



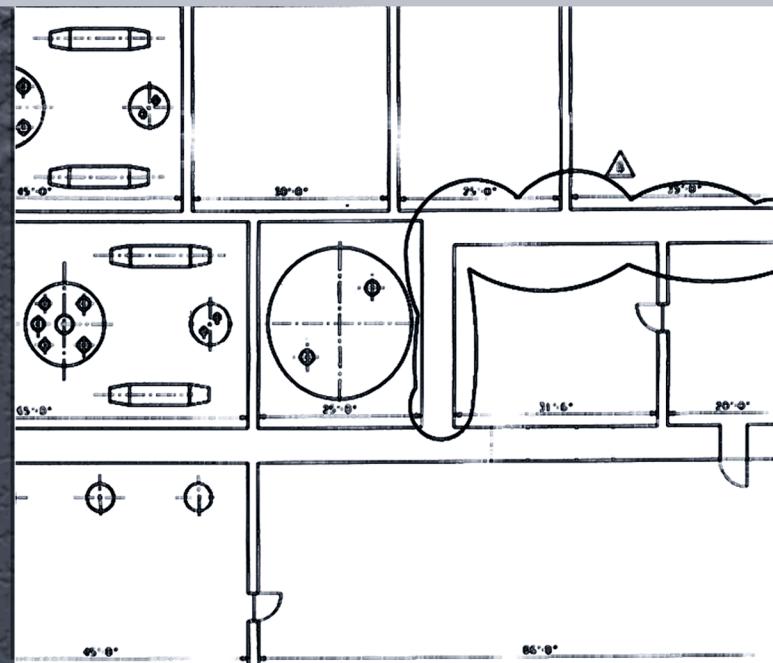
Savannah River Site **Salt Processing Alternatives**

Draft Supplemental *Environmental Impact Statement*

*U.S. Department of Energy
Savannah River Operations Office
Aiken, South Carolina*

March 2001

DOE/EIS-0082-S2D



COVER SHEET

RESPONSIBLE AGENCY: U.S. Department of Energy (DOE)

TITLE: Savannah River Site Salt Processing Alternatives Draft Supplemental Environmental Impact Statement (DOE/EIS-0082-S2D)

CONTACT: For additional information on this supplemental environmental impact statement (SEIS), write or call:

Andrew R. Grainger, NEPA Compliance Officer
U.S. Department of Energy,
Savannah River Operations Office
Building 742A, Room 183
Aiken, South Carolina 29802
Attention: Salt Processing SEIS
Local and Nationwide Telephone:
(800) 881-7292
Email: nepa@SRS.gov

CONTACT: For general information on DOE's National Environmental Policy Act (NEPA) process, write or call:

Ms. Carol M. Borgstrom, Director
Office of NEPA Policy and Compliance
U.S. Department of Energy, EH-42
1000 Independence Avenue, S.W.
Washington, D.C. 20585-0119
Telephone: (202) 586-4600 or
leave a message at (800) 472-2756

The SEIS is available on the internet at: <http://tis.eh.doe.gov/nepa/docs/docs.htm>.

ABSTRACT: DOE prepared this Draft SEIS on alternatives for separating the high-activity fraction from the low-activity fraction of the high-level radioactive waste salt solutions now stored in underground tanks at the Savannah River Site (SRS) near Aiken, South Carolina. The high-activity fraction of the high-level waste (HLW) salt solution would then be vitrified in the Defense Waste Processing Facility (DWPF) and stored until it could be disposed of as HLW in a geologic repository. The low-activity fraction would be disposed of as low-level waste (saltstone) in vaults at SRS.

A process to separate the high-activity and low-activity waste fractions of the HLW salt solutions is needed to replace the In-Tank Precipitation (ITP) process which, as presently configured, cannot achieve production goals and safety requirements for processing HLW. This SEIS analyzes the impacts of constructing and operating facilities for four alternative processing technologies – Small Tank Precipitation, Ion Exchange, Solvent Extraction, and Direct Disposal in Grout – and the No Action Alternative. DOE has not selected a Preferred Technology Alternative. Preferred sites for locating processing facilities within S and Z Areas at SRS are identified.

