

Final Environmental Impact Statement

Design, Construction and Operation of
One or More Pilot Test Facilities for
Assembled Chemical Weapons
Destruction Technologies at
One or More Sites

April 2002

**Program Manager
Assembled Chemical
Weapons Assessment**

Anniston Army Depot, Alabama

Pine Bluff Arsenal, Arkansas

Blue Grass Army Depot, Kentucky

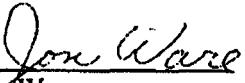
Pueblo Chemical Depot, Colorado

APPROVAL AUTHORITY: U.S. Department of Defense, Program Manager
Assembled Chemical Weapons Assessment

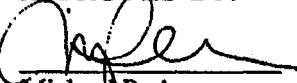
DOCUMENT DESIGNATION: Final Environmental Impact Statement (FEIS)

AFFECTED JURISDICTIONS: State of Alabama, State of Arkansas, State of Colorado, and Commonwealth of Kentucky.

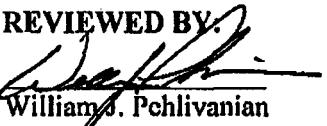
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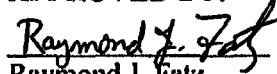
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COVER SHEET

LEAD AGENCY: U.S. Department of Defense (DOD), Program Manager Assembled Chemical Weapons Assessment (PMACWA)

COOPERATING AGENCIES: None

TITLE OF PROPOSED ACTION: Design, Construction and Operation of One or More Pilot Test Facilities for Assembled Chemical Weapons Destruction Technologies at One or More Sites

POINT OF CONTACT: Information concerning this environmental impact statement can be obtained by calling 1-888-482-4312 or by writing to PMACWA, Attn: AMSSB-PM-ACWA, 5183 Blackhawk Rd., Aberdeen Proving Ground, MD 21010-5424.

APPROVAL AUTHORITY: U.S. Department of Defense, Program Manager Assembled Chemical Weapons Assessment

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ABSTRACT: The U.S. Congress established the ACWA Program as part of the *Omnibus Consolidated Appropriations Act* of 1997 (Public Law [P.L.] 104-208). This authorizing legislation instructed DOD to “demonstrate not less than two alternatives to the baseline incineration process for the demilitarization of assembled chemical munitions.” The primary purpose of ACWA is to pilot test alternative systems for destroying assembled chemical weapons (ACWs). The actual destruction of chemical munitions is not the primary function of the ACWA Program. The Program Manager for Chemical Demilitarization (PMCD), as mandated under P.L. 99-145, is charged with the systematic construction and operation of facilities or processes to reduce the chemical weapons stockpile.

This EIS analyzes the potential environmental impacts of a proposed action to pilot test one or more alternative systems for the destruction of ACWs at one or more alternative Army installations that are storing ACWs. The four installations included in this EIS are Anniston Army Depot (ANAD) in Anniston, Alabama; Pine Bluff Arsenal (PBA) in Pine Bluff, Arkansas; Pueblo Chemical Depot (PCD) in Pueblo, Colorado; and Blue Grass Army Depot (BGAD) in Richmond, Kentucky. The four destruction systems that are assessed in the document are those that successfully completed the initial demonstration testing. The systems are (1) neutralization followed by biological treatment (Neut/Bio), (2) neutralization followed by supercritical water oxidation (Neut/SCWO), (3) neutralization followed by gas-phase chemical reduction and transpiring wall supercritical water oxidation (Neut/GPCR/TW-SCWO), and (4) electrochemical oxidation (Elchem Ox). The no action alternative is also assessed. The preferred alternative is to pilot test ACWA technologies at one or more locations. The substantive impact areas that are considered include the following broad categories: land use, infrastructure, waste management, air quality, noise, human health and safety, visual resources, water use and quality, soils, biological resources, cultural resources, socioeconomic, environmental justice, accidents, agriculture, and cumulative effects. In addition to facility construction and operation, decommissioning and closure are also addressed.

CONTENTS

COVER SHEET	iii
NOTATION	xlv
SUMMARY	S-1
S.1 Introduction	S-1
S.1.1 Background	S-1
S.1.2 Purpose and Need.....	S-1
S.1.3 Scope of the EIS	S-2
S.1.4 Public Involvement	S-4
S.2 Proposed Action	S-6
S.3 Description of Alternative Destruction Systems and No Action	S-6
S.3.1 Neutralization Followed by Biological Treatment.....	S-8
S.3.2 Neutralization Followed by Supercritical Water Oxidation.....	S-9
S.3.3 Neutralization Followed by Gas-Phase Chemical Reduction/Transpiring Wall Supercritical Water Oxidation.....	S-10
S.3.4 Electrochemical Oxidation.....	S-12
S.3.5 No Action Alternative	S-13
S.4 Anniston Army Depot	S-14
S.4.1 Affected Environment	S-14
S.4.2 Consequences of the Proposed Action and No Action	S-17
S.5 Pine Bluff Arsenal.....	S-28
S.5.1 Affected Environment	S-28
S.5.2 Consequences of the Proposed Action and No Action	S-32
S.6 Pueblo Chemical Depot.....	S-41
S.6.1 Affected Environment	S-41
S.6.2 Consequences of the Proposed Action and No Action	S-44
S.7 Blue Grass Army Depot	S-53
S.7.1 Affected Environment	S-53
S.7.2 Consequences of the Proposed Action and No Action	S-56
S.8 Summary and Comparison of Accidents.....	S-66
S.9 Summary and Comparison of Cumulative Impacts	S-66
S.10 Preferred Alternative	S-84
S.11 Closure and Decommissioning.....	S-85
S.12 References	S-86
1 PURPOSE AND NEED	1-1
1.1 Introduction	1-1
1.2 Purpose and Need.....	1-2
1.3 Scope of This Environmental Impact Statement.....	1-3

CONTENTS (Cont.)

1.4	Public Involvement	1-5
1.4.1	General Public Involvement.....	1-5
1.4.2	ACWA Dialogue	1-5
1.4.3	Notice of Intent.....	1-5
1.4.4	Scoping Process.....	1-6
1.4.5	Draft Environmental Impact Statement.....	1-8
1.4.6	Final Environmental Impact Statement.....	1-8
1.4.7	Record of Decision.....	1-8
1.5	Related NEPA Reviews and Supporting Studies	1-9
1.5.1	PMCD Programmatic EIS	1-9
1.5.2	Anniston Army Depot	1-9
1.5.3	Pine Bluff Arsenal	1-9
1.5.4	Pueblo Chemical Depot.....	1-10
1.5.5	Blue Grass Army Depot	1-10
1.5.6	Technology Testing.....	1-10
1.6	Organization of this Environmental Impact Statement.....	1-11
1.7	References For Chapter 1	1-11
2	PROPOSED ACTION AND ALTERNATIVES.....	2-1
2.1	Introduction	2-1
2.2	Proposed Action	2-1
2.3	Installations	2-3
2.4	Alternative ACW Destruction Systems.....	2-4
2.4.1	Neutralization Followed by Biological Treatment.....	2-5
2.4.2	Neutralization Followed by Supercritical Water Oxidation.....	2-5
2.4.3	Neutralization Followed by Gas-Phase Chemical Reduction and Transpiring Wall Supercritical Water Oxidation	2-5
2.4.4	Electrochemical Oxidation.....	2-6
2.5	No Action Alternative	2-6
2.5.1	Destruction of ACWs at Pine Bluff Arsenal and Anniston Army Depot	2-6
2.5.2	Pueblo Chemical Depot and Blue Grass Army Depot	2-7
2.6	Alternatives Considered But Not Analyzed in Detail	2-7
2.6.1	Other Technologies	2-7
2.6.2	Transportation of ACWs to Another Site for Pilot Tests	2-8
2.7	Summary Comparison of Alternatives	2-8
2.8	Preferred Alternative	2-8
2.9	References for Chapter 2	2-9
3	DESCRIPTION OF ALTERNATIVE SYSTEMS	3-1
3.1	Introduction	3-1
3.1.1	Characteristics of Assembled Chemical Weapons.....	3-3

CONTENTS (Cont.)

3.1.2	Processes Required for ACW Destruction	3-5
3.1.3	Containment Structure and Facility Size.....	3-7
3.2	ACWA Systems	3-8
3.2.1	Neutralization/Biotreatment System	3-8
3.2.2	Neutralization/Supercritical Water Oxidation System.....	3-9
3.2.3	Neutralization/Gas-Phase Chemical Reduction/Transpiring Wall Supercritical Water Oxidation System.....	3-10
3.2.4	Electrochemical Oxidation System	3-11
3.3	ACWA Processes	3-11
3.3.1	Removal and Movement from Storage	3-11
3.3.2	Disassembly Process	3-12
3.3.3	Pretreatment Process	3-14
3.3.4	Neutralization Process.....	3-14
3.3.5	Biotreatment Process.....	3-14
3.3.6	Supercritical Water Oxidation Process	3-15
3.3.7	Electrochemical Oxidation Process.....	3-15
3.3.8	Thermal Treatment Processes	3-16
3.3.9	Pollution Abatement and Waste Handling Processes	3-16
3.4	Inputs and Outputs	3-16
3.4.1	Resource Requirements.....	3-16
3.4.2	Routine Emissions and Wastes	3-17
3.5	No Action Alternative	3-23
3.5.1	Storage.....	3-24
3.5.2	Baseline Incineration.....	3-24
3.6	References for Chapter 3	3-26
4	ANNISTON ARMY DEPOT, ALABAMA	4-1
4.1	Introduction	4-1
4.1.1	Potential Sites and Facility Locations	4-1
4.1.2	Munitions Inventory	4-5
4.2	Land Use	4-6
4.2.1	Installation History and Uses	4-6
4.2.2	Current and Planned On-Post Land Use	4-7
4.2.3	Current and Planned Off-Post Land Use.....	4-10
4.2.4	Impacts on Land Use.....	4-10
4.3	Infrastructure	4-11
4.3.1	Electric Power	4-12
4.3.2	Natural Gas.....	4-14
4.3.3	Water	4-15
4.3.4	Communications	4-17
4.4	Waste Management	4-18
4.4.1	Current Waste Generation and Management	4-18

CONTENTS (Cont.)

