETTP -- Focus on Closure

Melton Valley - Focus on Risk Reduction

Current Conditions



- ◆ 140 acres of unlined burial grounds, seepage pits & trenches received over 2 million curies of radioactive waste
- ◆ CERCLA ROD signed (Sept. 2000)
- ◆ Regulator agreement to leave waste in place

Current Conditions

- ◆ Contributes 90% of Strontium-90 and 67% of tritium discharged from DOE property to Clinch River, a drinking water source, exceeding MCLs
- ◆ Contaminated soils and sediments pose unacceptable risk to workers and environment
- ◆ Existing deep hydrofracture injection and monitoring wells are pathways for contaminant migration from injected grout sheets
- ◆ Deterioration of buried waste containers is ongoing and in some areas contaminant discharges are increasing
- ◆ Surface water exceeds recreational risk goals and ambient water quality criteria
- ◆ Groundwater exceeds MCLs

Endpoint Under Current Plan



- ◆ Melton Valley ROD Scope Completion date: 2014
- ◆ Total Cleanup Project Cost: \$350M
- ◆ Concurrent cleanup at Bethel Valley and Melton Valley

Current Plan

- ◆ Melton Valley and Bethel Valley cleanup occur concurrently such that project funding is spread thin amongst many projects
- ◆ Compliance milestones continue to drive work sequencing rather than risk
- ◆ Due to lack of funding, many Melton Valley projects are delayed to 2004 - 2010 timeframe

Endpoint Under Closure Plan



- ◆ Melton Valley ROD Scope Completion date: 2006
- ◆ Total Cleanup Project Cost: \$240M
- ◆ Focused cleanup at Melton Valley, defer all but high risk projects at Bethel Valley

Closure Plan

- ◆ Accelerated closure of Melton Valley through focused cleanup
 - ◆ Hydraulic isolation and capping of burial grounds, pits and trenches
 - ◆ Facilities demolished and disposed in on-site cell (EMWMF)
 - ◆ Soil and sediment cleanup
 - ◆ Retrieve 22 Trench Area TRU waste casks for disposal at WIPP (all other TRU remains in place)
 - ◆ Plug and abandon hydrofracture injection and monitoring wells
- ◆ Interim land use controls restrict contaminated area/groundwater access
- ◆ Complete ongoing and other high risk projects in Bethel Valley and defer the remaining work in Bethel Valley pending final plans for lab revitalization

Figure E.4 ORNL Melton Valley -- Focus on Risk Reduction

Table of Contents

Executive Summary	ES.1
Table of Contents	i
Acronyms and Abbreviations	iii
1.0 Program Risk Evaluation	1-1
1.1 East Tennessee Technology Park	1-1
1.2 Oak Ridge National Laboratory	1-1
1.3 Balance of Program	1-2
2.0 Oak Ridge Comprehensive Closure Plan.....	2-1
2.1 Current Status Summary	2-1
2.2 Achieving Closure.....	2-1
2.3 Program Funding Profile Comparison.....	2-3
3.0 ETTP Closure Proposal.....	3-1
3.1 Introduction	3-1
3.2 Problem Statement	3-5
3.3 Successes to Date	3-7
3.4 Overall Closure Plan/End State.....	3-9
3.5 Regulatory Process	3-11
3.6 Scope of Work.....	3-11
3.7 D&D Program	3-12
3.8 Environmental Restoration/Remedial Action Program.....	3-18
3.9 Legacy Waste Disposition.....	3-9
3.10 DUF ₆ Cylinder Program	3-24
3.11 Site Management/Base Operations.....	3-25
3.12 Reindustrialization Integrated Plan	3-27
3.13 Key Assumptions/Challenges.....	3-29
3.14 Contracting Approach	3-31
3.15 Bringing It Together.....	3-31
4.0 Melton Valley Closure Proposal	4-1
4.1 Purpose/Objective	4-1
4.2 Current Problems and Risk.....	4-3
4.3 Closure Plan	4-5
4.4 Scope of Work.....	4-8
4.5 Contractual Method of Accomplishment	4-21
4.6 Melton Valley Closure Assumptions.....	4-22
4.7 Bringing It Together	4-23
5.0 Regulatory Strategy	5-1

