

Table of Contents

	<u>Page</u>
Summary	S-1
List of Acronyms and Abbreviations	xix
Glossary	xxi
Chapter 1. Purpose and Need for Action	1-1
1.1 BACKGROUND	1-1
1.2 PURPOSE AND NEED	1-2
1.3 DOE ALTERNATIVES	1-2
1.4 NATIONAL ENVIRONMENTAL POLICY ACT AND PUBLIC INVOLVEMENT	1-2
1.4.1 Scoping and Public Involvement	1-2
1.4.2 Summary of Scoping Comments	1-3
1.4.3 Draft EIS Public Comment Period	1-6
1.4.4 Public Review of the Draft EIS and Changes to the Final EIS	1-6
1.4.4.1 Major Issues Raised in Comments on Draft EIS	1-6
1.4.4.2 Major Changes to the Final EIS	1-8
1.4.5 Final Environmental Impact Statement and Record of Decision	1-9
1.5 DOE DECISION	1-9
Chapter 2. Proposed Action and Alternatives	2-1
2.1 INTRODUCTION	2-1
2.2 PROPOSED ACTION	2-1
2.2.1 Potential New Sites	2-1
2.2.2 Potential Expansion Sites	2-2
2.2.3 Alternatives	2-2
2.3 BACKGROUND ON CONSTRUCTION AND OPERATION OF SPR	
STORAGE SITES	2-5
2.3.1 Cavern Creation, Fill, and Drawdown System	2-5
2.3.2 Raw Water Intake System	2-9
2.3.3 Brine Disposal System	2-10
2.3.4 Crude Oil Distribution System	2-12
2.3.5 Site Support Structure and Equipment	2-12
2.3.6 Storm Protection Measures	2-13
2.3.7 Construction in Uplands	2-14
2.3.8 Construction in Wetlands	2-14
2.3.9 Pipeline Construction	2-15
2.3.10 Operations and Maintenance	2-16
2.3.11 Decommissioning	2-20
2.4 POTENTIAL NEW SITES AND ASSOCIATED INFRASTRUCTURE	2-22
2.4.1 Bruinsburg Storage Site	2-22
2.4.2 Chacahoula Storage Site	2-31
2.4.3 Richton Storage Site	2-35
2.4.4 Stratton Ridge Storage Site	2-42
2.5 EXPANSION AT EXISTING SPR SITES	2-50
2.5.1 Bayou Choctaw Expansion Site	2-50
2.5.2 Big Hill Expansion Site	2-53
2.5.3 West Hackberry Expansion Site	2-56
2.6 ALTERNATIVES ELIMINATED FROM DETAILED STUDY	2-56

2.7	COMPARISON OF ALTERNATIVES	2-60
2.7.1	Environmental Risks and Public and Occupational Safety and Health	2-61
2.7.2	Land Use	2-62
2.7.3	Geology and Soils	2-64
2.7.4	Air Quality	2-65
2.7.5	Water Resources	2-65
2.7.6	Biological Resources	2-67
2.7.7	Socioeconomics	2-72
2.7.8	Cultural Resources	2-72
2.7.9	Noise	2-73
2.7.10	Environmental Justice	2-74
2.7.11	Comparison Across Alternatives	2-74
Chapter 3.	Affected Environment and Potential Impacts	3-1
3.1	INTRODUCTION	3-1
3.2	ENVIRONMENTAL RISKS AND PUBLIC AND OCCUPATIONAL SAFETY AND HEALTH	3-2
3.2.1	Methodology	3-2
3.2.1.1	Oil Spills	3-2
3.2.1.2	Brine Spills	3-4
3.2.1.3	Hazardous Material Spills	3-5
3.2.1.4	Fires	3-6
3.2.1.5	Occupational Injuries	3-9
3.2.1.6	Terrorism	3-9
3.2.2	Impacts Common to All Alternatives	3-9
3.2.2.1	Oil Spills	3-9
3.2.2.2	Brine Spills	3-12
3.2.2.3	Hazardous Material Spills	3-13
3.2.2.4	Fires	3-15
	3.2.2.4.1 Well-Pad Accident	3-15
	3.2.2.4.2 Tank Fire	3-15
	3.2.2.4.3 Pump Fire	3-16
	3.2.2.5 Occupational Injuries	3-17
3.2.3	No-Action Alternative	3-17
3.3	LAND USE	3-18
3.3.1	Methodology	3-18
3.3.1.1	Possible Land Use Conflicts	3-18
3.3.1.2	Visual Resources	3-19
3.3.1.3	Prime Farmland	3-19
3.3.1.4	Coastal Zone Management	3-20
3.3.2	Impacts Common to Multiple Sites	3-20
3.3.2.1	Possible Land Use Conflicts	3-20
3.3.2.2	Visual Resource Impacts	3-23
3.3.2.3	Prime Farmland Impacts	3-25
3.3.2.4	Coastal Zone Management Impacts	3-26
3.3.3	Bruinsburg Storage Site	3-26
3.3.3.1	Affected Environment	3-26
3.3.3.2	Potential Impacts	3-30
	3.3.3.2.1 Possible Land Use Conflicts	3-30
	3.3.3.2.2 Visual Resources	3-31