4.4.2	ACWA Pilot Test Facility Waste Generation and Treatment Requirements	4-20
4.4.3	Impacts of the Proposed Action	4-21
4.4.4	Impacts of No Action	4-28
4.5	Air Quality — Criteria Pollutants	4-29
4.5.1	Current Meteorology, Emissions, and Air Quality	4-31
4.5.2	ACWA Facility Emissions	4-39
4.5.3	Impacts of the Proposed Action	4-42
4.5.4	Impacts of No Action	4-49
4.6	Air Quality — Toxic Air Pollutants	4-50
4.6.1	Current Emissions and Air Quality	4-50
4.6.2	ACWA Facility Emissions	4-50
4.6.3	Impacts of the Proposed Action	4-61
4.6.4	Impacts of No Action	4-66
4.7	Human Health and Safety — Routine Operations	4-67
4.7.1	Current Environment	4-68
4.7.2	Impacts of the Proposed Action	4-71
4.7.3	Impacts of No Action	4-79
4.7.4	Impacts from Transportation	4-80
4.8	Noise	4-80
4.8.1	Current Environment	4-83
4.8.2	Noise Sources from the ACWA Pilot Test Systems	4-83
4.8.3	Impacts of the Proposed Action	4-85
4.8.4	Impacts of No Action	4-86
4.9	Visual Resources	4-86
4.9.1	Current Environment	4-86
4.9.2	Site-Specific Factors	4-87
4.9.3	Impacts of the Proposed Action	4-88
4.9.4	Impacts of No Action	4-88
4.10	Geology and Soils	4-88
4.10.1	Current Environment	4-88
4.10.2	Site-Specific Factors	4-90
4.10.3	Impacts of the Proposed Action	4-91
4.10.4	Impacts of No Action	4-93
4.11	Groundwater	4-94
4.11.1	Current Environment	4-94
4.11.2	Site-Specific Factors	4-95
4.11.3	Impacts of the Proposed Action	4-96
4.11.4	Impacts of No Action	4-96
4.12	Surface Water	4-97
4.12.1	Current Environment	4-97
4.12.2	Site-Specific Factors	4-99
4.12.3	Impacts of the Proposed Action	4-100
4.12.4	Impacts of No Action	4-100

CONTENTS (Cont.)

4.13	Terrestrial Habitats and Vegetation.....	4-101
4.13.1	Current Environment.....	4-101
4.13.2	Site-Specific Factors	4-105
4.13.3	Impacts of the Proposed Action	4-105
4.13.4	Impacts of No Action	4-107
4.14	Wildlife	4-107
4.14.1	Current Environment.....	4-107
4.14.2	Site-Specific Factors	4-111
4.14.3	Impacts of the Proposed Action	4-111
4.14.4	Impacts of No Action	4-114
4.15	Aquatic Habitats and Fish	4-115
4.15.1	Current Environment.....	4-115
4.15.2	Site-Specific Factors	4-116
4.15.3	Impacts of the Proposed Action	4-116
4.15.4	Impacts of No Action	4-118
4.16	Protected Species.....	4-118
4.16.1	Current Environment.....	4-118
4.16.2	Site-Specific Factors	4-125
4.16.3	Impacts of the Proposed Action	4-125
4.16.4	Impacts of No Action	4-127
4.17	Wetlands.....	4-128
4.17.1	Current Environment.....	4-128
4.17.2	Site-Specific Factors	4-131
4.17.3	Impacts of the Proposed Action	4-131
4.17.4	Impacts of No Action	4-134
4.18	Cultural Resources	4-134
4.18.1	Current Environment.....	4-134
4.18.2	Site-Specific Factors	4-138
4.18.3	Impacts of the Proposed Action	4-139
4.18.4	Impacts of No Action	4-140
4.19	Socioeconomics.....	4-141
4.19.1	Current Environment.....	4-141
4.19.2	Site-Specific Factors	4-152
4.19.3	Impacts of the Proposed Action	4-152
4.19.4	Impacts of No Action	4-156
4.20	Environmental Justice	4-156
4.20.1	Current Environment.....	4-158
4.20.2	Site-Specific Factors	4-161
4.20.3	Impacts of the Proposed Action	4-161
4.20.4	Impacts of No Action	4-162
4.21	Accidents Involving Assembled Chemical Weapons	4-162
4.21.1	Potential Accidental Releases	4-162
4.21.2	Impacts of Accidents during the Proposed Action.....	4-165
4.21.3	Impacts of Accidents during No Action.....	4-186

CONTENTS (Cont.)

4.22	Cumulative Impacts.....	4-189
4.22.1	Other Reasonably Foreseeable Future Actions	4-190
4.22.2	Land Use	4-191
4.22.3	Infrastructure	4-192
4.22.4	Waste Management	4-194
4.22.5	Air Quality.....	4-194
4.22.6	Human Health and Safety — Routine Operations	4-196
4.22.7	Noise.....	4-198
4.22.8	Visual Resources	4-199
4.22.9	Soils.....	4-200
4.22.10	Groundwater.....	4-200
4.22.11	Surface Water.....	4-201
4.22.12	Biological Resources.....	4-202
4.22.13	Socioeconomics.....	4-205
4.22.14	Environmental Justice	4-206
4.23	Agriculture	4-207
4.23.1	Current Environment.....	4-207
4.23.2	Site-Specific Factors	4-208
4.23.3	Impacts of the Proposed Action	4-209
4.23.4	Impacts of No Action	4-211
4.24	Other Impacts	4-212
4.24.1	Unavoidable Adverse Impacts	4-212
4.24.2	Irreversible and Irretrievable Commitment of Resources	4-214
4.24.3	Short-Term Uses of the Environment and Enhancement of Long-Term Productivity	4-215
4.25	Mitigation	4-215
4.25.1	Waste Management	4-215
4.25.2	Air Quality — Criteria Pollutants	4-216
4.25.3	Air Quality — Toxic Air Pollutants.....	4-216
4.25.4	Human Health	4-216
4.25.5	Geology and Soils	4-216
4.25.6	Groundwater, Surface Water, and Wetlands.....	4-217
4.25.7	Vegetation, Wildlife, and Aquatic Resources	4-217
4.25.8	Cultural Resources	4-218
4.26	References for Chapter 4.....	4-218
5	PINE BLUFF DEPOT, ARKANSAS	5-1
5.1	Introduction	5-1
5.1.1	Potential Sites and Facility Locations	5-1
5.1.2	Munitions Inventory.....	5-4
5.2	Land Use	5-5
5.2.1	Installation History and Uses	5-5
5.2.2	Current and Planned On-Post Land Use	5-6

CONTENTS (Cont.)

5.2.3	Current and Planned Off-Post Land Use.....	5-9
5.2.4	Impacts on Land Use.....	5-10
5.3	Infrastructure	5-10
5.3.1	Electric Power	5-12
5.3.2	Natural Gas.....	5-13
5.3.3	Water	5-14
5.3.4	Communications	5-16
5.4	Waste Management	5-17
5.4.1	Current Waste Generation and Management	5-17
5.4.2	ACWA Pilot Test Facility Waste Generation and Treatment Requirements	5-19
5.4.3	Impacts of the Proposed Action	5-20
5.4.4	Impacts of No Action	5-27
5.5	Air Quality — Criteria Pollutants	5-28
5.5.1	Current Meteorology, Emissions, and Air Quality	5-29
5.5.2	ACWA Facility Emissions	5-35
5.5.3	Impacts of the Proposed Action	5-40
5.5.4	Impacts of No Action	5-47
5.6	Air Quality — Toxic Air Pollutants	5-47
5.6.1	Current Emissions and Air Quality	5-47
5.6.2	ACWA Facility Emissions	5-47
5.6.3	Impacts of the Proposed Action	5-48
5.6.4	Impacts of No Action	5-59
5.7	Human Health and Safety — Routine Operations	5-60
5.7.1	Current Environment.....	5-61
5.7.2	Impacts of the Proposed Action	5-63
5.7.3	Impacts of No Action	5-71
5.7.4	Impacts from Transportation.....	5-71
5.8	Noise.....	5-72
5.8.1	Current Environment.....	5-73
5.8.2	Noise Sources from the ACWA Pilot Test Systems	5-74
5.8.3	Impacts of the Proposed Action	5-75
5.8.4	Impacts of No Action	5-76
5.9	Visual Resources	5-76
5.9.1	Current Environment.....	5-76
5.9.2	Site-Specific Factors	5-76
5.9.3	Impacts of the Proposed Action	5-77
5.9.4	Impacts of No Action	5-77
5.10	Geology and Soils	5-78
5.10.1	Current Environment.....	5-78
5.10.2	Site-Specific Factors	5-80
5.10.3	Impacts of the Proposed Action	5-80
5.10.4	Impacts of No Action	5-83

CONTENTS (Cont.)

5.11	Groundwater.....	5-83
5.11.1	Current Environment.....	5-83
5.11.2	Site-Specific Factors	5-85
5.11.3	Impacts of the Proposed Action	5-85
5.11.4	Impacts of No Action	5-86
5.12	Surface Water.....	5-86
5.12.1	Current Environment.....	5-86
5.12.2	Site-Specific Factors	5-89
5.12.3	Impacts of the Proposed Action	5-90
5.12.4	Impacts of No Action	5-91
5.13	Terrestrial Habitats and Vegetation.....	5-91
5.13.1	Current Environment.....	5-91
5.13.2	Site-Specific Factors	5-92
5.13.3	Impacts of the Proposed Action	5-92
5.13.4	Impacts of No Action	5-93
5.14	Wildlife	5-93
5.14.1	Current Environment.....	5-93
5.14.2	Site-Specific Factors	5-95
5.14.3	Impacts of the Proposed Action	5-95
5.14.4	Impacts of No Action	5-99
5.15	Aquatic Habitats and Fish	5-99
5.15.1	Current Environment.....	5-99
5.15.2	Site-Specific Factors	5-101
5.15.3	Impacts of the Proposed Action	5-101
5.15.4	Impacts of No Action	5-102
5.16	Protected Species.....	5-102
5.16.1	Current Environment.....	5-102
5.16.2	Site-Specific Factors	5-104
5.16.3	Impacts of the Proposed Action	5-104
5.16.4	Impacts of No Action	5-104
5.17	Wetlands.....	5-105
5.17.1	Current Environment.....	5-105
5.17.2	Site-Specific Factors	5-106
5.17.3	Impacts of the Proposed Action	5-107
5.17.4	Impacts of No Action	5-110
5.18	Cultural Resources	5-110
5.18.1	Current Environment.....	5-110
5.18.2	Site-Specific Factors	5-112
5.18.3	Impacts of the Proposed Action	5-112
5.18.4	Impacts of No Action	5-114
5.19	Socioeconomics.....	5-115
5.19.1	Current Environment.....	5-115

CONTENTS (Cont.)

5.19.2	Site-Specific Factors	5-125
5.19.3	Impacts of the Proposed Action	5-125
5.19.4	Impacts of No Action	5-128
5.20	Environmental Justice	5-129
5.20.1	Current Environment.....	5-130
5.20.2	Site-Specific Factors	5-133
5.20.3	Impacts of the Proposed Action	5-134
5.20.4	Impacts of No Action	5-134
5.21	Accidents Involving Assembled Chemical Weapons	5-135
5.21.1	Potential Accidental Releases	5-135
5.21.2	Impacts of Accidents during the Proposed Action.....	5-138
5.21.3	Impacts of Accidents during No Action.....	5-152
5.22	Cumulative Impacts.....	5-155
5.22.1	Other Reasonably Foreseeable Future Actions	5-157
5.22.2	Land Use	5-158
5.22.3	Infrastructure	5-159
5.22.4	Waste Management.....	5-161
5.22.5	Air Quality.....	5-162
5.22.6	Human Health and Safety — Routine Operations	5-165
5.22.7	Noise.....	5-166
5.22.8	Visual Resources	5-167
5.22.9	Soils.....	5-167
5.22.10	Groundwater.....	5-168
5.22.11	Surface Water.....	5-169
5.22.12	Biological Resources.....	5-170
5.22.13	Socioeconomics.....	5-173
5.22.14	Environmental Justice	5-174
5.23	Agriculture	5-175
5.23.1	Current Environment.....	5-175
5.23.2	Site-Specific Factors	5-176
5.23.3	Impacts of the Proposed Action	5-176
5.23.4	Impacts of No Action	5-179
5.24	Other Impacts	5-180
5.24.1	Unavoidable Adverse Impacts	5-180
5.24.2	Irreversible and Irretrievable Commitment of Resources	5-182
5.24.3	Short-Term Uses of the Environment and Enhancement of Long-Term Productivity	5-182
5.25	Mitigation	5-183
5.25.1	Waste Management.....	5-183
5.25.2	Air Quality — Criteria Pollutants	5-183
5.25.3	Air Quality — Toxic Air Pollutants.....	5-183
5.25.4	Human Health	5-184
5.25.5	Geology and Soils	5-184
5.25.6	Groundwater, Surface Water, and Wetlands.....	5-184

CONTENTS (Cont.)

