

the Oak Ridge  
Reservation

# Annual Site ENVIRONMENTAL Report



2007

the Oak Ridge  
Reservation

*Annual Site*

# ENVIRONMENTAL 2007

*Report*

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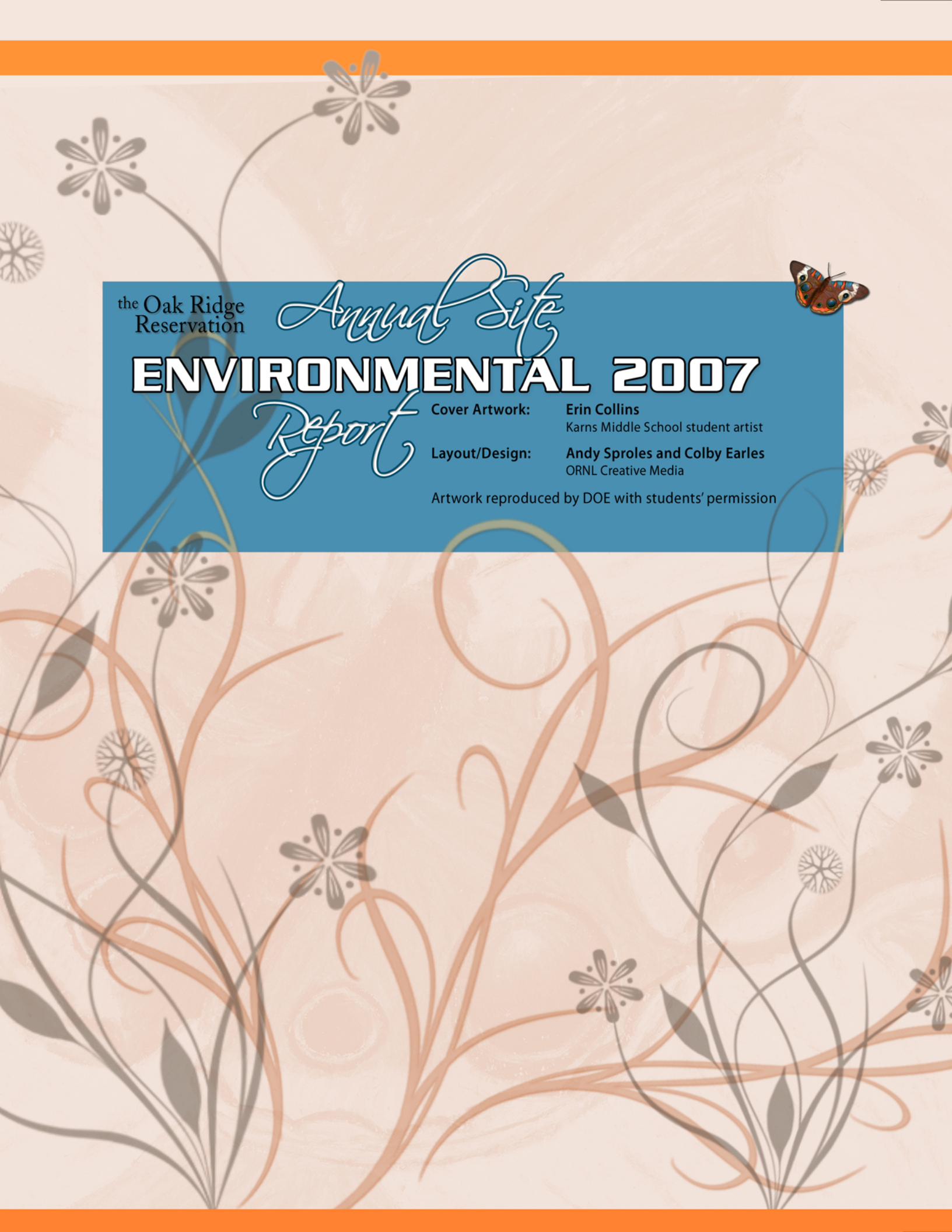
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**Oak Ridge Reservation Annual Site  
Environmental Report for 2007**

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# Contents

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	<b>Page</b>
Figures .....	ix
Tables.....	xv
Acronyms and Abbreviations .....	xix
Units of Measure and Conversion Factors.....	xxv
Acknowledgments.....	xxix
<b>1. Introduction to the Oak Ridge Reservation .....</b>	<b>1-1</b>
1.1 Background.....	1-1
1.2 History of the Oak Ridge Reservation .....	1-1
1.3 Site Description.....	1-2
1.3.1 Location and Population .....	1-2
1.3.2 Climate .....	1-2
1.3.3 Regional Air Quality .....	1-4
1.3.4 Surface Water.....	1-5
1.3.5 Geological Setting.....	1-6
1.3.6 Natural, Cultural, and Historic Resources.....	1-7
1.4 DOE Offices and Sites .....	1-11
1.4.1 The DOE Oak Ridge Office.....	1-11
1.4.2 The National Nuclear Security Administration Y-12 Site Office .....	1-11
1.4.3 Oak Ridge National Laboratory .....	1-12
1.4.4 The Y-12 National Security Complex.....	1-12
1.4.5 East Tennessee Technology Park.....	1-12
1.4.6 Oak Ridge National Environmental Research Park .....	1-14
1.4.7 Oak Ridge Institute for Science and Education.....	1-15
<b>2. Oak Ridge Reservation Compliance Summary .....</b>	<b>2-1</b>
2.1 Laws and Regulations .....	2-1
2.2 Environmental Permits.....	2-4
2.3 Release of Property .....	2-4
2.4 External Oversight and Assessments .....	2-6
2.5 Emergency Reporting of Spills and Releases .....	2-6
2.6 Notices of Violations and Penalties .....	2-6
2.7 Community Involvement .....	2-8
<b>3. East Tennessee Technology Park .....</b>	<b>3-1</b>
3.1 Introduction.....	3-1
3.2 Environmental Compliance.....	3-2
3.3 Current Operations.....	3-2
3.3.1 Waste Management Activities.....	3-2
3.3.2 Environmental Restoration Activities .....	3-7
3.3.3 Reindustrialization .....	3-12