Because replacing the ITP process constitutes a substantial change to the HLW salt processing operation of the DWPF, as evaluated in a 1994 SEIS (DOE/SEIS-0082-S) to the 1982 DWPF EIS (DOE/EIS-0082), DOE prepared this second SEIS to evaluate the potential environmental impacts of alternatives to the ITP process.

PUBLIC INVOLVEMENT: In preparing this Draft SEIS, DOE considered comments received by letter and voice mail and comments received at two public scoping workshops held in Columbia and North Augusta, South Carolina, on March 11 and March 18, 1999, respectively.

A 45-day comment period on the Draft Salt Processing Alternatives SEIS begins with the U.S. Environmental Protection Agency's publication of a Notice of Availability in the *Federal Register*. Public meetings to discuss and receive comments on the Draft SEIS will be held on May 1, 2001, at the North Augusta Community Center in North Augusta, South Carolina, and on May 3, 2001, at the Holiday Inn Coliseum in Columbia, South Carolina. Comments may be submitted at the public meetings and by voice mail, e-mail, or regular mail to the first address above. Comments received or postmarked by the end of the comment period will be considered in the preparation of the Final SEIS. Comments received or postmarked after the close of the comment period will be considered to the extent practicable.

FOREWORD

The U.S. Department of Energy (DOE) published a Notice of Intent (NOI) on February 22, 1999, to prepare this supplemental environmental impact statement (SEIS). DOE prepared this SEIS on alternatives for separating the high-activity fraction from the low-activity fraction in the radioactive high-level waste (HLW) salt solution now stored in underground tanks at the Savannah River Site (SRS) near Aiken, South Carolina. The high-activity fraction of the HLW salt solution waste would then be vitrified in the Defense Waste Processing Facility and stored until it could be disposed of as high-level waste in a geologic repository. The low-activity fraction would be disposed of as low-level waste (saltstone) in vaults at SRS.

A process to separate the high-activity and low-activity waste fractions in the high-level waste salt solutions is needed to replace the In-Tank Precipitation (ITP) process which, as presently configured, cannot achieve production goals and safety requirements for processing high-level waste. This SEIS analyzes the impacts of constructing and operating four alternative processing technologies – Small Tank Precipitation, Ion Exchange, Solvent Extraction, and Direct Disposal in Grout – and the No Action Alternative. Because replacing the ITP process constitutes a substantial change to the HLW salt processing operation of the Defense Waste Processing Facility, as evaluated in a 1994 SEIS (DOE/SEIS-0082-S) to the 1982 Defense Waste Processing Facility EIS (DOE/EIS-0082), DOE prepared this second SEIS to evaluate the potential environmental impacts of alternatives to the ITP process.

The NOI requested public comments for DOE to consider in determining the scope of the SEIS and announced a public scoping period that ended on April 8, 1999. Two public scoping workshops were held during the scoping period: one on March 11, 1999, in Columbia, South Carolina, and one on March 18, 1999, in North Augusta, South Carolina. From the scoping process, DOE identified approximately 90 comments considered applicable to the Salt

Processing SEIS. A Summary of the comments received during the scoping period, and how they influenced the scope of this Draft SEIS, is included in Appendix C.

Transcripts of public testimony, copies of scoping letters, responses to those comments, and reference materials cited in the SEIS are available for review in the DOE Public Reading Room, University of South Carolina at Aiken, Gregg-Graniteville Library, University Parkway, Aiken, South Carolina.