5.25.7	Vegetation and Wildlife	5-185
5.25.8	Cultural Resources	5-185
5.26	References for Chapter 5.....	5-185
6	PUEBLO CHEMICAL DEPOT, COLORADO	6-1
6.1	Introduction	6-1
6.1.1	Potential Sites and Facility Locations	6-1
6.1.2	Munitions Inventory	6-4
6.2	Land Use	6-4
6.2.1	Installation History and Uses	6-4
6.2.2	Current and Planned On-Post Land Use	6-7
6.2.3	Current and Planned Off-Post Land Use.....	6-9
6.2.4	Impacts on Land Use.....	6-11
6.3	Infrastructure	6-12
6.3.1	Electric Power	6-13
6.3.2	Natural Gas.....	6-16
6.3.3	Water	6-17
6.3.4	Communications	6-20
6.4	Waste Management	6-21
6.4.1	Current Waste Generation and Management	6-21
6.4.2	ACWA Pilot Test Facility Waste Generation and Treatment Requirements.....	6-23
6.4.3	Impacts of the Proposed Action	6-25
6.4.4	Impacts of No Action	6-31
6.5	Air Quality — Criteria Pollutants	6-32
6.5.1	Current Meteorology, Emissions, and Air Quality	6-33
6.5.2	ACWA Facility Emissions	6-40
6.5.3	Impacts of the Proposed Action	6-41
6.5.4	Impacts of No Action	6-48
6.6	Air Quality — Air Toxic Pollutants.....	6-48
6.6.1	Current Emissions and Air Quality	6-48
6.6.2	ACWA Facility Emissions	6-48
6.6.3	Impacts of the Proposed Action	6-55
6.6.4	Impacts of No Action	6-57
6.7	Human Health and Safety — Routine Operations	6-57
6.7.1	Current Environment.....	6-58
6.7.2	Impacts of the Proposed Action	6-60
6.7.3	Impacts of No Action	6-68
6.7.4	Impacts from Transportation.....	6-69
6.8	Noise.....	6-69
6.8.1	Current Environment.....	6-71
6.8.2	Noise Sources for the ACWA Pilot Test Systems	6-72
6.8.3	Impacts of the Proposed Action	6-72

CONTENTS (Cont.)

6.8.4	Impacts of No Action	6-73
6.9	Visual Resources	6-73
6.9.1	Current Environment.....	6-73
6.9.2	Site-Specific Factors	6-74
6.9.3	Impacts of the Proposed Action	6-75
6.9.4	Impacts of No Action	6-75
6.10	Geology and Soils	6-75
6.10.1	Current Environment.....	6-75
6.10.2	Site-Specific Factors	6-80
6.10.3	Impacts of the Proposed Action	6-80
6.10.4	Impacts of No Action	6-81
6.11	Groundwater.....	6-81
6.11.1	Current Environment.....	6-81
6.11.2	Site-Specific Factors	6-86
6.11.3	Impacts of the Proposed Action	6-87
6.11.4	Impacts of No Action	6-88
6.12	Surface Water.....	6-88
6.12.1	Current Environment.....	6-88
6.12.2	Site-Specific Factors	6-90
6.12.3	Impacts of the Proposed Action	6-90
6.12.4	Impacts of No Action	6-91
6.13	Terrestrial Habitats and Vegetation.....	6-91
6.13.1	Current Environment.....	6-91
6.13.2	Site-Specific Factors	6-93
6.13.3	Impacts of the Proposed Action	6-94
6.13.4	Impacts of No Action	6-95
6.14	Wildlife	6-96
6.14.1	Current Environment.....	6-96
6.14.2	Site-Specific Factors	6-99
6.14.3	Impacts of the Proposed Action	6-100
6.14.4	Impacts of No Action	6-103
6.15	Aquatic Habitats and Fish	6-103
6.15.1	Current Environment.....	6-103
6.15.2	Site-Specific Factors	6-105
6.15.3	Impacts of the Proposed Action	6-105
6.15.4	Impacts of No Action	6-106
6.16	Protected Species.....	6-106
6.16.1	Current Environment.....	6-106
6.16.2	Site-Specific Factors	6-109
6.16.3	Impacts of the Proposed Action	6-109
6.16.4	Impacts of No Action	6-110
6.17	Wetlands.....	6-110
6.17.1	Current Environment.....	6-110
6.17.2	Site-Specific Factors	6-114

CONTENTS (Cont.)

6.17.3	Impacts of the Proposed Action	6-114
6.17.4	Impacts of No Action	6-115
6.18	Cultural Resources	6-115
6.18.1	Current Environment.....	6-115
6.18.2	Site-Specific Factors	6-118
6.18.3	Impacts of the Proposed Action	6-118
6.18.4	Impacts of No Action	6-120
6.19	Socioeconomics.....	6-120
6.19.1	Current Environment.....	6-120
6.19.2	Site-Specific Factors	6-125
6.19.3	Impacts of the Proposed Action	6-126
6.19.4	Impacts of No Action	6-132
6.20	Environmental Justice	6-132
6.20.1	Current Environment.....	6-134
6.20.2	Site-Specific Factors	6-137
6.20.3	Impacts of the Proposed Action	6-137
6.20.4	Impacts of No Action	6-138
6.21	Accidents Involving Assembled Chemical Weapons	6-138
6.21.1	Potential Accidental Releases	6-138
6.21.2	Impacts of Accidents during the Proposed Action.....	6-141
6.21.3	Impacts of Accidents during No Action.....	6-155
6.22	Cumulative Impacts.....	6-159
6.22.1	Other Reasonably Foreseeable Future Actions	6-161
6.22.2	Land Use	6-162
6.22.3	Infrastructure	6-163
6.22.4	Waste Management.....	6-166
6.22.5	Air Quality.....	6-167
6.22.6	Human Health and Safety — Routine Operations	6-170
6.22.7	Noise.....	6-173
6.22.8	Visual Resources	6-173
6.22.9	Soils.....	6-174
6.22.10	Groundwater.....	6-175
6.22.11	Surface Water.....	6-177
6.22.12	Biological Resources.....	6-178
6.22.13	Socioeconomics.....	6-183
6.22.14	Environmental Justice	6-185
6.23	Agriculture	6-185
6.23.1	Current Environment.....	6-186
6.23.2	Site-Specific Factors	6-188
6.23.3	Impacts of the Proposed Action	6-188
6.23.4	Impacts of No Action	6-191
6.24	Other Impacts	6-191
6.24.1	Unavoidable Adverse Impacts	6-191
6.24.2	Irreversible and Irretrievable Commitment of Resources	6-192

CONTENTS (Cont.)

6.24.3	Short-Term Uses of the Environment and Enhancement of Long-Term Productivity	6-193
6.25	Mitigation	6-193
6.25.1	Waste Management	6-194
6.25.2	Air Quality — Criteria Pollutants	6-194
6.25.3	Air Quality — Toxic Pollutants	6-194
6.25.4	Human Health	6-194
6.25.5	Geology and Soils	6-195
6.25.6	Groundwater, Surface Water, and Wetlands	6-195
6.25.7	Vegetation, Wildlife, and Protected Species	6-195
6.25.8	Cultural Resources	6-196
6.26	References for Chapter 6	6-196
7	BLUE GRASS ARMY DEPOT, KENTUCKY	7-1
7.1	Introduction	7-1
7.1.1	Potential Sites and Facility Locations	7-1
7.1.2	Munitions Inventory	7-1
7.2	Land Use	7-5
7.2.1	Intallation History and Uses	7-5
7.2.2	Current and Planned On-Post Land Use	7-6
7.2.3	Current and Planned Off-Post Land Use	7-8
7.2.4	Impacts on Land Use	7-8
7.3	Infrastructure	7-9
7.3.1	Electric Power	7-11
7.3.2	Natural Gas	7-13
7.3.3	Water	7-14
7.3.4	Communications	7-16
7.4	Waste Management	7-17
7.4.1	Current Waste Generation and Management	7-17
7.4.2	ACWA Pilot Test Facility Waste Generation and Treatment Requirements	7-19
7.4.3	Impacts of the Proposed Action	7-20
7.4.4	Impacts of No Action	7-27
7.5	Air Quality — Criteria Pollutants	7-28
7.5.1	Current Meteorology, Emissions, and Air Quality	7-29
7.5.2	ACWA Facility Emissions	7-37
7.5.3	Impacts of the Proposed Action	7-42
7.5.4	Impacts of No Action	7-48
7.6	Air Quality — Toxic Air Pollutants	7-48
7.6.1	Current Emissions and Air Quality	7-48
7.6.2	ACWA Facility Emissions	7-50
7.6.3	Impacts of the Proposed Action	7-50
7.6.4	Impacts of No Action	7-65

CONTENTS (Cont.)

7.7	Human Health and Safety — Routine Operations	7-66
7.7.1	Current Environment.....	7-67
7.7.2	Impacts of the Proposed Action	7-69
7.7.3	Impacts of No Action	7-77
7.7.4	Impacts from Transportation.....	7-78
7.8	Noise.....	7-80
7.8.1	Current Environment.....	7-81
7.8.2	Noise Sources from the ACWA Pilot Test Systems	7-83
7.8.3	Impacts of the Proposed Action	7-84
7.8.4	Impacts of No Action	7-85
7.9	Visual Resources	7-85
7.9.1	Current Environment.....	7-85
7.9.2	Site-Specific Factors	7-85
7.9.3	Impacts of the Proposed Action	7-86
7.9.4	Impacts of No Action	7-86
7.10	Geology and Soils	7-87
7.10.1	Current Environment.....	7-87
7.10.2	Site-Specific Factors	7-89
7.10.3	Impacts of the Proposed Action	7-91
7.10.4	Impacts of No Action	7-92
7.11	Groundwater.....	7-92
7.11.1	Current Environment.....	7-92
7.11.2	Site-Specific Factors	7-93
7.11.3	Impacts of the Proposed Action	7-94
7.11.4	Impacts of No Action	7-94
7.12	Surface Water	7-95
7.12.1	Current Environment.....	7-95
7.12.2	Site-Specific Factors	7-97
7.12.3	Impacts of the Proposed Action	7-98
7.12.4	Impacts of No Action	7-99
7.13	Terrestrial Habitats and Vegetation.....	7-99
7.13.1	Current Environment.....	7-99
7.13.2	Site-Specific Factors	7-102
7.13.3	Impacts of the Proposed Action	7-103
7.13.4	Impacts of No Action	7-104
7.14	Wildlife	7-104
7.14.1	Current Environment.....	7-104
7.14.2	Site-Specific Factors	7-107
7.14.3	Impacts of the Proposed Action	7-107
7.14.4	Impacts of No Action	7-111
7.15	Aquatic Habitats and Fish	7-111
7.15.1	Current Environment.....	7-111
7.15.2	Site-Specific Factors	7-112
7.15.3	Impacts of the Proposed Action	7-112

CONTENTS (Cont.)