3.4	Bechtel Jacobs Company Quality Assurance/Quality Control at the ETTP .....	3-13
3.4.1	Quality Assurance Program .....	3-13
3.4.2	Integrated Safety Management System .....	3-15
3.4.3	Integrated Assessment and Oversight Program .....	3-15
3.5	Environmental Monitoring .....	3-16
3.5.1	Effluent Monitoring .....	3-16
3.6	Biological Monitoring .....	3-40
3.7	Surveillance Monitoring .....	3-46
3.7.1	Air .....	3-46
3.7.2	Surface Water Monitoring .....	3-53
3.7.3	Direct Radiation Monitoring .....	3-58
4.	The Y-12 National Security Complex .....	4-1
4.1	Description of Site and Operations .....	4-1
4.1.1	Mission .....	4-1
4.1.2	Transformation .....	4-2
4.2	Environmental Management System .....	4-4
4.2.1	Integration with Integrated Safety Management System .....	4-4
4.2.2	Policy .....	4-4
4.2.3	Planning .....	4-5
4.2.4	Implementation and Operation .....	4-14
4.3	Compliance Status .....	4-19
4.3.1	Environmental Permits .....	4-19
4.3.2	NEPA/NHPA Assessments .....	4-22
4.3.3	Clean Air Act .....	4-24
4.3.4	Clean Water Act and Aquatic Resources Protection .....	4-24
4.3.5	Safe Drinking Water Act .....	4-26
4.3.6	The Resource Conservation and Recovery Act .....	4-26
4.3.7	RCRA/CERCLA Coordination .....	4-28
4.3.8	Toxic Substances Control Act .....	4-30
4.3.9	Preventing Spills and Reporting Spills/Releases .....	4-30
4.3.10	Audits and Oversight .....	4-33
4.4	Air Quality Program .....	4-33
4.4.1	Construction and Operating Permits .....	4-34
4.4.2	Ambient Air .....	4-40
4.5	Surface Water Program .....	4-45
4.5.1	NPDES Permit and Compliance Monitoring .....	4-45
4.5.2	Dechlorination .....	4-46
4.5.3	Radiological Monitoring Plan and Results .....	4-46
4.5.4	Storm Water Pollution Prevention .....	4-52
4.5.5	Flow Management (or Raw Water) .....	4-52
4.5.6	Y-12 Complex Ambient Surface Water Quality .....	4-52
4.5.7	Industrial Wastewater Discharge Permit .....	4-53
4.5.8	Quality Assurance/Quality Control .....	4-54
4.5.9	Biomonitoring Program .....	4-55
4.5.10	Biological Monitoring and Abatement Programs .....	4-55
4.6	Groundwater at the Y-12 Complex .....	4-59
4.6.1	Hydrogeologic Setting .....	4-60
4.6.2	Well Installation and Plugging and Abandonment Activities .....	4-63
4.6.3	CY 2007 Groundwater Monitoring .....	4-63

4.6.4	Y-12 Groundwater Quality.....	4-63
4.6.5	Quality Assurance .....	4-79
4.7	Remedial Action and Waste Management.....	4-80
4.7.1	Upper East Fork Poplar Creek Remediation .....	4-80
4.7.2	Waste Management.....	4-80
4.7.3	Wastewater Treatment.....	4-80
5.	ORNL Environmental Monitoring Programs.....	5-1
5.1	Description of Site and Operations .....	5-1
5.1.1	Mission.....	5-1
5.1.2	Facilities Revitalization Program .....	5-3
5.2	Environmental Management System .....	5-6
5.2.1	Integration with ISMS.....	5-6
5.2.2	Policy.....	5-7
5.2.3	Planning.....	5-8
5.2.4	Implementation and Operation.....	5-17
5.2.5	Checking .....	5-18
5.3	Compliance Status.....	5-18
5.3.1	Environmental Permits.....	5-18
5.3.2	Notices of Violations and Penalties.....	5-18
5.3.3	Audits and Oversight.....	5-21
5.3.4	National Environmental Policy Act/National Historic Preservation Act.....	5-21
5.3.5	Clean Air Act .....	5-23
5.3.6	Clean Water Act.....	5-23
5.3.7	Safe Drinking Water Act.....	5-24
5.3.8	Resource Conservation and Recovery Act.....	5-24
5.3.9	RCRA Underground Storage Tanks.....	5-26
5.3.10	Comprehensive Environmental Response, Compensation, and Liability Act.....	5-26
5.3.11	Toxic Substances Control Act.....	5-27
5.3.12	Emergency Planning and Community Right-to-Know Act.....	5-27
5.4	Air Quality Program.....	5-28
5.4.1	Nonradiological Monitoring.....	5-28
5.4.2	NESHAP for Asbestos .....	5-29
5.4.3	ORNL Radiological Airborne Effluent Monitoring.....	5-30
5.4.4	Stratospheric Ozone Protection .....	5-38
5.4.5	Ambient Air.....	5-39
5.5	Water Quality Program .....	5-41
5.5.1	NPDES/Surface Water .....	5-41
5.5.2	Surface Water Monitoring at NPDES Reference Location.....	5-56
5.5.3	Sanitary Wastewater.....	5-63
5.5.4	Storm Water Protection Permits.....	5-63
5.5.5	Aquatic Resources Protection .....	5-63
5.5.6	Oil Pollution Prevention.....	5-63
5.5.7	ORNL Surface Water Surveillance Monitoring.....	5-64
5.5.8	ORNL Sediment.....	5-66
5.6	U.S. Department of Agriculture/Tennessee Department of Agriculture.....	5-68
5.7	Groundwater Protection Program .....	5-68
5.7.1	Environmental Management and Enrichment Facilities Groundwater Monitoring.....	5-68
5.7.2	Office of Science Groundwater Monitoring.....	5-68

5.8	Monitoring Results.....	5-76
5.8.1	2007 Exit Pathway Groundwater Surveillance Monitoring.....	5-76
5.8.2	WOC Discharge Area Exit Pathway Results.....	5-76
5.9	Quality Assurance Program.....	5-78
5.9.1	Work/Project Planning and Control.....	5-78
5.9.2	Personnel Training and Qualifications.....	5-78
5.9.3	Equipment and Instrumentation.....	5-79
5.9.4	Assessment.....	5-79
5.9.5	Analytical Quality Assurance.....	5-79
5.9.6	Data Management and Reporting.....	5-80
5.9.7	Records Management.....	5-80
5.10	Environmental Management Activities.....	5-80
5.10.1	Melton Valley Project Completion.....	5-80
5.10.2	Remediation Resumes at Molten Salt Reactor Salt Experiment Facility.....	5-80
5.10.3	3019 Project to Resolve Safety, Security Issues.....	5-81
5.11	ORNL Waste Management.....	5-81
5.11.1	ORNL Wastewater Treatment.....	5-81
5.11.2	Transuranic Waste Processing Center.....	5-81
6.	ORR Environmental Monitoring Program.....	6-1
6.1	Meteorological Monitoring.....	6-1
6.1.1	Description.....	6-1
6.1.2	Meteorological Impacts on Modeling Results.....	6-2
6.2	External Gamma Radiation Monitoring.....	6-3
6.2.1	Data Collection and Analysis.....	6-3
6.2.2	Results.....	6-3
6.3	Ambient Air Monitoring.....	6-3
6.3.1	ORR Ambient Air Monitoring.....	6-5
6.3.2	Results.....	6-6
6.4	Surface Water Monitoring.....	6-9
6.4.1	ORR Surface Water Monitoring.....	6-9
6.4.2	Results.....	6-10
6.5	Food.....	6-10
6.5.1	Hay.....	6-11
6.5.2	Vegetables.....	6-12
6.5.3	Milk.....	6-13
6.6	Fish.....	6-13
6.6.1	Results.....	6-15
6.7	White-Tailed Deer.....	6-16
6.7.1	Results.....	6-16
6.8	Fowl.....	6-16
6.8.1	Waterfowl Surveys—Canada Geese.....	6-16
6.8.2	Turkey Monitoring.....	6-17
6.9	Quality Assurance.....	6-17
7.	Dose.....	7-1
7.1	Radiation Dose.....	7-1
7.1.1	Terminology.....	7-1
7.1.2	Methods of Evaluation.....	7-2
7.1.3	Doses to Aquatic and Terrestrial Biota.....	7-14
7.1.4	Current-Year Summary.....	7-16