DOE has prepared this SEIS in accordance with the National Environmental Policy Act (NEPA) regulations of the Council on Environmental Quality (40 CFR 1500-1508) and DOE NEPA Implementing Procedures (10 CFR 1021). This SEIS identifies the methods used for analyses and the scientific and other sources of information consulted. In addition, results available from ongoing studies are incorporated directly or summarized and referenced. The organization of the SEIS is as follows:

- Chapter 1 describes the background and purpose and need for DOE action regarding salt processing at SRS.
- Chapter 2 describes the proposed action and the alternatives that DOE is evaluating.
- Chapter 3 describes the SRS environment as it relates to the alternatives described in Chapter 2.
- Chapter 4 assesses the potential environmental impacts of the alternatives.
- Chapter 5 discusses the cumulative impacts of salt processing in relation to other past, present, and reasonably foreseeable future activities at SRS, and in the surrounding region.
- Chapter 6 identifies irreversible and irretrievable resource commitments.

- Chapter 7 discusses applicable statutes, state and Federal regulations, and DOE Orders, and agreements.
- Appendix A describes the facilities and processes that would be used for each of the alternatives.
- Appendix B discusses the methods used for accident analysis and the results of the analysis.
- Appendix C describes the SEIS scoping process, the comments received, and how DOE has addressed those comments.
- Appendix D gives the methods and the results of long-term performance modeling that was used to evaluate the impacts of salt processing alternatives.

TABLE OF CONTENTS

<u>Section</u>	<u>Page</u>
COVER SHEET.....	iii
FOREWORD	v
ACRONYMS, ABBREVIATIONS, AND USE OF SCIENTIFIC NOTATION.....	xv
SUMMARY	S-1
CHAPTER 1. BACKGROUND AND PURPOSE AND NEED FOR ACTION	1-1
1.1 Background	1-1
1.2 Purpose and Need for Action.....	1-5
1.3 SEIS Overview	1-5
1.3.1 Scope	1-5
1.3.2 Organization	1-6
1.3.3 Stakeholder Participation.....	1-6
1.4 Related Information	1-7
1.4.1 NEPA Documents.....	1-7
1.4.2 Other Relevant Documents.....	1-8
References	1-13
CHAPTER 2. PROPOSED ACTION AND ALTERNATIVES.....	2-1
2.1 Proposed Action.....	2-1
2.2 Inventory and Schedule for Processing of High-Level Waste Salt.....	2-1
2.3 No Action Alternative.....	2-4
2.3.1 Identify Additional Ways to Optimize Tank Farm Operations	2-4
2.3.2 Reuse Tanks Scheduled to be Closed By 2019.....	2-5
2.3.3 Build Tanks Permitted Under Wastewater Treatment Regulations	2-5
2.3.4 Build Tanks Permitted Under RCRA Regulations	2-5
2.3.5 Suspend Operations At DWPF	2-6
2.4 Selection of Salt Processing Technologies for Evaluation as Alternatives.....	2-6
2.5 Salt Processing Facility Site Identification	2-7
2.6 Salt Processing Alternatives	2-7
2.6.1 Small Tank Precipitation	2-12
2.6.2 Ion Exchange	2-12
2.6.3 Solvent Extraction	2-15
2.6.4 Direct Disposal in Grout.....	2-15
2.7 Salt Processing Facilities	2-15
2.7.1 Process Inputs and Processing Requirements.....	2-15
2.7.2 Product Outputs	2-18
2.7.3 Process Facilities	2-19
2.7.4 Support Facilities	2-20
2.7.5 Z-Area Vaults	2-20
2.7.6 Pilot Plant	2-22
2.7.7 Facility Decontamination and Decommissioning.....	2-22
2.8 Other Decision-Making Factors.....	2-23
2.8.1 National Academy of Sciences Review Committee Final Report	2-23
2.8.2 Self-Protecting HLW Canisters	2-25
2.8.3 Cost.....	2-26

TABLE OF CONTENTS (Continued)