Table of Contents

		3.3.3.2.3 Coastal Zone Management	3-32
3.3.4	Chacahoula Storage Site		3-32
	3.3.4.1 Affected Environment		3-32
	3.3.4.2 Potential Impacts		3-33
	3.3.4.2.1 Possible Land Use Conflicts		3-33
	3.3.4.2.2 Visual Resources		3-33
	3.3.4.2.3 Coastal Zone Management		3-33
3.3.5	Richton Storage Site		3-34
	3.3.5.1 Affected Environment		3-34
	3.3.5.2 Potential Impacts		3-34
	3.3.5.2.1 Possible Land Use Conflicts		3-34
	3.3.5.2.2 Visual Resources		3-35
	3.3.5.2.3 Coastal Zone Management		3-35
3.3.6	Stratton Ridge Storage Site		3-36
	3.3.6.1 Affected Environment		3-36
	3.3.6.2 Potential Impacts		3-36
	3.3.6.2.1 Possible Land Use Conflicts		3-36
	3.3.6.2.2 Visual Resources		3-37
	3.3.6.2.3 Coastal Zone Management		3-38
3.3.7	Bayou Choctaw Expansion Site		3-38
	3.3.7.1 Affected Environment		3-38
	3.3.7.2 Potential Impacts		3-38
	3.3.7.2.1 Possible Land Use Conflicts		3-38
	3.3.7.2.2 Visual Resources		3-39
	3.3.7.2.3 Coastal Zone Management		3-39
3.3.8	Big Hill Expansion Site		3-39
	3.3.8.1 Affected Environment		3-39
	3.3.8.2 Potential Impacts		3-39
	3.3.8.2.1 Possible Land Use Conflicts		3-39
	3.3.8.2.2 Visual Resources		3-40
	3.3.8.2.3 Coastal Zone Management		3-40
3.3.9	West Hackberry Expansion Site		3-40
	3.3.9.1 Affected Environment		3-40
	3.3.9.2 Potential Impacts		3-41
	3.3.9.2.1 Possible Land Use Conflicts		3-41
	3.3.9.2.2 Visual Resources		3-41
	3.3.9.2.3 Coastal Zone Management		3-41
3.3.10	No-Action Alternative		3-42
3.4	GEOLOGY AND SOILS		3-43
3.4.1	Methodology		3-43
	3.4.1.1 Erosion		3-43
	3.4.1.2 Subsidence		3-43
	3.4.1.3 Seismic Activity		3-44
	3.4.1.4 Soil Liquefaction		3-44
	3.4.1.5 Stability of Salt Domes		3-44
	3.4.1.6 Brine and Oil Seepage from Caverns		3-44
	3.4.1.7 Multiple-Use Impacts		3-45
3.4.2	Impacts Common to Multiple Sites		3-45
	3.4.2.1 Erosion		3-45
	3.4.2.2 Subsidence		3-45
	3.4.2.3 Seismic Activity		3-46