7.1.5	Five-Year Trends.....	7-16
7.1.6	Potential Contributions from Non-DOE Sources.....	7-17
7.2	Chemical Dose.....	7-18
7.2.1	Drinking Water Consumption.....	7-18
7.2.2	Fish Consumption.....	7-18
Appendix A. Errata.....		A-1
Appendix B. Glossary.....		B-1
Appendix C. Climate Overview for the Oak Ridge Area.....		C-1
Appendix D. Reference Standards and Data for Water.....		D-1
Appendix E. National Pollutant Discharge Elimination System Noncompliance Summaries for 2007.....		E-1
Appendix F. Radiation.....		F-1
Appendix G. Chemicals.....		G-1
References.....		R-1



# Figures

Figure		Page
1.1	Location of the city of Oak Ridge .....	1-3
1.2	The Oak Ridge Reservation .....	1-3
1.3	Population by county in the ten-county region surrounding the Oak Ridge Reservation.....	1-4
1.4	Locations and populations of towns nearest to the Oak Ridge Reservation .....	1-5
1.5	Vertical relationships of flow zones of the Oak Ridge Reservation: estimated thicknesses, water flux, and water types .....	1-7
1.6	The Oak Ridge National Laboratory .....	1-12
1.7	Y-12 National Security Complex .....	1-13
1.8	East Tennessee Technology Park .....	1-13
1.9	The Oak Ridge National Environmental Research Park covers about 8,094 ha on the reservation .....	1-15
3.1	The East Tennessee Technology Park.....	3-2
3.2	The Toxic Substances Control Act Incinerator .....	3-7
3.3	K-1401 as it appeared in 2005.....	3-9
3.4	K-1401 footprint at the end of 2007.....	3-9
3.5	K-1420 as it appeared in 2005.....	3-10
3.6	K-1420 footprint after demolition .....	3-10
3.7	Remediation of soil at East Tennessee Technology Park.....	3-11
3.8	Loading truck with waste for disposal .....	3-12
3.9	Dose from Toxic Substances Control Act Incinerator operations.....	3-16
3.10	Toxic Substances Control Act (TSCA) Incinerator criteria pollutant emissions .....	3-17
3.11	Toxic Substances Control Act (TSCA) Incinerator hazardous air pollutant (HAP) emissions: metals .....	3-18
3.12	Toxic Substances Control Act (TSCA) Incinerator hazardous air pollutant emissions: others .....	3-19
3.13	Storm water sampling at East Tennessee Technology Park.....	3-22
3.14	Trend of the isotopic sum of fractions of derived concentration guides (DCGs) at K-1407-J/K-1435 Waste Water Treatment System .....	3-36
3.15	Waterways at East Tennessee Technology Park .....	3-41
3.16	Major storm water outfalls and Biological Monitoring and Abatement Plan locations on Mitchell Branch .....	3-42
3.17	ORNL scientist conducting toxicity tests.....	3-43
3.18	Collecting fish for bioaccumulation monitoring .....	3-44
3.19	Sunfish collected as part of the fish community study.....	3-46
3.20	High-volume ambient air sampler.....	3-47
3.21	Locations of ambient air monitoring stations at East Tennessee Technology Park .....	3-48
3.22	East Tennessee Technology Park ambient air monitoring, 2007: Arsenic.....	3-49
3.23	East Tennessee Technology Park ambient air monitoring, 2007: Beryllium .....	3-49
3.24	East Tennessee Technology Park ambient air monitoring, 2007: Cadmium.....	3-50
3.25	East Tennessee Technology Park ambient air monitoring, 2007: Total chromium .....	3-50
3.26	East Tennessee Technology Park ambient air monitoring, 2007: Lead .....	3-51
3.27	East Tennessee Technology Park ambient air monitoring, 2007: Total uranium.....	3-51

## Oak Ridge Reservation

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3.28	East Tennessee Technology Park ambient air sampling program radiochemistry analysis historical results.....	3-53
3.29	East Tennessee Technology Park Environmental Monitoring Program sampling locations for surface water.....	3-54
3.30	Surface water sampling at East Tennessee Technology Park.....	3-55
3.31	Percentage of derived concentration guides (DCGs) at surface water surveillance locations, 2007.....	3-55
3.32	K-1700 surface water trichloroethene results for 1996–2007.....	3-56
3.33	K-1700 surface water 1,2-dichloroethene results for 1996–2007.....	3-56
3.34	K-1700 surface water vinyl chloride results for 1997–2007.....	3-57
3.35	K-1700 surface water chromium results for 1996–2007.....	3-57
4.1	The ribbon cutting ceremony at the New Hope Center.....	4-3
4.2	Jack Case Center (upper) and New Hope Center.....	4-3
4.3	Y-12 environment, safety, and health policy.....	4-5
4.4	Progress on achieving environmental goals at Y-12.....	4-6
4.5	Cost avoidance from Y-12 pollution prevention activities.....	4-8
4.6	Y-12 pollution prevention initiatives.....	4-8
4.7	Y-12 New Hope Center.....	4-9
4.8	Y-12 Medical radiography goes digitally green.....	4-10
4.9	Y-12 waste coolant evaporator.....	4-11
4.10	Y-12 recycling results.....	4-12
4.11	Electrical (a), natural gas (b), and coal (c) consumption by month.....	4-14
4.12	The Run for Clean Air 67-member Y-12 team.....	4-16
4.13	Y-12 environmental accomplishments were recognized at the 2007 Tennessee Chamber of Commerce and Industry Awards.....	4-16
4.14	Aprell Patterson and Jan Jackson of B&W Y-12 and Jim Donnelly of the Y-12 Site Office accept the Department of Energy Pollution Prevention (P2) Star Awards.....	4-17
4.15	Y-12 History Exhibit Hall in New Hope Center.....	4-23
4.16	Reducing inventory of legacy mixed waste as part of the ORR Site Treatment Plan.....	4-27
4.17	Hazardous waste generation, 2003–2007.....	4-27
4.18	Total curies of uranium discharged from the Y-12 Complex to the atmosphere, 2003–2007.....	4-37
4.19	Total kilograms of uranium discharged from the Y-12 Complex to the atmosphere, 2003–2007.....	4-37
4.20	Y-12 Steam plant NO <sub>x</sub> emissions per ozone season.....	4-39
4.21	Location of ambient air monitoring stations at the Y-12 Complex.....	4-42
4.22	Temporal trends in mercury vapor concentration for the boundary mercury monitoring stations at the Y-12 National Security Complex, July 1986 to January 2008 (Plots 1 and 2) and January 1993 to January 2008 for AAS8 (plot 3).....	4-43
4.23	Major Y-12 Complex National Pollutant Discharge Elimination System (NPDES) outfalls and storm water monitoring locations.....	4-46
4.24	Surface water and sanitary sewer radiological sampling locations at the Y-12 Complex.....	4-50
4.25	Five-year trend of Y-12 Complex release of uranium to East Fork Poplar Creek.....	4-51
4.26	Surface Water Hydrological Information Support System (SWHISS) monitoring locations.....	4-53
4.27	Locations of biological monitoring sites on East Fork Poplar Creek in relation to the Oak Ridge Y-12 National Security Complex.....	4-56
4.28	Locations of biological monitoring reference sites in relation to the Oak Ridge Y-12 National Security Complex.....	4-57