7.15.4	Impacts of No Action	7-112
7.16	Protected Species.....	7-113
7.16.1	Current Environment.....	7-113
7.16.2	Site-Specific Factors	7-114
7.16.3	Impacts of the Proposed Action	7-115
7.16.4	Impacts of No Action	7-115
7.17	Wetlands.....	7-116
7.17.1	Current Environment.....	7-116
7.17.2	Site-Specific Factors	7-116
7.17.3	Impacts of the Proposed Action	7-116
7.17.4	Impacts of No Action	7-120
7.18	Cultural Resources	7-120
7.18.1	Current Environment.....	7-120
7.18.2	Site-Specific Factors	7-122
7.18.3	Impacts of the Proposed Action	7-123
7.18.4	Impacts of No Action	7-125
7.19	Socioeconomics.....	7-126
7.19.1	Current Environment.....	7-126
7.19.2	Site-Specific Factors	7-135
7.19.3	Impacts of the Proposed Action	7-135
7.19.4	Impacts of No Action	7-139
7.20	Environmental Justice	7-140
7.20.1	Current Environment.....	7-141
7.20.2	Site-Specific Factors	7-143
7.20.3	Impacts of the Proposed Action	7-145
7.20.4	Impacts of No Action	7-145
7.21	Accidents Involving Assembled Chemical Weapons	7-146
7.21.1	Potential Accidental Releases	7-146
7.21.2	Impacts of Accidents during the Proposed Action.....	7-148
7.21.3	Impacts of Accidents during No Action.....	7-167
7.22	Cumulative Impacts.....	7-172
7.22.1	Other Reasonably Foreseeable Future Actions	7-174
7.22.2	Land Use	7-175
7.22.3	Infrastructure	7-176
7.22.4	Waste Management	7-180
7.22.5	Air Quality.....	7-181
7.22.6	Human Health and Safety — Routine Operations	7-185
7.22.7	Noise.....	7-188
7.22.8	Visual Resources	7-188
7.22.9	Soils.....	7-189
7.22.10	Groundwater.....	7-190
7.22.11	Surface Water.....	7-191
7.22.12	Biological Resources.....	7-193
7.22.13	Socioeconomics.....	7-199

CONTENTS (Cont.)

7.22.14	Environmental Justice	7-200
7.23	Agriculture	7-201
7.23.1	Current Environment.....	7-201
7.23.2	Site-Specific Factors	7-204
7.23.3	Impacts of the Proposed Action	7-205
7.23.4	Impacts of No Action	7-207
7.24	Other Impacts	7-207
7.24.1	Unavoidable Adverse Impacts	7-207
7.24.2	Irreversible and Irretrievable Commitment of Resources	7-209
7.24.3	Short-Term Uses of the Environment and Enhancement of Long-Term Productivity	7-210
7.25	Mitigation	7-210
7.25.1	Waste Management.....	7-210
7.25.2	Air Quality — Criteria Pollutants	7-211
7.25.3	Air Quality — Toxic Air Pollutants.....	7-211
7.25.4	Human Health	7-211
7.25.5	Geology and Soils	7-211
7.25.6	Groundwater, Surface Water, and Wetlands.....	7-211
7.25.7	Vegetation, Wildlife, Protected Species, and Aquatic Resources.....	7-212
7.25.8	Cultural Resources	7-213
7.26	References for Chapter 7	7-213
8	CLOSURE AND DECOMMISSIONING	8-1
8.1	Closure and Decommissioning Activities	8-1
8.2	Impacts of Closure and Decommissioning.....	8-3
8.2.1	Land Use	8-3
8.2.2	Infrastructure	8-3
8.2.3	Waste Management.....	8-3
8.2.4	Air Quality — Criteria Pollutants	8-4
8.2.5	Air Quality — Toxic Air Pollutants.....	8-4
8.2.6	Human Health and Safety — Routine Operations	8-4
8.2.7	Noise.....	8-4
8.2.8	Visual Resources	8-5
8.2.9	Geology and Soils	8-5
8.2.10	Groundwater.....	8-5
8.2.11	Surface Water.....	8-5
8.2.12	Terrestrial Habitats and Vegetation.....	8-6
8.2.13	Wildlife	8-6
8.2.14	Aquatic Habitats and Fish	8-6
8.2.15	Protected Species.....	8-6
8.2.16	Wetlands.....	8-7
8.2.17	Cultural Resources	8-7
8.2.18	Socioeconomics.....	8-7

CONTENTS (Cont.)

8.2.19	Environmental Justice	8-7
8.2.20	Accidents Involving Assembled Chemical Weapons	8-8
8.3	References for Chapter 8.....	8-8
9	ENVIRONMENTAL PERMITS AND OTHER COMPLIANCE REQUIREMENTS	9-1
9.1	Introduction	9-1
9.2	Waste Management	9-2
9.2.1	Requirements under Various Laws	9-2
9.2.2	Types of Waste That Would Be Generated.....	9-4
9.2.3	ANAD	9-7
9.2.4	PBA	9-11
9.2.5	PCD	9-15
9.2.6	BGAD.....	9-18
9.3	Air Quality.....	9-23
9.3.1	<i>Clean Air Act Requirements.</i>	9-23
9.3.2	<i>Emergency Planning and Community Right-to-Know Act of 1986 and Hazardous Material Transportation Act Requirements.</i>	9-41
9.4	Noise.....	9-42
9.4.1	Federal Requirements.....	9-42
9.4.2	Alabama Requirements	9-43
9.4.3	Arkansas Requirements.....	9-43
9.4.4	Colorado Requirements.....	9-43
9.4.5	Kentucky Requirements	9-43
9.5	Water Resources.....	9-43
9.5.1	<i>Clean Water Act and Safe Drinking Water Act Requirements.</i>	9-43
9.6	Ecological Resources	9-52
9.6.1	<i>Endangered Species Act Requirements.</i>	9-52
9.7	Cultural Resources	9-54
9.7.1	<i>National Historic Preservation Act and Archaeological and Historic Preservation Act Requirements.</i>	9-55
9.7.2	<i>American Indian Religious Freedom Act Requirements.</i>	9-57
9.8	Presidential Executive Orders	9-58
9.8.1	Environmental Justice	9-58
9.8.2	Consultation and Coordination with Indian Tribal Governments	9-60
9.8.3	Protection of Children from Environmental Health Risks and Safety Risks.....	9-60
9.9	Army Requirements	9-61
9.9.1	Chemical Agent Safety Program and Chemical Safety	9-61
9.9.2	Environmental Protection and Enhancement	9-62
9.9.3	Consideration of the Environmental Effects of Army Actions	9-62
9.10	Chemical Weapons Convention	9-62
9.11	References for Chapter 9.....	9-63

CONTENTS (Cont.)

10 LIST OF PREPARERS.....	10-1
11 INDEX	11-1
12 DISTRIBUTION LIST	12-1
ATTACHMENT 1: Notice of Intent.....	AT1-1
APPENDIX A: Environmental Fate and Toxicity of ACWA Vesicants, Nerve Agents, and Their Degradation Products.....	A-1
APPENDIX B: Methodology for Assessing Impacts on Air Quality from Construction and Operation of an ACWA Pilot Test Facility.....	B-1
APPENDIX C: Methodology for Assessing Impacts on Human Health from Air Emissions during Routine Operations.....	C-1
APPENDIX D: Letters of Consultation and Revised Biological Assessment for Anniston Army Depot	D-1
APPENDIX E: Letters of Consultation and Biological Assessment for Blue Grass Army Depot	E-1
APPENDIX F: Cultural Resources: Historic Contexts and Consultation Letters.....	F-1
APPENDIX G: Socioeconomics.....	G-1
APPENDIX H: Methodology for Assessing the Consequences from Accidents	H-1
APPENDIX I: Contractor Disclosure Statement.....	I-1

TABLES

S.1-1	Applicability of Alternative Destruction Systems to Installation Stockpiles	S-3
S.3-1	Agent, Burster, and Propellant Types That May Be Associated with Each Munition Type	S-8
S.4-1	ANAD Summary Table	S-18
S.5-1	PBA Summary Table.....	S-33
S.6-1	PCD Summary Table.....	S-45
S.7-1	BGAD Summary Table	S-57
S.9-1	Cumulative Impacts at ANAD.....	S-68
S.9-2	Cumulative Impacts at PBA	S-71
S.9-3	Cumulative Impacts at PCD	S-74
S.9-4	Cumulative Impacts at BGAD.....	S-79
1.3-1	Appropriate Destruction Systems at the Four Installations	1-4
2.1-1	Completion Dates for Assembled Chemical Weapons Destruction by PMCD	2-4
2.7-1	ANAD Summary Table	2-10
2.7-2	PBA Summary Table.....	2-20
2.7-3	PCD Summary Table.....	2-28
2.7-4	BGAD Summary Table	2-36
3.1-1	Agent, Burster, and Propellant Types That May Be Associated with Each Munition Type	3-6
3.4-1	Estimates of Annual Operational Input for Neutralization/Biotreatment by Site	3-18
3.4-2	Estimates of Annual Operational Input for Neutralization/SCWO by Site and Agent	3-19

TABLES (Cont.)

3.4-3	Estimates of Annual Operational Input for Neutralization/GPCR/TW-SCWO by Site and Agent	3-20
3.4-4	Estimates of Annual Operational Input for Electrochemical Oxidation by Site and Agent	3-21
3.5-1	Estimates of Annual Operational Input for Baseline Incineration.....	3-26
4.1-1	Assembled Chemical Weapons Inventory at ANAD	4-5
4.3-1	Current Utility Usage and Approximate Annual Utility Demands for Operation of an ACWA Pilot Test Facility at ANAD	4-11
4.3-2	Estimated Land Area Disturbed for Construction of an ACWA Pilot Test Facility and Associated Infrastructure at ANAD.....	4-12
4.4-1	Wastes Generated at ANAD in 1999	4-19
4.4-2	Wastes Generated during Construction of an ACWA Pilot Test Facility at ANAD.....	4-22
4.4-3	Hazardous Wastes Generated Annually from the Operation of an ACWA Pilot Test Facility at ANAD	4-23
4.4-4	Nonhazardous Wastes Generated Annually from the Operation of an ACWA Pilot Test Facility at ANAD	4-25
4.4-5	Solid Process Wastes Generated during the Operation of an ACW Incinerator at ANAD	4-30
4.5-1	Estimated Emissions of Air Pollutants from Existing ANAD Sources in 1999	4-34
4.5-2	Estimated Emissions of Air Pollutants from Calhoun County and ANAD Sources in 1996	4-35
4.5-3	National Ambient Air Quality Standards, Maximum Allowable Increments for Prevention of Significant Deterioration, and Highest Background Levels Representative of ANAD	4-36
4.5-4	Emission Rates of Criteria Air Pollutants and Volatile Organic Compounds and Stack Parameters Associated with Normal Operations of the Neutralization/Biotreatment Technology at ANAD.....	4-40

TABLES (Cont.)