<u>Section</u>	<u>Page</u>
2.9 Comparison of Alternatives	2-26
2.9.1 Short-Term Impacts	2-26
2.9.2 Long-Term Impacts	2-44
References	2-49
 CHAPTER 3. AFFECTED ENVIRONMENT	 3-1
3.1 Geologic Setting and Seismicity	3-4
3.1.1 General Geology	3-4
3.1.2 Subsurface Features	3-4
3.1.3 Seismicity	3-4
3.2 Water Resources	3-9
3.2.1 Surface Water	3-9
3.2.2 Groundwater Resources	3-13
3.2.2.1 Groundwater Features	3-13
3.2.2.2 Groundwater Use	3-17
3.2.2.3 Hydrogeology	3-20
3.2.2.4 Groundwater Quality	3-20
3.3 Air Resources	3-20
3.3.1 Meteorology	3-20
3.3.1.1 Local Climatology	3-23
3.3.1.2 Severe Weather	3-24
3.3.2 Air Quality	3-24
3.3.2.1 Nonradiological Air Quality	3-24
3.3.2.2 Radiological Air Quality	3-25
3.4 Ecological Resources	3-27
3.4.1 Natural Communities of the Savannah River Site	3-27
3.4.2 Ecological Communities Potentially Affected by Development and Operation of Salt Processing Facilities	3-32
3.5 Land Use	3-34
3.6 Socioeconomics and Environmental Justice	3-34
3.6.1 Socioeconomics	3-34
3.6.2 Environmental Justice	3-36
3.7 Cultural Resources	3-36
3.8 Public and Worker Health	3-37
3.8.1 Public Radiological Health	3-37
3.8.2 Public Nonradiological Health	3-40
3.8.3 Worker Radiological Health	3-42
3.8.4 Worker Nonradiological Health	3-42
3.9 Waste and Hazardous Materials Management	3-43
3.9.1 Low-Level Radioactive Waste	3-44
3.9.2 Mixed Low-Level Waste	3-45
3.9.3 High-Level Waste	3-45
3.9.4 Sanitary Waste	3-49
3.9.5 Hazardous Waste	3-49
3.9.6 Transuranic and Alpha Waste	3-49
3.9.7 Hazardous Chemicals	3-49

TABLE OF CONTENTS (Continued)

<u>Section</u>	<u>Page</u>
3.10 Energy and Utilities	3-50
References	3-51
CHAPTER 4. ENVIRONMENTAL IMPACTS.....	4-1
4.1 Short-Term Impacts	4-1
4.1.1 Geologic Resources	4-2
4.1.2 Water Resources	4-4
4.1.2.1 Surface Water	4-4
4.1.2.2 Groundwater Resources	4-5
4.1.3 Air Resources	4-7
4.1.3.1 Nonradiological Emissions	4-7
4.1.3.2 Radiological Emissions.....	4-13
4.1.4 Worker and Public Health	4-17
4.1.4.1 Nonradiological Health Effects.....	4-17
4.1.4.2 Radiological Health Effects	4-19
4.1.4.3 Occupational Health and Safety.....	4-20
4.1.5 Environmental Justice.....	4-22
4.1.5.1 Background	4-22
4.1.5.2 Methodology	4-23
4.1.6 Ecological Resources.....	4-25
4.1.7 Land Use.....	4-27
4.1.8 Socioeconomics	4-28
4.1.9 Cultural Resources.....	4-29
4.1.10 Traffic and Transportation	4-29
4.1.11 Waste Generation.....	4-32
4.1.11.1 Wastes From Salt Processing.....	4-32
4.1.11.2 Secondary Waste.....	4-33
4.1.12 Utilities and Energy	4-36
4.1.12.1 Water Use	4-36
4.1.12.2 Electricity Use.....	4-38
4.1.12.3 Steam Use	4-38
4.1.12.4 Fuel Use	4-38
4.1.13 Accident Analysis.....	4-39
4.1.14 Pilot Plant	4-40
4.1.14.1 Geologic Resources	4-46
4.1.14.2 Water Resources	4-46
4.1.14.3 Air Resources.....	4-46
4.1.14.4 Worker and Public Health.....	4-47
4.1.14.5 Environmental Justice.....	4-47
4.1.14.6 Ecological Resources	4-47
4.1.14.7 Land Use	4-47
4.1.14.8 Socioeconomics	4-47
4.1.14.9 Cultural Resources	4-48
4.1.14.10 Traffic and Transportation	4-48
4.1.14.11 Waste Generation.....	4-48
4.1.14.12 Utilities and Energy	4-48