4.29	Semiannual average mercury concentration in water and muscle fillets of redbreast sunfish and rock bass in East Fork Poplar Creek at EFK 23.4 through spring 2007 .....	4-58
4.30	Mean concentrations of PCBs in redbreast sunfish and rock bass muscle fillets in East Fork Poplar Creek at EFK 23.4 through spring 2007.....	4-58
4.31	Total taxonomic richness (mean number of taxa/sample) and total taxonomic richness of the Ephemeroptera, Plecoptera, and Trichoptera (EPT) (mean number of EPT taxa/sample) of the benthic macroinvertebrate communities sampled in spring from East Fork Poplar Creek and two reference sites, Brushy Fork (BFK 7.6) and Hinds Creek (HCK 20.6).....	4-59
4.32	Comparison of mean sensitive species richness (number of species) collected each year from 1985 through 2007 from four sites in East Fork Poplar Creek and a reference site (Brushy Fork).....	4-60
4.33	Known or potential contaminant sources for which groundwater monitoring was performed at the Y-12 Complex during CY 2007.....	4-61
4.34	Hydrogeologic regimes at the Y-12 Complex.....	4-62
4.35	Locations of Y-12 Complex perimeter/exit pathway well, spring, and surface water monitoring stations .....	4-65
4.36	Nitrate observed in groundwater at the Y-12 Complex, 2007.....	4-67
4.37	Summed volatile organic compounds observed in groundwater at the Y-12 Complex, 2007 .....	4-68
4.38	Gross alpha radioactivity observed in groundwater at the Y-12 Complex, 2007.....	4-69
4.39	Gross beta radioactivity observed in groundwater at the Y-12 Complex, 2007.....	4-70
4.40	Decreasing summed volatile organic compounds observed in exit pathway Well GW-722-17 near the New Hope Pond, 2007.....	4-71
4.41	Increasing volatile organic compounds observed in groundwater at Well GW-627 west and downgradient of the Bear Creek Burial Grounds, 2007 .....	4-75
5.1	Location of Oak Ridge National Laboratory within the Oak Ridge Reservation and its relationship to other local U.S. Department of Energy facilities .....	5-2
5.2	The Oak Ridge National Laboratory Multiprogram Research Facility—Leadership in Energy and Environmental Design (LEED) Gold.....	5-4
5.3	Old cafeteria at Oak Ridge National Laboratory .....	5-5
5.4	The relationship between EMS and the ISMS .....	5-7
5.5	The traffic roundabout at Oak Ridge National Laboratory .....	5-10
5.6	Oak Ridge National Laboratory recycling results .....	5-12
5.7	Example of reusable lead solder-scrap metal .....	5-13
5.8	Example of personal protective equipment sent for recycle.....	5-14
5.9	ORNL building energy reduction.....	5-14
5.10	Habitat for Humanity zero-energy house .....	5-16
5.11	Locations of major stacks (radiological emission points) at Oak Ridge National Laboratory .....	5-31
5.12	Total discharges of <sup>3</sup> H from Oak Ridge National Laboratory to the atmosphere, 2003–2007 .....	5-37
5.13	Total discharges of <sup>131</sup> I from Oak Ridge National Laboratory to the atmosphere, 2003–2007.....	5-38
5.14	Total discharges of <sup>41</sup> Ar and <sup>138</sup> Cs from Oak Ridge National Laboratory to the atmosphere, 2003–2007.....	5-38
5.15	Locations of ambient air monitoring stations at Oak Ridge National Laboratory .....	5-39
5.16	Oak Ridge National Laboratory surface water, National Pollutant Discharge Elimination System, and reference sampling locations.....	5-42

## Oak Ridge Reservation

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5.17	Radionuclides at Oak Ridge National Laboratory sampling sites having average concentrations greater than 4% of the relevant derived concentration guides in 2007 .....	5-49
5.18	Cesium-137 discharges at White Oak Dam, 2003–2007 .....	5-49
5.19	Gross alpha discharges at White Oak Dam, 2003–2007 .....	5-50
5.20	Gross beta discharges at White Oak Dam, 2003–2007 .....	5-50
5.21	Total radioactive strontium discharges at White Oak Dam, 2003–2007 .....	5-50
5.22	Tritium discharges at White Oak Dam, 2003–2007 .....	5-51
5.23	Total aqueous mercury concentrations at sites in White Oak Creek downstream from Oak Ridge National Laboratory, 1998–2007 .....	5-53
5.24	Mean total mercury concentrations ( $\mu\text{g/g}$ , $\pm$ SE) in fish muscle fillets collected from the White Oak Creek watershed, 1998–2007 .....	5-55
5.25	Mean total PCB concentrations ( $\mu\text{g/g}$ , $\pm$ SE) in largemouth bass and sunfish muscle fillets collected from the White Oak Creek watershed, 1998–2007 .....	5-55
5.26	Taxonomic richness (top) and richness of the pollution-intolerant taxa (bottom) of the benthic macroinvertebrate community in First Creek, April sampling periods, 1987–2007 .....	5-57
5.27	Taxonomic richness (top) and richness of the pollution-intolerant taxa (bottom) of the benthic macroinvertebrate community in Fifth Creek, April sampling periods, 1987–2007 .....	5-58
5.28	Taxonomic richness (top) and richness of the pollution-intolerant taxa (bottom) of the benthic macroinvertebrate communities in White Oak Creek, April sampling periods, 1987–2007 .....	5-59
5.29	Taxonomic richness (top) and richness of the pollution-intolerant taxa (bottom) of the benthic macroinvertebrate community in lower Melton Branch, April sampling periods, 1987–2007 .....	5-60
5.30	Density ( $\text{fish}/\text{m}^2$ ) estimates for fish in spring and fall samples from upper White Oak Creek and from a reference site on Mill Branch (MBK 1.6), 1985–2007 .....	5-61
5.31	Density ( $\text{fish}/\text{m}^2$ ) estimates for fish in spring and fall samples from First Creek, 1985–2007 .....	5-61
5.32	Density ( $\text{fish}/\text{m}^2$ ) estimates for fish in spring and fall samples from Fifth Creek, 1985–2006 .....	5-62
5.33	Density ( $\text{fish}/\text{m}^2$ ) estimates for fish in spring and fall samples from Melton Branch, 1985–2007 .....	5-62
5.34	Oak Ridge National Laboratory surface water sampling locations .....	5-64
5.35	ORNL sediment sampling locations .....	5-67
5.36	UT-Battelle exit pathway groundwater monitoring locations at Oak Ridge National Laboratory, 2007 .....	5-70
5.37	Groundwater monitoring locations at the High Flux Isotope Reactor, 2007 .....	5-72
5.38	Groundwater monitoring locations at the Spallation Neutron Source, 2007 .....	5-75
6.1	The ORR meteorological monitoring network .....	6-2
6.2	External gamma radiation monitoring locations on the ORR .....	6-4
6.3	Locations of ORR perimeter air monitoring stations .....	6-5
6.4	ORR surface water surveillance sampling locations .....	6-9
6.5	Hay sampling locations on the ORR, indicated by numbered areas .....	6-11
6.6	Milk sampling locations in the vicinity of the ORR .....	6-14
6.7	Fish sampling locations for the ORR .....	6-15
C.1	Wind rose for ETRP Meteorological Tower 1 for data taken at 10 m above ground level, 2007 .....	C-5