4.5-5	Emission Rates of Criteria Air Pollutants and Volatile Organic Compounds and Stack Parameters Associated with Normal Operations of the Neutralization/SCWO Technology at ANAD	4-41
4.5-6	Emission Rates of Criteria Air Pollutants and Volatile Organic Compounds and Stack Parameters Associated with Normal Operations of the Neutralization/GPCR/TW-SCWO Technology at ANAD.....	4-42
4.5-7	Emission Rates of Criteria Air Pollutants and Volatile Organic Compounds and Stack Parameters Associated with Normal Operations of the Electrochemical Oxidation Technology at ANAD.....	4-43
4.5-8	Maximum Predicted Off-Post Concentration Increments and Total Concentrations of PM ₁₀ and PM _{2.5} during Construction at ANAD	4-45
4.5-9	Maximum Predicted Off-Post Concentration Increments and Total Concentrations of Criteria Pollutants during Normal Operations of the Neutralization/Biotreatment Technology at ANAD.....	4-46
4.5-10	Maximum Predicted Off-Post Concentration Increments and Total Concentrations of Criteria Pollutants during Normal Operations of the Neutralization/SCWO Technology at ANAD	4-47
4.5-11	Maximum Predicted Off-Post Concentration Increments and Total Concentrations of Criteria Pollutants during Normal Operations of the Neutralization/GPCR/TW-SCWO Technology at ANAD.....	4-48
4.5-12	Maximum Predicted Off-Post Concentration Increments and Total Concentrations of Criteria Pollutants during Normal Operations of the Electrochemical Oxidation Technology at ANAD.....	4-49
4.6-1	Emissions from ANAD in 1999	4-51
4.6-2	Estimated Toxic Air Pollutant Emissions from Neutralization/Biotreatment Technology at ANAD	4-52
4.6-3	Estimated Toxic Air Pollutant Emissions from Neutralization/SCWO Technology at ANAD	4-55
4.6-4	Estimated Toxic Air Pollutant Emissions from Neutralization/ GPCR/TW-SCWO Technology at ANAD	4-57
4.6-5	Estimated Toxic Air Pollutant Emissions from Electrochemical Oxidation Technology at ANAD.....	4-62

TABLES (Cont.)

4.6-6	Maximum Annual Average Estimated On-Post and Off-Post Concentrations of Agent during ACWA Pilot Facility Operations at ANAD.....	4-67
4.7-1	Annual Occupational Hazard Rates Associated with Continued Munitions Maintenance and ACWA Facility Construction and Operations at ANAD.....	4-72
4.7-2	Toxic Air Pollutant Emissions and Impact on Human Health and Safety during Normal Operations at ANAD.....	4-75
4.7-3	Comparison of Annual Transportation Requirements for Construction and Routine Operations for Alternative Technology Systems at ANAD.....	4-81
4.8-1	Noise Criteria for Noise-Sensitive Land Use Classifications.....	4-82
4.10-1	Soil Associations at ANAD	4-91
4.13-1	Plant Species at ANAD	4-102
4.14-1	Chemical Emissions of Potential Concern Based on a Screening-Level Ecological Risk Assessment of Air Emissions from Routine Operation of an ACWA Pilot Facility at ANAD.....	4-114
4.16-1	State Protected and Federal Listed Threatened and Endangered Species Occurring within 30 Miles of ANAD.....	4-119
4.19-1	Population in the ANAD Region of Influence in Selected Years	4-143
4.19-2	Employment in Calhoun County by Industry in 1999.....	4-144
4.19-3	Employment in the ANAD Region of Influence by Industry in 1999.....	4-145
4.19-4	Unemployment Rates in Calhoun County, ANAD Region of Influence, and Alabama	4-145
4.19-5	Personal Income in Calhoun County and ANAD Region of Influence.....	4-146
4.19-6	Housing Characteristics in Anniston, Calhoun County, and ANAD Region of Influence	4-147
4.19-7	Public Service Employment in Calhoun County, Various Cities near ANAD, and Alabama in 2000.....	4-149
4.19-8	School District Data for Calhoun County, Various Cities near ANAD, and Alabama in 2000	4-150

TABLES (Cont.)

4.19-9	Medical Facility Data for Calhoun County in 1999	4-150
4.19-10	Physician Employment in Calhoun County and Alabama in 1997	4-151
4.19-11	Average Annual Daily Traffic in the Vicinity of ANAD.....	4-151
4.19-12	Effects of Construction, Operations, and No Action at ANAD on Socioeconomics	4-153
4.21-1	Chemical Agent Plume Distances Resulting from Accidents at an ACWA Pilot Test Facility or in the Chemical Limited Area at ANAD	4-166
4.21-2	Fatality Estimates for Potential Accidents Involving Agent Release at ANAD.....	4-170
4.21-3	Distance from Accident Location That Would Result in No or Lowest Adverse Effects on Wildlife at ANAD.....	4-178
4.21-4	Distance from Accident Location That Would Result in No or Lowest Adverse Effects on Protected Species at ANAD	4-180
4.21-5	Socioeconomic Impacts of Accidents at ANAD Associated with the Proposed Action and No Action	4-185
4.22-1	Estimated Annual Utility Demands for a Baseline Incinerator at ANAD.....	4-192
4.22-2	Air Quality Impacts from Construction of an ACWA Pilot Test Facility and Operation of a Baseline Incinerator at ANAD and Other Nearby Actions.....	4-196
4.22-3	Air Quality Impacts from Operation of an ACWA Pilot Test Facility and a Baseline Incinerator at ANAD and Other Nearby Actions.....	4-199
4.23-1	Farms and Crop Acreage in the Agricultural Region of Influence around ANAD in 1997	4-208
4.23-2	Agricultural Production in the Agricultural Region of Influence around ANAD in 1997	4-209
4.23-3	Sales by Farms in the Agricultural Region of Influence around ANAD in 1992 and 1997	4-210
4.23-4	Agricultural Impacts of Accidents at ANAD Associated with the Proposed Action and No Action	4-212

TABLES (Cont.)

5.1-1	Assembled Chemical Weapons Inventory at PBA	5-4
5.2-1	Land Use at PBA	5-7
5.3-1	Estimated Land Area Disturbed for Construction of an ACWA Pilot Test Facility and Associated Infrastructure at PBA	5-12
5.3-2	Approximate Annual Utility Demands for Operation of an ACWA Pilot Test Facility at PBA.....	5-13
5.4-1	Hazardous and Nonhazardous Wastes Generated at PBA in 1999.....	5-19
5.4-2	Wastes Generated during Construction of an ACWA Pilot Test Facility at PBA.....	5-21
5.4-3	Hazardous Wastes Generated Annually from the Operation of an ACWA Pilot Test Facility at PBA.....	5-23
5.4-4	Nonhazardous Wastes Generated Annually from the Operation of an ACWA Pilot Test Facility at PBA.....	5-24
5.4-5	Solid Process Wastes Generated from the Operation of an ACW Incinerator at PBA	5-28
5.5-1	Estimated Emissions of Air Pollutants from Existing PBA Sources.....	5-34
5.5-2	Emissions of Air Pollutants from Jefferson County in 1996 Compared to PBA Sources	5-34
5.5-3	National Ambient Air Quality Standards, Maximum Allowable Increments for Prevention of Significant Deterioration, and Highest Background Levels Representative of PBA	5-36
5.5-4	Emission Rates of Criteria Pollutants and Volatile Organic Compounds and Stack Parameters Associated with Normal Operations of the Neutralization/SCWO Technology at PBA.....	5-39
5.5-5	Emission Rates of Criteria Air Pollutants and Volatile Organic Compounds and Stack Parameters Associated with Normal Operations of the Neutralization/GPCR/TW-SCWO Technology at PBA.....	5-40

TABLES (Cont.)

5.5-6	Emission Rates of Criteria Air Pollutants and Volatile Organic Compounds and Stack Parameters Associated with Normal Operations of the Electrochemical Oxidation Technology at PBA	5-41
5.5-7	Maximum Predicted Off-Post Concentration Increments and Total Concentrations of PM ₁₀ and PM _{2.5} during Construction at PBA	5-42
5.5-8	Maximum Predicted Off-Post Concentration Increments and Total Concentrations of Criteria Pollutants during Normal Operations of the Neutralization/SCWO Technology at PBA.....	5-44
5.5-9	Maximum Predicted Off-Post Concentration Increments and Total Concentrations of Criteria Pollutants during Normal Operations of the Neutralization/GPCR/TW-SCWO Technology at PBA.....	5-45
5.5-10	Maximum Predicted Off-Post Concentration Increments and Total Concentrations of Criteria Pollutants during Normal Operations of the Electrochemical Oxidation Technology at PBA	5-46
5.6-1	Estimated Toxic Air Pollutant Emissions from Neutralization/SCWO Technology at PBA.....	5-49
5.6-2	Estimated Toxic Air Pollutant Emissions from Neutralization/ GPCR/TW-SCWO Technology at PBA	5-51
5.6-3	Estimated Toxic Air Pollutant Emissions from Electrochemical Oxidation Technology at PBA.....	5-55
5.6-4	Maximum Annual Average Estimated On-Post and Off-Post Concentrations of Agent during ACWA Pilot Facility Operations at PBA.....	5-60
5.7-1	Annual Occupational Hazard Rates Associated with Continued Munitions Maintenance and ACWA Facility Construction and Operations at PBA	5-65
5.7-2	Toxic Air Pollutant Emissions and Impact on Human Health and Safety during Normal Operations at PBA	5-67
5.7-3	Comparison of Annual Transportation Requirements for Construction and Routine Operations for Alternative Technology Systems at PBA.....	5-73
5.10-1	Soil Associations at PBA.....	5-81
5.11-1	Groundwater Resources of Jefferson County.....	5-84

TABLES (Cont.)

5.12-1	Ponds and Lakes at PBA.....	5-89
5.14-1	Chemical Emissions of Potential Concern Based on a Screening-Level Ecological Risk Assessment of Air Emissions from Routine Operation of an ACWA Pilot Facility at PBA.....	5-98
5.15-1	Common Fish Species Occurring at PBA	5-100
5.16-1	Species of Concern and Federal Protected Species within 30 Miles of PBA.....	5-103
5.19-1	Population in the PBA Region of Influence in Selected Years	5-117
5.19-2	Employment in Jefferson County by Industry in 1999.....	5-117
5.19-3	Employment in the PBA Region of Influence by Industry in 1999	5-119
5.19-4	Unemployment Rates in Jefferson County, PBA Region of Influence, and Arkansas.....	5-119
5.19-5	Personal Income in Jefferson County and PBA Region of Influence	5-120
5.19-6	Housing Characteristics in Pine Bluff, Jefferson County, and PBA Region of Influence.....	5-120
5.19-7	Public Service Employment in Jefferson County, Various Cities near PBA, and Arkansas.....	5-122
5.19-8	School District Data for Various Cities near PBA and Arkansas in 1999.....	5-123
5.19-9	Medical Facility Data for Jefferson County in 1999	5-123
5.19-10	Physician Employment in Jefferson County and Arkansas in 1997.....	5-124
5.19-11	Average Annual Daily Traffic in the Vicinity of PBA.....	5-124
5.19-12	Effects of Construction, Operations, and No Action at PBA on Socioeconomics	5-126
5.21-1	Chemical Agent Plume Distances Resulting from Accidents at an ACWA Pilot Test Facility or in the Chemical Limited Area at PBA.....	5-137
5.21-2	Fatality Estimates for Potential Accidents Involving Agent Release at PBA	5-141

TABLES (Cont.)