TABLE OF CONTENTS (Continued)

<u>Section</u>	<u>Page</u>
4.2 Long-Term Impacts	4-49
4.2.1 Geologic Resources	4-50
4.2.2 Water Resources	4-50
4.2.2.1 Surface Water	4-50
4.2.2.2 Groundwater	4-52
4.2.3 Ecological Resources.....	4-53
4.2.3.1 Radiological Contaminants.....	4-54
4.2.3.2 Nonradiological Contaminants	4-54
4.2.4 Land Use.....	4-58
4.2.5 Public Health	4-58
4.2.5.1 Radiological Contaminants.....	4-59
References	4-61
 CHAPTER 5. CUMULATIVE IMPACTS.....	5-1
5.1 Air Resources.....	5-7
5.2 Water Resources	5-9
5.3 Public and Worker Health.....	5-10
5.4 Waste Generation and Disposal Capacity	5-12
5.5 Utilities and Energy	5-13
5.6 Long-Term Cumulative Impacts.....	5-13
References	5-15
 CHAPTER 6. RESOURCE COMMITMENTS.....	6-1
6.1 Unavoidable Adverse Impacts	6-1
6.1.1 Operating-Life Impacts.....	6-1
6.1.2 Long-Term Impacts	6-4
6.2 Relationship Between Local Short-Term Uses of the Environment and the Maintenance and Enhancement of Long-Term Productivity	6-5
6.3 Irreversible and Irretrievable Resource Commitments	6-6
6.4 Waste Minimization, Pollution Prevention, and Energy Conservation	6-7
6.4.1 Waste Minimization and Pollution Prevention.....	6-7
6.4.2 Energy Conservation	6-10
References	6-11
 CHAPTER 7. APPLICABLE LAWS, REGULATIONS, AND OTHER REQUIREMENTS.	7-1
7.1 Waste Incidental to Reprocessing Determination.....	7-1
7.2 Statutes and Regulations Requiring Permits or Consultations.....	7-4
7.2.1 Environmental Protection Permits	7-4
7.2.2 Protection of Biological, Historic, and Archaeological Resources.....	7-8
7.3 Statutes, Regulations, and Guidelines Related to Emergency Planning, Worker Safety, and Protection of Public Health and the Environment.....	7-10
7.3.1 Environmental Protection	7-10
7.3.2 Emergency Planning and Response.....	7-11
7.4 Executive Orders.....	7-13

TABLE OF CONTENTS (Continued)

<u>Section</u>		<u>Page</u>
7.5	DOE Regulations and Orders.....	7-14
	References	7-16
APPENDIX A	- TECHNOLOGY DESCRIPTIONS	
APPENDIX B	- ACCIDENT ANALYSIS	
APPENDIX C	- PUBLIC SCOPING SUMMARY	
APPENDIX D	- LONG-TERM PERFORMANCE EVALUATION	
LIST OF PREPARERS		LP-1
CONTRACTOR DISCLOSURE STATEMENT		CDS-1
DISTRIBUTION LIST		DL-1
GLOSSARY		GL-1