C.2	Wind rose for ETP Meteorological Tower 1 for data taken at 60 m above ground level, 2007 .....	C-6
C.3	Wind rose for ETP Meteorological Tower 7 for data taken at 10 m above ground level, 2007 .....	C-7
C.4	Wind rose for ETP Meteorological Tower 7 for data taken at 30 m above ground level, 2007 .....	C-8
C.5	Wind rose for ORNL Meteorological Tower 2 for data taken at 10 m above ground level, 2007 .....	C-9
C.6	Wind rose for ORNL Meteorological Tower 2 for data taken at 30 m above ground level, 2007 .....	C-10
C.7	Wind rose for ORNL Meteorological Tower 2 for data taken at 100 m above ground level, 2007 .....	C-11
C.8	Wind rose for ORNL Meteorological Tower 3 for data taken at 10 m above ground level, 2007 .....	C-12
C.9	Wind rose for ORNL Meteorological Tower 3 for data taken at 30 m above ground level, 2007 .....	C-13
C.10	Wind rose for ORNL Meteorological Tower 4 for data taken at 10 m above ground level, 2007 .....	C-14
C.11	Wind rose for ORNL Meteorological Tower 4 for data taken at 30 m above ground level, 2007 .....	C-15
C.12	Wind rose for ORNL Meteorological Tower 10 for data taken at 10 m above ground level, 2007 .....	C-16
C.13	Wind rose for ORNL Meteorological Tower 6 for data taken at 10 m above ground level, 2007 .....	C-17
C.14	Wind rose for ORNL Meteorological Tower 6 for data taken at 30 m above ground level, 2007 .....	C-18
C.15	Wind rose for Y-12 Meteorological Tower 6 for data taken at 60 m above ground level, 2007 .....	C-19
C.16	Wind rose for Y-12 Meteorological Tower 9 for data taken at 15 m above ground level, 2007 .....	C-20
C.17	Wind rose for Y-12 Meteorological Tower 9 for data taken at 33 m above ground level, 2007 .....	C-21
C.18	Wind rose for ORNL Meteorological Tower 2 for data taken at 30 m above ground level during light precipitation events (trace–0.10 in.), 1998–2007 .....	C-22
C.19	Wind rose for ORNL Meteorological Tower 2 for data taken at 30 m above ground level during moderate precipitation events (0.10–0.30 in.), 1998–2007 .....	C-23
C.20	Wind rose for ORNL Meteorological Tower 2 for data taken at 30 m above ground level during heavy precipitation events (> 0.30 in.), 1998–2007 .....	C-24
C.21	Wind rose for ORNL Meteorological Tower 2 for data taken at 30 m above ground level during all precipitation events, 1998–2007 .....	C-25
C.22	Wind rose for ORNL Meteorological Tower 2, stability class A, for data taken at 30 m above ground level, 2007 .....	C-26
C.23	Wind rose for ORNL Meteorological Tower 2, stability class B, for data taken at 30 m above ground level, 2007 .....	C-27
C.24	Wind rose for ORNL Meteorological Tower 2, stability class C, for data taken at 30 m above ground level, 2007 .....	C-28
C.25	Wind rose for ORNL Meteorological Tower 2, stability class D, for data taken at 30 m above ground level, 2007 .....	C-29
C.26	Wind rose for ORNL Meteorological Tower 2, stability class E, for data taken at 30 m above ground level, 2007 .....	C-30
C.27	Wind rose for ORNL Meteorological Tower 2, stability class F, for data taken at 30 m above ground level, 2007 .....	C-31

**Oak Ridge Reservation**

---

C.28	Wind rose for ORNL Meteorological Tower 2, stability class G, for data taken at 30 m above ground level, 2007 .....	C-32
F.1	The hydrogen atom and its isotopes .....	F-3
F.2	Examples of radiation pathways.....	F-6



# Tables

Table		Page
1.1	Animal species of concern reported from the Oak Ridge Reservation .....	1-8
1.2	Vascular plant species listed by state or federal agencies, 2007 .....	1-10
2.1	Applicable laws/regulations and compliance status .....	2-1
2.2	Summary of permits as of December 2007 .....	2-5
2.3	Summary of environmental audits and assessments conducted at ORR, 2007 .....	2-7
3.1	Major regulatory programs at East Tennessee Technology Park .....	3-3
3.2	Permit actions at East Tennessee Technology Park .....	3-6
3.3	Oversight and assessment at East Tennessee Technology Park (ETTP) in 2007 .....	3-6
3.4	Toxic Substances Control Act Incinerator allowable and actual emissions .....	3-20
3.5	Group IV storm water outfalls .....	3-23
3.6	Group III storm water outfalls .....	3-24
3.7	Group II storm water outfalls .....	3-24
3.8	Group I storm water outfalls .....	3-25
3.9	Project quantitation levels, screening levels, and reference standards for storm water monitoring at East Tennessee Technology Park .....	3-26
3.10	Storm water outfall samples, East Tennessee Technology Park .....	3-28
3.11	Results of radiological monitoring performed in conjunction with remedial action and decontamination and decommissioning activities (pCi/L) .....	3-29
3.12	Storm water sampling for radiological discharges, 2007 .....	3-30
3.13	Radionuclides released to off-site surface waters from the East Tennessee Technology Park storm water system, 2007 (Ci) .....	3-30
3.14	Storm water sampling results exceeding screening levels for radiological discharges, 2007 (pCi/L) .....	3-31
3.15	Manual grab samples and grab-by-compositor samples collected in 2007 in support of the NPDES permit renewal application .....	3-32
3.16	Individual grab samples collected in 2007 in support of the NPDES permit renewal application .....	3-32
3.17	Dry weather sampling of non-storm water discharges .....	3-33
3.18	NPDES permit No. TN0074225 outfall 001 monitoring requirements .....	3-35
3.19	Isotopic discharges from the Central Neutralization Facility/ Wastewater Treatment System, 2007 .....	3-36
3.20	National Pollutant Discharge Elimination System noncompliances at East Tennessee Technology Park, 2007 .....	3-37
3.21	Mitchell Branch and associated storm water outfall toxicity test results, April 2007 .....	3-43
3.22	Mitchell Branch and associated storm water outfall toxicity test results, October–November 2007 .....	3-43
3.23	Average polychlorinated biophenyl (PCB) concentrations in biota, 2007 .....	3-45
3.24	2007 Total uranium in ambient air by inductively coupled plasma analysis at East Tennessee Technology Park .....	3-52
3.25	2007 Radionuclides in ambient air at East Tennessee Technology Park .....	3-52