5.21-3	Distance from Accident Location That Would Result in No or Lowest Adverse Effects on Wildlife at PBA.....	5-148
5.21-4	Socioeconomic Impacts of Accidents at PBA Associated with the Proposed Action and No Action	5-151
5.22-1	Estimated Annual Utility Demands for a Baseline Incinerator at PBA.....	5-159
5.22-2	Air Quality Impacts from Construction of an ACWA Pilot Test Facility and Operation of the PBCDF at PBA	5-163
5.22-3	Air Quality Impacts from Operation of an ACWA Pilot Test Facility and the PBCDF at PBA	5-164
5.23-1	Farms and Crop Acreage in the Agricultural Region of Influence around PBA in 1997	5-175
5.23-2	Agricultural Production in the Agricultural Region of Influence around PBA in 1997	5-177
5.23-3	Sales by Farms in the Agricultural Region of Influence around PBA in 1992 and 1997.....	5-178
5.23-4	Agricultural Impacts of Accidents at PBA Associated with the Proposed Action and No Action	5-180
6.1-1	Assembled Chemical Weapons Inventory at PCD	6-6
6.2-1	Potential Land Uses Considered under Base Realignment and Closure at PCD	6-9
6.3-1	Approximate Annual Utility Demands for Operation of an ACWA Pilot Test Facility at PCD	6-12
6.3-2	Estimated Land Area Disturbed for Construction of an ACWA Pilot Test Facility and Associated Infrastructure at PCD	6-13
6.4-1	Hazardous Wastes Generated at PCD in 1999	6-24
6.4-2	Wastes Generated during Construction of an ACWA Pilot Test Facility at PCD	6-26
6.4-3	Hazardous Wastes Generated Annually from the Operation of an ACWA Pilot Test Facility at PCD.....	6-28

TABLES (Cont.)

6.4-4	Nonhazardous Solid Wastes Generated Annually from the Operation of an ACWA Pilot Test Facility at PCD.....	6-30
6.5-1	Estimated Emissions of Air Pollutants from Existing PCD Sources in 1994	6-36
6.5-2	Estimated Emissions of Air Pollutants from Pueblo County and PCD Sources in 1996.....	6-37
6.5-3	National Ambient Air Quality Standards, Colorado State Ambient Air Quality Standards, Maximum Allowable Increments for Prevention of Significant Deterioration, and Highest Background Levels in the Urban Area near PCD	6-39
6.5-4	Emission Rates of Criteria Pollutants and Volatile Organic Compounds and Stack Parameters Associated with Normal Operations of the Neutralization/Biotreatment Technology at PCD	6-42
6.5-5	Emission Rates of Criteria Pollutants and Volatile Organic Compounds and Stack Parameters Associated with Normal Operations of the Neutralization/SCWO Technology at PCD	6-43
6.5-6	Maximum Predicted Off-Post Concentration Increments and Total Concentrations of PM ₁₀ and PM _{2.5} during Construction at PCD	6-44
6.5-7	Maximum Predicted Off-Post Concentration Increments and Total Concentrations of Criteria Pollutants during Normal Operations of the Neutralization/Biotreatment Technology at PCD	6-45
6.5-8	Maximum Predicted Off-Post Concentration Increments and Total Concentrations of Criteria Pollutants during Normal Operations of the Neutralization/SCWO Technology at PCD.....	6-46
6.6-1	Hazardous Air Pollutant Emissions from PCD in 1994	6-49
6.6-2	Estimated Toxic Air Pollutant Emissions from Neutralization/Biotreatment Technology at PCD	6-50
6.6-3	Estimated Toxic Air Pollutant Emissions from Neutralization/SCWO Technology at PCD	6-53
6.6-4	Maximum Annual Average Estimated On-Post and Off-Post Concentrations of Mustard Agent during ACWA Pilot Facility Operations at PCD	6-56

TABLES (Cont.)

6.7-1	Annual Occupational Hazard Rates Associated with Continued Munitions Maintenance and ACWA Facility Construction and Operations at PCD.....	6-61
6.7-2	Toxic Air Pollutant Emissions and Impacts on Human Health and Safety during Normal Operations at PCD	6-64
6.7-3	Comparison of Annual Transportation Requirements for Construction and Routine Operations for Alternative Technology Systems at PCD	6-70
6.8-1	State of Colorado Regulations on Maximum Permissible Noise Levels.....	6-71
6.10-1	Soil Associations at PCD.....	6-78
6.14-1	Chemical Emissions of Potential Concern Based on a Screening-Level Ecological Risk Assessment of Air Emissions from Routine Operation of an ACWA Pilot Facility at PCD	6-102
6.16-1	Federal and State Protected Species and Sensitive Communities Observed and Potentially Occurring at PCD	6-107
6.17-1	Wetlands at PCD Identified during the 1998 Surveys.....	6-113
6.19-1	Population in Pueblo, Pueblo County, and Colorado in Selected Years	6-121
6.19-2	Employment in Pueblo County by Industry in 1999	6-122
6.19-3	Unemployment Rates in Pueblo County and Colorado	6-123
6.19-4	Personal Income in Pueblo County.....	6-123
6.19-5	Housing Characteristics in Pueblo and Pueblo County	6-124
6.19-6	Local Government Financial Characteristics in Pueblo and Pueblo County.....	6-126
6.19-7	School District Financial Characteristics in Pueblo County.....	6-127
6.19-8	Public Service Employment in Pueblo, Pueblo County, and Colorado.....	6-128
6.19-9	School District Data for Pueblo, Pueblo County, and Colorado in 1998	6-128
6.19-10	Medical Facility Data for Pueblo County in 1999.....	6-129

TABLES (Cont.)

6.19-11	Employment of Physicians in Pueblo County and Colorado in 1997	6-129
6.19-12	Average Annual Daily Traffic in the Vicinity of PCD.....	6-130
6.19-13	Effects of Construction, Operations, and No Action at PCD on Socioeconomics	6-131
6.21-1	HD Plume Distances Resulting from Accidents at an ACWA Pilot Test Facility or in Munitions Storage Area A at PCD.....	6-142
6.21-2	Fatality Estimates for Potential Accidents Involving HD Release at PCD	6-145
6.21-3	Distance from Accident Site That Would Result in No or Lowest Adverse Effects on Wildlife for Proposed Action at PCD	6-150
6.21-4	Socioeconomic Impacts of Accidents at PCD Associated with the Proposed Action and No Action	6-155
6.21-5	Distance from Accident Site That Would Result in No or Lowest Adverse Effects on Wildlife for No Action Alternative at PCD	6-158
6.22-1	Estimated Annual Utility Demands for a Baseline Incinerator at PCD	6-163
6.22-2	Air Quality Impacts from Construction of an ACWA Pilot Test Facility and a Baseline Incinerator at PCD and Other Nearby Actions.....	6-168
6.22-3	Air Quality Impacts from Operation of an ACWA Pilot Test Facility and a Baseline Incinerator at PCD and Other Nearby Actions.....	6-170
6.23-1	Farms and Crop Acreage in the Agricultural Region of Influence around PCD in 1997	6-186
6.23-2	Agricultural Production in the Agricultural Region of Influence around PCD in 1997	6-187
6.23-3	Sales by Farms in the Agricultural Region of Influence around PCD in 1992 and 1997	6-188
6.23-4	Agricultural Impacts of Accidents at PCD Associated with the Proposed Action and No Action	6-190
7.1-1	Assembled Chemical Weapons Inventory at BGAD.....	7-4

TABLES (Cont.)

7.3-1	Approximate Annual Utility Demands for Operation of an ACWA Pilot Test Facility at BGAD	7-9
7.3-2	Estimated Land Area Disturbed for Construction of an ACWA Pilot Test Facility and Associated Infrastructure at BGAD.....	7-10
7.4-1	Wastes Generated at BGAD in 2000	7-17
7.4-2	Wastes Generated during Construction of an ACWA Pilot Test Facility at BGAD	7-20
7.4-3	Hazardous Wastes Generated Annually from the Operation of an ACWA Pilot Test Facility at BGAD	7-22
7.4-4	Nonhazardous Wastes Generated Annually from the Operation of an ACWA Pilot Test Facility at BGAD	7-23
7.5-1	Estimated Emissions of Air Pollutants from Existing BGAD Sources in 1999	7-32
7.5-2	Estimated Emissions of Air Pollutants from Madison County, Kentucky, and BGAD Sources in 1998	7-33
7.5-3	National Ambient Air Quality Standards, Kentucky State Ambient Air Quality Standards, Maximum Allowable Increments for Prevention of Significant Deterioration, and Highest Background Levels Representative of BGAD	7-34
7.5-4	Commonwealth of Kentucky Ambient Air Quality Standards.....	7-35
7.5-5	Emission Rates of Criteria Air Pollutants and Volatile Organic Compounds and Stack Parameters Associated with Normal Operations of the Neutralization/Biotreatment Technology at BGAD	7-38
7.5-6	Emission Rates of Criteria Air Pollutants and Volatile Organic Compounds and Stack Parameters Associated with Normal Operations of the Neutralization/SCWO Technology at BGAD	7-39
7.5-7	Emission Rates of Criteria Air Pollutants and Volatile Organic Compounds and Stack Parameters Associated with Normal Operations of the Neutralization/GPCR/TW-SCWO Technology at BGAD	7-40

TABLES (Cont.)

7.5-8	Emission Rates of Criteria Air Pollutants and Volatile Organic Compounds and Stack Parameters Associated with Normal Operations of the Electrochemical Oxidation Technology at BGAD.....	7-41
7.5-9	Maximum Predicted Off-Post Concentration Increments and Total Concentrations of PM ₁₀ and PM _{2.5} during Construction at BGAD.....	7-43
7.5-10	Maximum Predicted Off-Post Concentration Increments and Total Concentrations of Criteria Pollutants during Normal Operations of the Neutralization/Biotreatment Technology at BGAD	7-44
7.5-11	Maximum Predicted Off-Post Concentration Increments and Total Concentrations of Criteria Pollutants during Normal Operations of the Neutralization/SCWO Technology at BGAD	7-45
7.5-12	Maximum Predicted Off-Post Concentration Increments and Total Concentrations of Criteria Pollutants during Normal Operations of the Neutralization/GPCR/TW-SCWO Technology at BGAD	7-46
7.5-13	Maximum Predicted Off-Post Concentration Increments and Total Concentrations of Criteria Pollutants during Normal Operations of the Electrochemical Oxidation Technology at BGAD.....	7-47
7.6-1	Emissions from BGAD in 1999.....	7-49
7.6-2	Estimated Toxic Air Pollutant Emissions from Neutralization/Biotreatment Technology at BGAD	7-51
7.6-3	Estimated Toxic Air Pollutant Emissions from Neutralization/SCWO Technology at BGAD	7-54
7.6-4	Estimated Toxic Air Pollutant Emissions from Neutralization/GPCR/TW-SCWO Technology at BGAD	7-56
7.6-5	Estimated Toxic Air Pollutant Emissions from Electrochemical Oxidation Technology at BGAD	7-61
7.6-6	Maximum Annual Average Estimated On-Post and Off-Post Concentrations of Agent during ACWA Pilot Facility Operations at BGAD	7-65
7.7-1	Annual Occupational Hazard Rates Associated with Continued Munitions Maintenance and ACWA Pilot Facility Construction and Operations at BGAD....	7-71

TABLES (Cont.)