List of Tables

<u>Table</u>		<u>Page</u>
1-1	Primer of Technical Terms (other scientific terms are defined in the glossary).....	1-10
2-1	Comparison of salt processing alternatives	2-10
2-2	Primer of technical terms (other scientific terms are defined in the glossary).	2-11
2-3	Inputs and processing requirements for the salt processing alternatives.	2-18
2-4	Product outputs for the salt processing alternatives.....	2-19
2-5	Building specifications for each action alternative.....	2-20
2-6	Summary comparison of incremental life-cycle impacts to the SRS baseline by salt processing alternative.	2-27
2-7	Comparison of accident impacts among alternatives	2-39
2-8	Summary comparison of long-term impacts by salt processing alternative.	2-47
3-1	SRS stream water quality (onsite downstream locations)	3-12
3-2	Annual liquid releases by source for 1997 (including direct and seepage basin migration releases).....	3-13
3-3	Liquid radioactive releases by outfall/facility and comparison of annual average radionuclide concentrations to DOE derived concentration guides.....	3-14
3-4	Potential F and H Area contributors of contamination to Upper Three Runs and Fourmile Branch	3-17
3-5	Soil formations of the Floridan aquifer system in F and H Areas	3-21
3-6	H Area maximum reported groundwater parameters in excess of regulatory and SRS limits	3-22
3-7	S Area maximum reported groundwater parameters in excess of regulatory and SRS limits	3-23
3-8	Z Area maximum reported groundwater parameters in excess of regulatory and SRS limits	3-23
3-9	SCDHEC ambient air monitoring data for 1997	3-26
3-10	Criteria and toxic/hazardous air pollutant emissions from SRS (1997)	3-26

TABLE OF CONTENTS (Continued)**List of Tables (Continued)**

<u>Table</u>		<u>Page</u>
3-11	SRS baseline air quality for maximum potential emissions and observed ambient concentrations.....	3-27
3-12	Radiological atmospheric releases by operational group for 1997	3-28
3-13	Radioactivity in air at the SRS boundary and at a 100-mile radius during 1997 (picocuries per cubic meter)	3-31
3-14	Population projections and percent of region of influence	3-35
3-15	General racial characteristics of population in the Savannah River Site region of influence	3-37
3-16	General poverty characteristics of populations in the Savannah River Site region of influence	3-40
3-17	SRS annual individual and collective radiation doses	3-43
3-18	Potential occupational safety and health hazards and associated exposure limits.....	3-43
3-19	Comparison of injury and illness incident rates for SRS construction to general industry construction	3-44
3-20	Comparison of injury and illness incident rates for SRS operations to private industry and manufacturing	3-44
3-21	Total waste generation forecast for SRS (cubic meters).....	3-45
3-22	Planned and existing waste storage facilities.....	3-46
3-23	Planned and existing waste treatment processes and facilities	3-47
3-24	Planned and existing waste disposal facilities	3-48
4-1	Impact to SRS land from each of the proposed action alternatives	4-3
4-2	Total annual wastewater generation and as a percentage of available treatment capacity for all salt processing action alternatives.....	4-6
4-3	Expected sources of air emissions from construction activities for all alternatives	4-8
4-4	Estimated nonradiological air emissions (tons per year) from construction activities associated with all alternatives	4-8
4-5	Estimated maximum incremental increases of air concentrations (micrograms per cubic meter) of SCDHEC-regulated nonradiological air pollutants at the SRS boundary from construction activities associated with all salt processing alternatives.....	4-10
4-6	Expected sources of air emissions during salt processing for the four action alternatives ...	4-10
4-7	Estimated nonradiological air emissions (tons per year) from routine operations for salt processing alternatives.....	4-11
4-8	Estimated maximum increases in air concentrations (micrograms per cubic meter) and percent of standard of SCDHEC-regulated nonradiological air pollutants at the SRS boundary from salt processing alternatives	4-14
4-9	Annual radionuclide emissions (curies/year) resulting from operations	4-15
4-10	Annual doses from radiological air emissions from salt processing activities presented as 50-year committed effective dose equivalents	4-16
4-11	Estimated maximum concentration in milligrams per cubic meter (mg/m^3) of air pollutants to the noninvolved worker from facility air emissions	4-19
4-12	Estimated public and occupational radiological doses and health impacts from atmospheric emissions during operations.....	4-21
4-13	Estimated total recordable cases and lost workdays annually and for the life cycle of each alternative	4-22