## Oak Ridge Reservation

---

4.1	Y-12 Complex environmental permits .....	4-20
4.2	RCRA postclosure status for former treatment, storage, and disposal units on the ORR.....	4-29
4.3	EPCRA Sect. 313 toxic chemical release and off-site transfer summary for the Y-12 Complex, 2007 .....	4-31
4.4	Summary of external regulatory audits and reviews for 2007 .....	4-33
4.5	Actual vs allowable air emissions from the Oak Ridge Y-12 Steam Plant, 2007 .....	4-38
4.6	Periods of excess emissions and out-of-service conditions for Y-12 Steam Plant east and west opacity monitors, 2007.....	4-39
4.7	Summary of 2007 data for the Oak Ridge Y-12 National Security Complex mercury in ambient air monitoring program .....	4-42
4.8	NPDES compliance monitoring requirements and record for the Y-12 Complex, January through December 2007.....	4-47
4.9	Radiological parameters monitored at the Y-12 Complex in 2007 .....	4-49
4.10	Summary of Y-12 Complex Radiological Monitoring Plan Sample Requirements.....	4-50
4.11	Release of uranium from the Y-12 Complex to the off-site environment as a liquid effluent, 2003–2007 .....	4-51
4.12	Y-12 Complex Discharge Point SS6, Sanitary Sewer Station 6 January through December 2007.....	4-54
4.13	Y-12 Complex Biomonitoring Program summary information for outfalls 200, 135, and 125 for 2007 .....	4-55
4.14	Summary of CY 2007 groundwater monitoring at the Y-12 Complex .....	4-64
4.15	History of waste management units and underground storage tanks included in CY 2007 groundwater monitoring activities, Upper East Fork Poplar Creek Hydrogeologic Regime .....	4-66
4.16	History of waste management units included in CY 2007 groundwater monitoring activities, Bear Creek Hydrogeologic Regime .....	4-73
4.17	Nitrate and uranium concentrations in Bear Creek .....	4-74
4.18	History of waste management units included in CY 2007 groundwater monitoring activities, Chestnut Ridge Hydrogeologic Regime.....	4-77
5.1	New Oak Ridge National Laboratory facilities constructed since 2000 .....	5-3
5.2	Levels and sources of funding for ORNL campus modernization .....	5-3
5.3	UT-Battelle policy for the Oak Ridge National Laboratory.....	5-6
5.4	Metering status .....	5-15
5.5	Buildings to receive advanced meters .....	5-15
5.6	Oak Ridge National Laboratory environmental permits, 2007 .....	5-19
5.7	Summary of environmental audits, assessments and regulatory visits conducted at Oak Ridge National Laboratory, 2007 .....	5-22
5.8	National Environmental Policy Act (NEPA) activities during 2007.....	5-22
5.9	Oak Ridge National Laboratory (ORNL) Resource Conservation and Recovery Act operating permits, 2007.....	5-25
5.10	Oak Ridge National Laboratory underground storage tank (UST) status, 2007 .....	5-26
5.11	Descriptions of the main parts of the Emergency Planning and Community Right-to-Know Act (EPCRA) .....	5-28
5.12	Emergency Planning and Community Right-to-Know Act Sect. 313 toxic chemical release and off-site transfer summary for Oak Ridge National Laboratory, 2007 .....	5-29
5.13	Actual vs. allowable air emissions from Oak Ridge National Laboratory steam production, 2007.....	5-29
5.14	Radiological airborne emissions (Ci), Oak Ridge National Laboratory sources, 2007.....	5-33
5.15	Radionuclide concentrations (pCi/mL) measured at Oak Ridge National Laboratory perimeter air monitoring stations, 2007.....	5-40

5.16	National Pollutant Discharge Elimination System (NPDES) compliance at Oak Ridge National Laboratory, 2007 .....	5-43
5.17	National Pollutant Discharge Elimination System (NPDES) compliance at Spallation Neutron Source, 2007.....	5-45
5.18	Oak Ridge National Laboratory National Pollutant Discharge Elimination System Radiological Monitoring Plan .....	5-47
5.19	Toxicity test results of Oak Ridge National Laboratory wastewaters, 2007.....	5-52
5.20	Total mercury and polychlorinated biphenyl (Aroclor 1254 + 1260) concentrations in fish (mean ± SE; range in parentheses) from sites in White Oak Creek and a reference stream, Hinds Creek, April/May 2007.....	5-54
5.21	Oak Ridge National Laboratory surface water sampling locations, frequencies, and parameters, 2007.....	5-65
6.1	Oak Ridge Reservation meteorological towers .....	6-1
6.2	External gamma averages for the ORR, 2007 .....	6-4
6.3	Average radionuclide concentrations at ORR perimeter air monitoring stations, 2007.....	6-6
6.4	Uranium concentrations in ambient air on the ORR .....	6-8
6.5	ORR surface water sampling locations, frequencies, and parameters, 2007.....	6-10
6.6	Concentrations of radionuclides detected in hay, 2007 (pCi/kg) .....	6-12
6.7	Concentrations of radionuclides detected in vegetables, 2007 (pCi/kg) .....	6-12
6.8	Concentration of radionuclides detected in raw milk, 2007.....	6-14
7.1	Emission point parameters and receptor locations used in the dose calculations.....	7-3
7.2	Summary of Oak Ridge Reservation meteorological towers, sampling heights, and sources .....	7-4
7.3	Calculated radiation doses to maximally exposed off-site individuals from airborne releases, 2007 .....	7-5
7.4	Calculated collective effective doses from airborne releases, 2007 .....	7-5
7.5	Hypothetical effective doses from living at the Oak Ridge Reservation and the East Tennessee Technology Park ambient-air monitoring stations, 2007.....	7-6
7.6	Summary of annual maximum individual (mrem) and collective (person-rem) effective doses (EDs) from waterborne radionuclides .....	7-10
7.7	Summary of maximum potential radiation effective dose to an adult and locations of the maximum exposures, 2007 .....	7-17
7.8	Trends in effective dose (mrem) for selected pathways .....	7-18
7.9	Chemical hazard quotients and estimated risks for drinking water, 2007.....	7-19
7.10	Chemical hazard quotients and estimated risks for carcinogens in fish, 2007 .....	7-20
C.1	Climate normals (1978–2007) and extremes (1948–2007) for Oak Ridge, Tennessee (Town Site), with 2007 comparisons .....	C-33
C.2	Decadal climate change (1978–2007) for Oak Ridge, Tennessee (Town Site) with 2007 comparisons.....	C-34
C.3	Hourly freeze data for Oak Ridge, Tennessee, 1985–2007.....	C-35
D.1	Reference standards for radionuclides in water.....	D-3
D.2	Reference standards for chemicals and metals in water .....	D-4
F.1	Radionuclide half-lives.....	F-4
F.2	Comparison and description of various dose levels .....	F-8