7.7-2	Toxic Air Pollutant Emissions and Impact on Human Health and Safety during Normal Operations at BGAD	7-74
7.7-3	Comparison of Annual Transportation Requirements for Construction and Routine Operations for Alternative Technology Systems at BGAD	7-79
7.8-1	Noise Criteria for Noise-Sensitive Land Use Classifications.....	7-80
7.10-1	Soil Associations at BGAD	7-89
7.13-1	Dominant Trees and Common Understory Plant Species of Forests at BGAD	7-100
7.13-2	Mammalian Species Occurring at BGAD	7-106
7.14-1	Chemical Emissions of Potential Concern Based on a Screening-Level Ecological Risk Assessment of Air Emissions from Routine Operation of an ACWA Pilot Facility at BGAD	7-109
7.16-1	Federal Listed Threatened, Endangered, and Candidate Species Occurring within 30 Miles of BGAD	7-113
7.19-1	Population in the BGAD Region of Influence and Kentucky in Selected Years	7-128
7.19-2	Employment in Madison County by Industry in 1999	7-128
7.19-3	Employment in the BGAD Region of Influence by Industry in 1999.....	7-129
7.19-4	Unemployment Rates in Richmond, BGAD Region of Influence, and Kentucky	7-130
7.19-5	Personal Income in Madison County and BGAD Region of Influence.....	7-131
7.19-6	Housing Characteristics in Richmond, Madison County, and BGAD Region of Influence	7-132
7.19-7	Public Service Employment in Madison County, Richmond, Berea, and Kentucky.....	7-133
7.19-8	School District Data for Madison County and Kentucky in 2000.....	7-133
7.19-9	Medical Facility Information for Madison County in 1999	7-134
7.19-10	Employment of Physicians in Madison County and Kentucky in 1997.....	7-134

TABLES (Cont.)

7.19-11	Average Annual Daily Traffic in the Vicinity of BGAD	7-135
7.19-12	Effects of Construction, Operations, and No Action at BGAD on Socioeconomics	7-136
7.21-1	Chemical Agent Plume Distances Resulting from Accidents at an ACWA Pilot Test Facility or in the Chemical Limited Area at BGAD	7-149
7.21-2	Fatality Estimates for Potential Accidents Involving Agent Release at BGAD	7-153
7.21-3	Distance from Accident Site That Would Result in No or Lowest Adverse Effects on Wildlife during Proposed Action at BGAD for Mustard Release.....	7-160
7.21-4	Distance from Accident Site That Would Result in No or Lowest Adverse Effects on Wildlife during Proposed Action at BGAD for VX Release	7-161
7.21-5	Distance from Accident Site That Would Result in No or Lowest Adverse Effects on Wildlife during Proposed Action at BGAD for GB Release.....	7-162
7.21-6	Socioeconomic Impacts of Accidents at BGAD Associated with the Proposed Action and No Action	7-166
7.21-7	Distance from Accident Site That Would Result in No or Lowest Adverse Effects on Wildlife If VX Were Released during Continued Storage at BGAD	7-170
7.21-8	Distance from Accident Site That Would Result in No or Lowest Adverse Effects on Wildlife If GB Were Released during Continued Storage at BGAD	7-171
7.22-1	Estimated Annual Utility Demands for a Baseline Incinerator at BGAD	7-176
7.22-2	Air Quality Impacts from Construction of an ACWA Pilot Test Facility and a Baseline Incinerator at BGAD and Other Nearby Actions	7-183
7.22-3	Air Quality Impacts from Operation of an ACWA Pilot Test Facility and a Baseline Incinerator at BGAD and Other Nearby Actions	7-184
7.23-1	Farms and Crop Acreage in the Agricultural Region of Influence around BGAD in 1997	7-202
7.23-2	Agricultural Production in the Agricultural Region of Influence around BGAD in 1997	7-203

TABLES (Cont.)

7.23-3	Sales by Farms in the Agricultural Region of Influence around BGAD in 1992 and 1997	7-204
7.23-4	Agricultural Impacts of Accidents at BGAD Associated with the Proposed Action and No Action	7-206
9.1	Significant Net Emissions Increase	9-26
9.2	Alabama Ambient Air Increments.....	9-27

FIGURES

S.1-1	Locations of the U.S. Army's Stockpile of Lethal Unitary Chemical Munitions Included in the EIS	S-3
S.3-1	General Diagrams of a Projectile, Mortar, Rocket, and Mine	S-7
S.3-2	Neutralization/Biotreatment System.....	S-9
S.3-3	Neutralization/SCWO System.....	S-11
S.3-4	Neutralization/GPCR/TW-SCWO System.....	S-12
S.3-5	Electrochemical Oxidation System.....	S-13
S.4-1	Assessment Areas at ANAD.....	S-14
S.5-1	Assessment Areas at PBA	S-28
S.6-1	Assessment Areas at PCD	S-40
S.7-1	Assessment Areas at BGAD	S-51
3.1-1	Relationship of Terms Used to Identify Elements of the Proposed Action	3-2
3.1-2	General Diagrams of a Projectile, Mortar, Rocket, and Mine	3-4
3.1-3	Conceptual Overview of Proposed Alternatives for ACWA Systems	3-7
3.2-1	Neutralization/Biotreatment System.....	3-9
3.2-2	Neutralization/SCWO System	3-10
3.2-3	Neutralization/GPCR/TW-SCWO System.....	3-12
3.2-4	Electrochemical Oxidation System.....	3-13
3.5-1	Baseline Incineration Process	3-25
4.1-1	Location of ANAD	4-2
4.1-2	Facilities at ANAD	4-4
4.2-1	Land Use at ANAD	4-8

FIGURES (Cont.)

4.3-1	Proposed Utility and Road Access Corridors for an ACWA Pilot Test Facility at ANAD	4-13
4.5-1	Annual Wind Roses for Two Heights Aboveground at the Demil Tower at ANAD from June 1998 through June 2000 and for One Height at Birmingham Municipal Airport from 1984 through 1992.....	4-32
4.5-2	ANAD and Air Quality Control Regions in Alabama.....	4-38
4.8-1	Noise-Sensitive Zones at ANAD.....	4-84
4.10-1	Soil Types at ANAD.....	4-92
4.12-1	Surface Water Features at ANAD	4-98
4.13-1	Vegetation at ANAD	4-103
4.16-1	Locations of Tennessee Yellow-Eyed Grass at ANAD.....	4-122
4.17-1	Wetlands in the Vicinity of the Proposed Locations for an ACWA Pilot Test Facility at ANAD.....	4-130
4.18-1	Areas of Disturbance at ANAD.....	4-136
4.19-1	ANAD Region of Influence.....	4-142
4.20-1	Census Block Groups within a 30-Mile Radius of ANAD with Minority Populations Greater than the National Average in 2000	4-159
4.20-2	Census Block Groups within a 30-Mile Radius of ANAD with Low-Income Populations Greater than the National Average in 1989	4-160
5.1-1	Location of PBA	5-2
5.1-2	Existing Facilities and Potential Locations for the Proposed ACWA Pilot Test Facility at PBA.....	5-3
5.2-1	Land Use at PBA	5-8
5.3-1	Proposed Utility and Road Access Corridors for the ACWA Pilot Test Facility at PBA	5-11
5.5-1	Annual Wind Roses for Three Heights Aboveground at Tower 1 at PBA in 1995 and for One Height at Little Rock Airport from 1984 through 1992	5-31

FIGURES (Cont.)

5.5-2	PBA and Air Quality Control Regions in Arkansas	5-37
5.10-1	Soil Types at PBA	5-82
5.12-1	Surface Water Features at PBA	5-87
5.17-1	Wetlands at PBA	5-108
5.19-1	PBA Region of Influence.....	5-116
5.20-1	Census Block Groups within a 30-Mile Radius of PBA with Minority Populations Greater than the National Average in 2000	5-131
5.20-2	Census Block Groups within a 30-Mile Radius of PBA with Low-Income Populations Greater than the National Average in 1989	5-132
6.1-1	Location of PCD	6-2
6.1-2	Facilities at PCD	6-3
6.1-3	Proposed Utility and Road Access Corridors for an ACWA Pilot Test Facility at PCD	6-5
6.2-1	Land Use at PCD	6-8
6.2-2	Land Ownership near PCD.....	6-10
6.3-1	Locations of Water Supply Wells at PCD	6-17
6.3-2	Locations of Sewage Lagoons near Munitions Storage Area A in PCD	6-19
6.4-1	Locations of Hazardous Wastes Storage Areas at PCD	6-22
6.5-1	Annual Wind Rose for PCD in 1998–1999	6-34
6.5-2	PCD and Air Quality Control Regions in Colorado	6-38
6.10-1	Soil Types at PCD	6-79
6.11-1	Bedrock Surface Elevations at PCD.....	6-83
6.11-2	Groundwater Contours at PCD.....	6-84
6.12-1	Surface Water Features at PCD	6-89

FIGURES (Cont.)

6.13-1	Vegetation at PCD	6-92
6.17-1	Wetlands at PCD as Identified in U.S. Fish and Wildlife Service National Wetland Inventory Maps.....	6-112
6.18-1	Archaeological Survey Areas and Areas of Disturbance at PCD.....	6-116
6.20-1	Census Block Groups surrounding PCD with Minority Populations Greater than the National Average in 2000	6-135
6.20-2	Census Block Groups surrounding PCD with Low-Income Populations Greater than the National Average in 1989	6-136
7.1-1	Location of BGAD	7-2
7.1-2	Facilities at BGAD	7-3
7.2-1	Land Use at BGAD.....	7-7
7.3-1	Proposed Utility and Road Access Corridors for the Proposed ACWA Pilot Test Facility at BGAD	7-12
7.5-1	Annual Wind Roses for Three Heights Aboveground at the Demil Tower at BGAD from August 1998 through July 2000 and for One Height at Lexington Airport from 1984 through 1992	7-30
7.5-2	BGAD and Air Quality Control Regions in Kentucky.....	7-36
7.8-1	Noise-Sensitive Zones at BGAD	7-82
7.10-1	Soil Types at BGAD	7-90
7.12-1	Surface Water Features at BGAD.....	7-96
7.13-1	Vegetation at BGAD.....	7-101
7.17-1	Wetlands at BGAD as Identified in U.S. Fish and Wildlife Service National Wetland Inventory Maps	7-117
7.17-2	Wetlands and Potential Routes for Utility Corridors and Access Roads at BGAD	7-119

FIGURES (Cont.)