6.0 Stakeholder Strategy..... 6-1

7.0 Management Approach 7-1

7.1 Enable Closure 7-1

7.2 Provide Oversight..... 7-1

7.3 Verify Earned Value..... 7-1

7.4 Government-Furnished Services and Equipment..... 7-1

8.0 Contracting Proposal..... 8-1

8.1 Proposal..... 8-1

8.2 Cost Incentive..... 8-1

8.3 Schedule Incentive 8-1

8.4 Environmental, Safety & Health and Safeguards and Security Compliance..... 8-1

8.5 Department of Energy Orders and Other Contract Requirements..... 8-1

Acronyms and Abbreviations

ACAP	Atomic City Auto Parts
AM	action memorandum
AWQC	ambient water quality criteria
BOA	basic ordering agreement
BV	Bethel Valley
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act of 1980
cm	centimeter
CMTS	Central Mercury Treatment System
CNF	Central Neutralization Facility
COC	contaminant of concern
CPCF	Central Pollution Control Facility
CROET	Community Reuse Organization of East Tennessee
D&D	decontamination and decommissioning
DARA	disposal area remedial action
DOE	U.S. Department of Energy
DUF ₆	depleted uranium hexafluoride
ECRWP	East Chestnut Ridge Waste Pile
EE/CA	engineering evaluation/cost analysis
EEMTS	East End Mercury Treatment System
EEVOC	East End Volatile Organic Compound (treatment system)
EIS	environmental impact statement
EM	environmental management
EMWMF	Environmental Management Waste Management Facility
EPA	U.S. Environmental Protection Agency
ES&H	environment, safety, and health
ETTP	East Tennessee Technology Park
FFA	Federal Facilities Agreement
FFP	firm fixed price
FTF	Filter Test Facility
GWTF	Groundwater Treatment Facility
HEU	highly enriched uranium
HFIR	High Flux Isotope Ractor
HRE	Homogeneous Reactor Experiment
IHP	Intermediate Holding Pond
IPABS	Integrated Planning, Accountability, and Budgeting System
ISMS	Integrated Safety Management System
ISV	in situ vitrification
IWMF	Interim Waste Management Facility
LCB	lifecycle baseline
LLW	low-level waste
LLLW	liquid low-level waste
LOC	local oversight committee
μR	microrentgen

m	meter
M&I	management and integration
MCL	maximum contaminant level
MLLW	mixed low-level waste
NEPA	National Environmental Policy Act
NFA	no further action
NFI	no further investigation
NHF	New Hydrofracture Facility
NNSA	National Nuclear Security Administration
NRWTP	Non-Radioactive Waste Treatment Plant
NSC	National Security Complex
NTS	Nevada Test Site
OHF	Old Hydrofracture Facility
ORNL	Oak Ridge National Laboratory
ORO	DOE Oak Ridge Operations
ORR	Oak Ridge Reservation
OS	DOE Office of Science
OVEC	Ohio Valley Electric Company
P&A	plugging and abandonment
PCB	polychlorinated biphenyl
PWSB	Pond Waste Sludge Basin
RCRA	Resource Conservation and Recovery Act
ROD	record of decision
S&M	surveillance and maintenance
SAP	sampling and analysis plan
SHPO	State Historical Preservation Officer
SNF	spent nuclear fuel
SOP	standard operating procedure
SSAB	site-specific advisory board
SWSA	solid waste storage area
TCE	trichloroethene
TDEC	Tennessee Department of Environment and Conservation
TRU	transuranic
TSCAI	Toxic Substances Control Act Incinerator
TWTF	TRU Waste Treatment Facility
UCOF	Uranium Chip Oxidation Facility
UEFPC	Upper East Fork Poplar Creek
USEC	U.S. Enrichment Corporation
VOC	volatile organic compound
WAC	waste acceptance criteria
WEMA	West End Mercury Area
WETF	West End Treatment Facility
WIPP	Waste Isolation Pilot Plant