**Oak Ridge Reservation**

---

F.3	Summary of annual maximum individual effective dose equivalents from waterborne radionuclides (mrem).....	F-12
G.1	Chemical reference doses and slope factors used in drinking water and fish intake analysis .....	G-5

# Acronyms and Abbreviations

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AAS	ambient air station
ACGIH	American Conference of Governmental Industrial Hygienists
ALARA	as low as reasonably achievable
AM	action memorandum
AMSE	American Museum of Science and Energy
AMO	Atlantic Multidecadal Oscillation
ANSI	American National Standards Institute, Inc.
ARAP	aquatic resource alteration permit
ASER	annual site environmental report
ASTM	American Society for Testing and Materials
B&W Y-12	B&W Technical Services Y-12
BCG	biota concentration guide
BCK	Bear Creek kilometer
BESC	BioEnergy Science Center
BFK	Brushy Fork kilometer
BJC	Bechtel Jacobs Company LLC
BMAP	Biological Monitoring and Abatement Program, Plan
BSTS	Big Spring Treatment System
CAA	Clean Air Act
CBMH	catch basin manhole
CEMS	continuous emission monitoring system
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	<i>Code of Federal Regulations</i>
CH	contact-handled
CMTS	Central Mercury Treatment System
CNF	Central Neutralization Facility
CRK	Clinch River kilometer
CROET	Community Reuse Organization of East Tennessee
CRT	cathode ray tube
CWA	Clean Water Act
CX	categorical exclusion
CY	calendar year
CYRTF	Coal Yard Runoff Treatment Facility
D&D	decontamination and decommissioning
DCG	derived concentration guide
DOE	U.S. Department of Energy
DOE-EM	DOE Office of Environmental Management
DOE-ORO	DOE Oak Ridge Office
dps	disintegrations per second
DWI	David Witherspoon, Inc.

## Oak Ridge Reservation

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EC&P	Environmental Compliance and Protection
ECD	Environmental Compliance Department
ECR	environmental compliance representative
ED	effective dose
EDE	effective dose equivalent
EFD	east foundation drain
EFK	East Fork Poplar Creek kilometer
EM	(DOE Office of) Environmental Management
EMC	event mean concentration
EMEF	Environmental Management and Enrichment Facilities
EMMIS	Environmental Monitoring Management Information System
EMS	environmental management system
EMWMF	Environmental Monitoring Waste Management Facility
ENSO	El Niño Southern Oscillation
EO	environmental officer
EPA	U.S. Environmental Protection Agency
EPACT	Energy Policy Act
EPCRA	Emergency Planning and Community Right-to-Know Act
EPO	environmental protection officer
EPT	Ephemeroptera, Plecoptera, and Trichoptera (taxa)
EP&WSD	Environmental Protection and Waste Services Division
ER	Environmental Restoration
ES&H	Environment, Safety, and Health
ESCO	energy savings contractor
ESPC	energy savings performance contract
ESS	Environmental Surveillance System
ETCFC	East Tennessee Clean Fuel Coalition
ETTP	East Tennessee Technology Park
FCK	First Creek kilometer
FFA	Federal Facility Agreement
FFK	Fifth Creek kilometer
FONSI	finding of no significant impact
FY	fiscal year
GET	General Employee Training
GWQAR	Groundwater Quality Assurance Report
HCK	Hinds Creek kilometer
HFIR	High Flux Isotope Reactor
HQ	hazard quotient
HSWA	Hazardous Solid Waste Amendment
IC <sub>25</sub>	inhibition concentration
ICK	Ish Creek kilometer
ICP	inductively coupled plasma
ICP-MS	inductively coupled plasma mass spectrometry
ID	identification (number)
IDMS	Integrated Document Management System
IFDP	Integrated Facility Disposition Project
ISM	Integrated Safety Management
ISMS	Integrated Safety Management System

ISO	International Organization for Standardization
ITER	International Thermonuclear Experimental Reactor
JIBS	Joint Institute for Biological Sciences
JTU	Jackson turbidity unit
LANL	Los Alamos National Laboratory
LC <sub>50</sub>	concentration of an aqueous sample lethal to 50% of test organisms in a given time span
LCD	liquid crystal display
LEED®	Leadership in Energy and Environmental Design
LIMS	Laboratory Information Management System
LLW	low-level radioactive waste
LOC	Local Oversight Committee
MACT	Maximum Achievable Control Technology
MBK	Mill Branch kilometer
MCCBK	McCoy Branch kilometer
MDA	minimum detectable activity
MEK	Melton Branch kilometer
MIK	Mitchell Branch kilometer
MOA	memorandum of agreement
MRF	Multiprogram Research Facility
MSDS	material safety data sheet
MSRE	Molten Salt Reactor Experiment
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NESHAP	National Emission Standards for Hazardous Air Pollutants
NHPA	National Historic Preservation Act
NIOSH	National Institute for Occupational Safety and Health
NNSA	National Nuclear Security Administration
NOAA	National Oceanic and Atmospheric Administration
NOEC	no-observed-effect concentration
NOV	notice of violation
NPDES	National Pollutant Discharge Elimination System
NPL	National Priorities List
NSF-ISR	NSF International Registrations, Inc.
NSPS	New Source Performance Standard
NTRC	National Transportation Research Center
NTS	Nevada Test Site
NTU	nephelometric turbidity unit
NWTK	Northwest Tributary kilometer
ODS	ozone-depleting substance
OHS	Occupational Health Services
ORAU	Oak Ridge Associated Universities
OREIS	Oak Ridge Environmental Information System
ORGDP	Oak Ridge Gaseous Diffusion Plant
ORISE	Oak Ridge Institute for Science and Education
ORNL	Oak Ridge National Laboratory
ORO	DOE Oak Ridge Office