7.18-1	Surveyed Areas and Areas with a High Potential for Archaeological Sites at BGAD	7-121
7.19-1	BGAD Region of Influence	7-127
7.20-1	Census Block Groups within a 30-Mile Radius of BGAD with Minority Populations Greater than the National Average in 2000	7-142
7.20-2	Census Block Groups within a 30-Mile Radius of BGAD with Low-Income Populations Greater than the National Average in 1989	7-144

NOTATION

ACRONYMS AND ABBREVIATIONS

1X, 3X, 5X	U.S. Army system for material safety hazard classification (X, XXX, and XXXXX, respectively)
AADT	annual average daily traffic
ACA	<i>Arkansas Code Annotated</i>
ACW	assembled chemical weapon
ACWA	Assembled Chemical Weapons Assessment
ADECA	Alabama Department of Economics and Community Affairs
ADEM	Alabama Department of Environmental Management
ADEQ	Arkansas Department of Environmental Quality
agl	above ground level
AHPA	<i>Archaeological and Historic Preservation Act</i>
AIRFA	<i>American Indian Religious Freedom Act</i>
AMC	Army Material Command
ANAD	Anniston Army Depot
ANCA	Anniston Chemical Activity
ANSI	American National Standards Institute
APEN	air pollutant emission notice
AQCR	Air Quality Control Region
AR	Army Regulation
ASA	Ammunition Storage Area
ATSDR	Agency for Toxic Substances and Disease Registry
AWS	Ammunition Workshop
BACT	best available control technology
BGAD	Blue Grass Army Depot
BGCA	Blue Grass Chemical Activity
Bio	biological treatment or biotreatment as used in Neut/Bio
BLM	Bureau of Land Management
BLS	U.S. Bureau of Labor Statistics
BR	business route
BRAC	Base Realignment and Closure
CAA	<i>Clean Air Act</i>
CAAA	<i>Clean Air Act Amendments</i>
Cabinet	Kentucky Natural Resources and Environmental Protection Cabinet
CAIRA	Chemical Accident or Incident Response and Assistance
CatOx	catalytic oxidation unit
CBDCOM	Chemical and Biological Defense Command
CCR	<i>Code of Colorado Regulations</i>
CDC	Centers for Disease Control and Prevention

CD EIS	chemical demilitarization environmental impact statement
CDPHE	Colorado Department of Public Health and Environment
CEQ	Council on Environmental Quality
CERCLA	<i>Comprehensive Environmental Response, Compensation, and Liability Act</i>
CFR	<i>Code of Federal Regulations</i>
CHB	Container Handling Building
CIC	Central Incinerator Complex
CLA	Chemical Limited Area
CNHP	Colorado Natural Heritage Program
CO	carbon monoxide
COE	U.S. Army Corps of Engineers
CR	county road
CSEPP	Chemical Stockpile Emergency Preparedness Program
CWA	<i>Clean Water Act</i>
CWC	Chemical Weapons Convention (<i>Convention on the Prohibition of the Development, Production, Stockpiling, and Use of Chemical Weapons</i>)
DAB	Defense Acquisition Board
DAE	Defense Acquisition Executive
DAPC	Division of Air Pollution Control
DCE	dichloroethylene
DDT	dichlorodiphenyltrichloroethane
DEIS	draft environmental impact statement
DOC	U.S. Department of Commerce
DOD	U.S. Department of Defense
DOI	U.S. Department of the Interior
DOT	U.S. Department of Transportation
DRMO	Defense Reutilization and Marketing Office
EIS	environmental impact statement
Elchem	electrochemical as used in Elchem Ox
EMIS	Emergency Management Information System
EOC	emergency operations center
EPA	U.S. Environmental Protection Agency
EPCRA	<i>Emergency Planning and Community Right-to-Know Act</i>
EVAWS	enhanced visual/audio warning system
FDA	U.S. Food and Drug Administration
FEC	Foothill Engineering Consultants, Inc.
FEIS	final environmental impact statement
FEMA	Federal Emergency Management Agency
FR	<i>Federal Register</i>
FRRA	Front Range Research Associates, Inc.
FTE	full-time-equivalent
FY	fiscal year

GB	sarin, a nerve agent
GPCR	gas-phase chemical reduction
H	mustard, a blister agent
H ₂ S	hydrogen sulfide
HAP	hazardous air pollutant
HC	hydrocarbon
HD	mustard, a blister agent
HEPA	high-efficiency particulate air
HF	hydrogen fluoride
HQ	hazard quotient
HSWA	<i>Hazardous Solid Waste Amendments of 1984</i>
HT	mustard, a blister agent
HVAC	heating, ventilation, and air conditioning
I	interstate
ICAGRS	interim corrective action groundwater remediation system
ICB	immobilized cell bioreactor
IIPT	Integrating Integrated Product Team
IMPA	isopropyl methylphosphonic acid
IOC	Industrial Operations Command
IPT	Integrated Product Team
ISCST3	Industrial Source Complex Short-Term 3 (model)
IWTP	Industrial Waste Treatment Plant
JACADS	Johnston Atoll Chemical Agent Disposal System
KAR	<i>Kentucky Administrative Regulation</i>
KDEP	Kentucky Department of Environmental Protection
KPDES	Kentucky Pollutant Discharge Elimination System
KRS	<i>Kentucky Revised Statute</i>
KSNPC	Kentucky State Nature Preserves Commission
KYNHP	Kentucky Natural Heritage Program
LEPC	Local Emergency Planning Committee
LOAEL	lowest observed adverse effect level
LP	load platform
MCE	maximum credible event
MCL	maximum contaminant level
MDB	Munitions Demilitarization Building
MOA	memorandum of agreement
MOU	memorandum of understanding
MPA	methylphosphonic acid
MPT	metal parts treater

MSA	Metropolitan Statistical Area
MSL	mean sea level
NAAQS	National Ambient Air Quality Standards
NAGPRA	<i>Native American Grave Protection and Repatriation Act</i>
NCTR	National Center for Toxicological Research
NEPA	<i>National Environmental Policy Act</i>
NESHAP	National Emission Standards for Hazardous Air Pollutants
Neut	neutralization as used in Neut/Bio, Neut/SCWO, and Neut/GPCR/TW-SCWO
NHPA	<i>National Historic Preservation Act</i>
NO ₂	nitrogen dioxide
NOA	Notice of Availability
NOAA	National Oceanic and Atmospheric Administration
NOAEL	no observed adverse effects level
NOI	Notice of Intent
NO _x	nitrogen oxides
NPDES	National Pollutant Discharge Elimination System
NPL	National Priorities List
NRHP	<i>National Register of Historic Places</i>
NSPS	New Source Performance Standards
O ₃	ozone
OB/OD	open burning/open detonation
OIPT	Overarching Integrated Product Team
OMB	Office of Management and Budget
ONC	on-site container
OSC	Operations Support Command
OSHA	Occupational Safety and Health Administration
OSWER	Office of Solid Waste and Emergency Response
OU	operable unit
Ox	oxidation as used in Elchem Ox
PA	programmatic agreement
PAD	Pueblo Army Depot
PAH	polycyclic aromatic hydrocarbon
PAPR	powered air-purifying respirator
PAR	protective action recommendation
PAZ	protective action zone
Pb	lead
PBA	Pine Bluff Arsenal
PBCDF	Pine Bluff Chemical Demilitarization Facility
PCB	polychlorinated biphenyl
PCD	Pueblo Chemical Depot
PCP	pentachlorophenyl
PDA	Pueblo Depot Activity
PDADA	Pueblo Depot Activity Development Authority

PEPS	plasma energy pyrolysis system
P.L.	Public Law
PM	particulate matter
PM ₁₀	coarse, inhalable PM with a mean aerodynamic diameter of 10 µm or less
PM _{2.5}	fine, inhalable PM with a mean aerodynamic diameter of 2.5 µm or less
PMACWA	Program Manager Assembled Chemical Weapons Assessment
PMCD	Program Manager for Chemical Demilitarization
POD	Pueblo Ordnance Depot
POM	polycyclic organic matter
PPE	personal protective equipment
PSD	Prevention of Significant Deterioration (of air quality)
PTFMC	Power Train Flexibility Maintenance Center
PVC	polyvinyl chloride
QA	quality assurance
QC	quality control
R&D	research and development
RBC	running buffalo clover
RCRA	<i>Resource Conservation and Recovery Act</i>
RD&D	research, development, and demonstration
RDF	rotary deactivation furnace
RDX	an explosive
RFP	request for proposal
RI	remedial investigation
RMP	risk management plan
ROD	Record of Decision
ROI	region of influence
SAAQS	State Ambient Air Quality Standards
SAFE	Serving Alabama's Future Environment
SAIC	Science Applications International Corporation
SARA	<i>Superfund Amendments and Reauthorization Act</i>
SBCCOM	Soldier and Biological Chemical Command
SCWO	supercritical water oxidation
SDWA	<i>Safe Drinking Water Act</i>
SET	solvated electron technology
SHPO	State Historic Preservation Officer
SIA	Southeast Industrial Area
SIC	Standard Industrial Classification
SIP	state implementation plan
SO ₂	sulfur dioxide
SR	state route
SVOC	semivolatile organic compound
SWMU	solid waste management unit

TACOM	Tank Automotive Command
TAF	time after functioning
TCE	trichloroethylene
TCLP	Toxicity Characteristic Leaching Procedure
TDG	thiodiglycol, a mustard degradation product
TEAD	Tooele Army Depot
TNT	trinitrotoluene
TOCDF	Tooele Chemical Agent Disposal Facility
TRBP	thermal reduction batch processor
TRI	Toxics Release Inventory
TSCA	<i>Toxic Substances Control Act</i>
TSDF	treatment, storage, and disposal facility
TTC	Transportation Technology Center
TW	transpiring wall as used in Neut/GPCR/TW-SCWO
US	U.S. highway
USAEHA	U.S. Army Environmental Hygiene Agency
USC	<i>United States Code</i>
USDA	U.S. Department of Agriculture
USFS	U.S. Forest Service
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
VOC	volatile organic compound
VRM	Visual Resources Management
VX	a nerve agent
Western	Western Area Power Administration
WIPT	Working Integrated Product Team
WVRU	waste volume reduction unit
WWTP	wastewater treatment plant

UNITS OF MEASURE

°C	degree(s) Celsius
cm	centimeter(s)
d	day(s)
dB	decibel(s)
°F	degree(s) Fahrenheit
ft	foot (feet)
ft ³	cubic foot (feet)
g	gram(s)
G	gravity
gal	gallon(s)

GWh	gigawatt-hour(s)
h	hour(s)
ha	hectare(s)
in.	inch(es)
K	kelvin
kg	kilogram(s)
km	kilometer(s)
km ²	square kilometer(s)
kV	kilovolt(s)
L	liter(s)
lb	pound(s)
m	meter(s)
m ²	square meter(s)
m ³	cubic meter(s)
mg	milligram(s)
MHz	megahertz
mi	mile(s)
mi ²	square mile(s)
min	minute(s)
mm	millimeter(s)
mo	month(s)
mph	mile(s) per hour
MWh	megawatt-hour(s)
ng	nanogram(s)
Nm ³	normal cubic meter(s)
ppm	part(s) per million
psi	pound(s) per square inch
psia	pounds per square inch absolute
s	second(s)
tonne(s)	metric ton(s)
wk	week(s)
yd ³	cubic yard(s)
yr	year(s)
µg	microgram(s)
µm	micrometer(s)
µS	microsievert(s)