TABLE OF CONTENTS (Continued)**List of Tables (Continued)**

<u>Table</u>		<u>Page</u>
4-14	Peak and attenuated noise (in dBA) levels expected from operation of construction equipment	4-26
4-15	Estimated salt processing employment by alternative	4-28
4-16	Material (totals for the construction and operation phases) transportation impacts associated with the salt processing alternatives	4-31
4-17	Worker transportation impacts associated with the salt processing alternatives	4-32
4-18	Maximum annual waste generation for the salt processing action alternatives	4-34
4-19	Total estimated waste generation for the salt processing action alternatives	4-34
4-20	Estimated project total energy and utilities use for the salt processing alternatives	4-37
4-21	Estimated consequences of accidents involving nonradioactive hazardous materials	4-41
4-22	Estimated accident consequences for the Small Tank Precipitation process	4-42
4-23	Estimated accident consequences for the Ion Exchange process	4-43
4-24	Estimated accident consequences for the Solvent Extraction process	4-44
4-25	Estimated accident consequences for the Direct Disposal in Grout process	4-45
4-26	Maximum dose and health effects from concentrations of radionuclides in groundwater 1 meter and 100 meters downgradient of Z Area vaults and at the seepline	4-51
4-27	Maximum nonradiological contaminant concentrations (mg/L) in groundwater 1 meter and 100 meters downgradient and at the seepline	4-52
4-28	Maximum concentrations of radiological contaminants in seepline groundwater compared to ORNL screening guidelines (pCi/L)	4-55
4-29	Maximum concentrations of nitrate in seepline groundwater compared to ecotoxicity guidelines (mg/L)	4-57
4-30	Summary comparison of long-term human exposure scenarios and health effects	4-60
5-1	Estimated maximum nonradiological cumulative ground-level concentrations of criteria and toxic pollutants (micrograms per cubic meter) at the SRS boundary	5-8
5-2	Estimated average annual cumulative radiological doses and resulting health effects to offsite population from airborne emissions	5-10
5-3	Estimated average annual cumulative radiological doses and resulting health effects to offsite population and facility workers	5-11
5-4	Estimated cumulative waste generation from SRS concurrent activities (cubic meters)	5-13
5-5	Estimated average annual cumulative utility consumption	5-14
6-1	Total estimated waste generation for the salt processing action alternatives	6-3
6-2	Estimated project total energy, utilities, and material use for the salt processing alternatives	6-8
7-1	Environmental permits and consultations required by law	7-2
7-2	DOE Orders and Standards relevant to the salt processing alternatives	7-15

TABLE OF CONTENTS (Continued)**List of Figures**

<u>Figure</u>		<u>Page</u>
1-1	Savannah River Site map with F, H, S, and Z Areas highlighted.....	1-2
2-1	Process Flow for High-Level Waste at the Savannah River Site.....	2-2
2-2	Potential salt processing facility sites in S Area	2-8
2-3	Proposed location of new Grout Facility and saltstone disposal vaults in Z Area	2-9
2-4	Small Tank Precipitation process flow diagram.....	2-13
2-5	Ion Exchange process flow diagram.....	2-14
2-6	Solvent Extraction process flow diagram.....	2-16
2-7	Direct Disposal in Grout process flow diagram.....	2-17
2-8	Cross-section diagram of vault closure concept	2-21
3-1	Surface elevation and direction of surface drainage in the vicinity of S Area.....	3-2
3-2	Surface elevation and direction of surface drainage in the vicinity of Z Area.	3-3
3-3	Generalized location of Savannah River Site and its relationship to physiographic provinces of southeastern United States	3-5
3-4	Generalized geologic and aquifer units in SRS region.	3-6
3-5	Soil series in H, S, and Z Areas.	3-7
3-6	Savannah River Site, showing fault lines and locations of onsite earthquakes and their year of occurrence.	3-8
3-7	Savannah River Site, showing 100-year floodplain and major stream systems.	3-10
3-8	Radiological surface water sampling locations.	3-16
3-9	Average groundwater elevation and direction of flow in the vicinity of S Area.....	3-18
3-10	Average groundwater elevation and direction of flow in the vicinity of Z Area.....	3-19
3-11	Distribution of minority population by census tracts in the SRS region of analysis.	3-38
3-12	Low income census tracts in the SRS region of analysis.	3-39
3-13	Major sources of radiation exposure in the vicinity of the Savannah River Site.....	3-41