## Oak Ridge Reservation

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ORR	Oak Ridge Reservation
ORR PCB FFCA	Oak Ridge Reservation Polychlorinated Biphenyl Federal Facilities Compliance Agreement
ORSSAB	Oak Ridge Site Specific Advisory Board
ORSTP	Oak Ridge Science and Technology Park
OS	DOE Office of Science
OST	Office of Secure Transportation
P2	pollution prevention
PAM	perimeter air monitoring
PCB	polychlorinated biphenyl
PCCR	phased construction completion report
PCPA	postclosure permit application
PDO	Pacific Decadal Oscillation
PIDAS	Perimeter Intrusion Detection Assessment System
PM <sub>10</sub>	particulate matter with an aerodynamic diameter less than or equal to 10 micrometers
PM <sub>2.5</sub>	particulate matter with an aerodynamic diameter less than or equal to 2.5 micrometers
PPE	personal protection equipment
PWD	process waste drain
PWTC	Process Waste Treatment Complex
QA	quality assurance
QC	quality control
QE	quality evaluation
R&D	research and development
RAC	Radiological Assessment Corporation
Rad NESHAP	National Emission Standards for Hazardous Air Pollutants for Radionuclides
RATA	Relative Accuracy Test Audit
RCK	Raccoon Creek kilometer
RCRA	Resource Conservation and Recovery Act
RfD	reference dose
RH	remote-handled
RI	species of regional importance
ROD	record of decision
RQ	reportable quantity
RRD	Research Reactors Division
SAP	Sampling and Analysis Plan
SARA	Superfund Amendments and Reauthorization Act
SBMS	Standards-Based Management System
SDWA	Safe Drinking Water Act
SE	standard error
SF	slope factor
SHPO	state historic preservation officer
SIP	State Implementation Plan
SMS	Safety Management System
SNS	Spallation Neutron Source
SPCC	Spill Prevention, Control, and Countermeasures Plan
SPEIS	Supplemental Programmatic Environmental Impact Statement
SPWTF	Steam Plant Wastewater Treatment Facility



STP	Sewage Treatment Plant
SWEIS	sitewide environmental impact statement
SWHISS	Surface Water Hydrological Information Support System
SWMU	solid waste management unit
SWP3	Storm Water Pollution Prevention Program
SWSA	solid waste storage area
TCE	trichloroethene
TDEC	Tennessee Department of Environment and Conservation
TRC	total residual chlorine
TRU	transuranic
TSCA	Toxic Substances Control Act
TSS	total suspended solids
TVA	Tennessee Valley Authority
TWA	time-weighted average
TWPC	Transuranic Waste-Processing Center
TWRA	Tennessee Wildlife Resources Agency
UST	underground storage tank
UT	University of Tennessee
VOC	volatile organic compound
WAG	waste area grouping
WBK	Walker Branch kilometer
WCK	White Oak Creek kilometer
WOC	White Oak Creek
WOD	White Oak Dam
WOL	White Oak Lake
WQC	Water quality criteria
WRRP	Water Resources Restoration Program
WSR	Waste Services Representative
WWTS	Waste Water Treatment System
Y-12 Complex	Y-12 National Security Complex
YSO	Y-12 Site Office



# Units of Measure and Conversion Factors

## Units of measure and their abbreviations

acre	acre	milliliter	mL
becquerel	Bq	millimeter	mm
centimeter	cm	million	M
curie	Ci	millirad	mrad
day	day	millirem	mrem
degrees Celsius	°C	millisievert	mSv
degrees Fahrenheit	°F	minute	min
foot	ft	nephelometric turbidity unit	NTU
gallon	gal	parts per billion	ppb
gallons per minute	gal/min	parts per million	ppm
gram	g	parts per trillion	ppt
hectare	ha	picocurie	pCi
hour	h	pound	lb
kilogram	kg	pounds per square inch	psi
kilometer	km	quart	qt
kilowatt	kW	rad	rad
liter	L	roentgen	R
megawatt	MW	roentgen equivalent man	rem
meter	m	second	s
metric ton	MT	sievert	Sv
microcurie	μCi	standard unit (pH)	SU
microgram	μg	ton, short (2000 lb)	ton
micrometer	μm	yard	yd
millicurie	mCi	year	year
milligram	mg		

### Quantitative prefixes

tera	$\times 10^{12}$	pico	$\times 10^{-12}$
giga	$\times 10^9$	nano	$\times 10^{-9}$
mega	$\times 10^6$	micro	$\times 10^{-6}$
kilo	$\times 10^3$	milli	$\times 10^{-3}$
hecto	$\times 10^2$	centi	$\times 10^{-2}$
deka	$\times 10^1$	deci	$\times 10^{-1}$



**Unit conversions**

Unit	Conversion	Equivalent	Unit	Conversion	Equivalent
<b>Length</b>					
in.	× 2.54	cm	cm	× 0.394	in.
ft	× 0.305	m	m	× 3.28	ft
mile	× 1.61	km	km	× 0.621	mile
<b>Area</b>					
acre	× 0.405	ha	ha	× 2.47	acre
ft <sup>2</sup>	× 0.093	m <sup>2</sup>	m <sup>2</sup>	× 10.764	ft <sup>2</sup>
mile <sup>2</sup>	× 2.59	km <sup>2</sup>	km <sup>2</sup>	× 0.386	mile <sup>2</sup>
<b>Volume</b>					
ft <sup>3</sup>	× 0.028	m <sup>3</sup>	m <sup>3</sup>	× 35.31	ft <sup>3</sup>
qt (U.S. liquid)	× 0.946	L	L	× 1.057	qt (U.S. liquid)
gal	× 3.7854118	L	L	× 0.264172051	gal
<b>Concentration</b>					
ppm	× 1	mg/L	mg/L	× 1	ppm
<b>Weight</b>					
lb	× 0.4536	kg	kg	× 2.205	lb
ton	× 907.1847	kg	kg	× 0.00110231131	ton
<b>Temperature</b>					
°C	F = (9/5) C + 32	°F	°F	C = (5/9) (F - 32)	°C
<b>Activity</b>					
Bq	× 2.7 × 10 <sup>-11</sup>	Ci	Ci	× 3.7 × 10 <sup>10</sup>	Bq
Bq	× 27	pCi	pCi	× 0.037	Bq
mSv	× 100	mrem	mrem	× 0.01	mSv
Sv	× 100	rem	rem	× 0.01	Sv
nCi	× 1000	pCi	pCi	× 0.001	nCi
mCi/km <sup>2</sup>	× 1	nCi/m <sup>2</sup>	nCi/m <sup>2</sup>	× 1	mCi/km <sup>2</sup>
dpm/L	× 0.45 × 10 <sup>9</sup>	μCi/cm <sup>3</sup>	μCi/cm <sup>3</sup>	× 2.22 × 10 <sup>9</sup>	dpm/L
pCi/L	× 10 <sup>-9</sup>	μCi/mL	μCi/mL	× 10 <sup>9</sup>	pCi/L
pCi/m <sup>3</sup>	× 10 <sup>-12</sup>	μCi/cm <sup>3</sup>	μCi/cm <sup>3</sup>	× 10 <sup>12</sup>	pCi/m <sup>3</sup>



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