Table of Contents

	3.4.2.4	Soil Liquefaction	3-48
	3.4.2.5	Stability of Salt Domes	3-48
	3.4.2.6	Brine and Oil Seepage from Caverns	3-49
	3.4.2.7	Multiple-Use Impacts	3-50
3.4.3		Bruinsburg Storage Site	3-50
	3.4.3.1	Affected Environment	3-50
	3.4.3.2	Operation and Maintenance Impacts	3-51
3.4.4		Chacahoula Storage Site	3-52
	3.4.4.1	Affected Environment	3-52
	3.4.4.2	Operation and Maintenance Impacts	3-53
3.4.5		Richton Storage Site	3-54
	3.4.5.1	Affected Environment	3-54
	3.4.5.2	Operation and Maintenance Impacts	3-55
3.4.6		Stratton Ridge Storage Site	3-56
	3.4.6.1	Affected Environment	3-56
	3.4.6.2	Operation and Maintenance Impacts	3-57
3.4.7		Bayou Choctaw Expansion Site	3-58
	3.4.7.1	Affected Environment	3-58
	3.4.7.2	Operation and Maintenance Impacts	3-59
3.4.8		Big Hill Expansion Site	3-59
	3.4.8.1	Affected Environment	3-59
	3.4.8.2	Operation and Maintenance Impacts	3-61
3.4.9		West Hackberry Expansion Site	3-61
	3.4.9.1	Affected Environment	3-61
	3.4.9.2	Operation and Maintenance Impacts	3-62
3.4.10		No-Action Alternative	3-63
3.5		AIR QUALITY	3-64
	3.5.1	Methodology	3-64
		3.5.1.1 Construction Impacts	3-64
		3.5.1.2 Operations and Maintenance Impacts	3-66
		3.5.1.3 Greenhouse Gas Emissions and Climate Change Impacts	3-66
	3.5.2	Impacts Common to Multiple Sites	3-67
		3.5.2.1 Construction Impacts	3-67
		3.5.2.2 Operations and Maintenance Impacts	3-68
		3.5.2.3 Greenhouse Gas Emissions and Climate Change Impacts	3-72
	3.5.3	Bruinsburg Storage Site	3-72
		3.5.3.1 Affected Environment	3-72
		3.5.3.2 Construction Impacts	3-73
	3.5.4	Chacahoula Storage Site	3-76
		3.5.4.1 Affected Environment	3-76
		3.5.4.2 Construction Impacts	3-77
	3.5.5	Richton Storage Site	3-79
		3.5.5.1 Affected Environment	3-79
		3.5.5.2 Construction Impacts	3-80
	3.5.6	Stratton Ridge Storage Site	3-83
		3.5.6.1 Affected Environment	3-83
		3.5.6.2 Construction Impacts	3-83
	3.5.7	Bayou Choctaw Expansion Site	3-87
		3.5.7.1 Affected Environment	3-87
		3.5.7.2 Construction Impacts	3-87

Table of Contents

3.5.8	Big Hill Expansion Site	3-90
3.5.8.1	Affected Environment	3-90
3.5.8.2	Construction Impacts	3-91
3.5.9	West Hackberry Expansion Storage Site and Associated Infrastructure	3-94
3.5.9.1	Affected Environment	3-94
3.5.9.2	Construction Impacts	3-94
3.5.10	No-Action Alternative	3-95
3.6	WATER RESOURCES	3-96
3.6.1	Methodology	3-96
3.6.1.1	Surface Water	3-96
3.6.1.2	Groundwater	3-98
3.6.2	Impacts Common to Multiple Sites	3-98
3.6.2.1	Surface Water Common Impacts	3-99
3.6.2.1.1	Impacts of Raw Water Withdrawal from Surface Water	3-99
3.6.2.1.2	Impacts of Brine Disposal in the Gulf of Mexico	3-99
3.6.2.1.3	Impacts Associated with Constructing Pipelines Across Surface Water Bodies	3-101
3.6.2.1.4	Impacts from Erosion and Runoff from Construction Activities	3-103
3.6.2.1.5	Impacts of Oil Spills to Surface Water	3-104
3.6.2.1.6	Impacts of Brine Spills to Surface Water	3-106
3.6.2.1.7	Impacts on Floodplains	3-107
3.6.2.1.8	Impacts to Navigation	3-109
3.6.2.1.9	Impacts From On-Site Wastewater Treatment Plant Discharge	3-110
3.6.2.1.10	Impacts From Nonpoint Source Surface Water Discharge	3-110
3.6.2.1.11	Impacts Associated with Potable and Miscellaneous Water Use	3-111
3.6.2.2	Groundwater Common Impacts	3-111
3.6.2.2.1	Impacts of Brine Releases to Groundwater	3-111
3.6.2.2.2	Impacts from Oil Storage Cavern Leakage	3-112
3.6.2.2.3	Impacts to Groundwater Due to Raw Water Withdrawal from Surface Waters	3-112
3.6.3	Bruinsburg Storage Site	3-113
3.6.3.1	Bruinsburg Surface Water	3-113
3.6.3.1.1	Bruinsburg Surface Water: Affected Environment	3-113
3.6.3.1.2	Bruinsburg Surface Water: Construction Impacts	3-113
3.6.3.1.3	Bruinsburg Surface Water: Operations and Maintenance Impacts	3-119
3.6.3.2	Bruinsburg Groundwater	3-119
3.6.3.2.1	Bruinsburg Groundwater: Affected Environment	3-119
3.6.3.2.2	Bruinsburg Groundwater: Construction Impacts	3-121

Table of Contents

		3.6.3.2.3 Bruinsburg Groundwater: Operations and Maintenance Impacts	3-122
3.6.4	Chacahoula Storage Site		3-123
	3.6.4.1 Chacahoula Surface Water		3-123
		3.6.4.1.1 Chacahoula Surface Water: Affected Environment	3-123
		3.6.4.1.2 Chacahoula Surface Water: Construction Impacts	3-123
		3.6.4.1.3 Chacahoula Surface Water: Operations and Maintenance Impacts	3-129
	3.6.4.2 Chacahoula Groundwater		3-129
		3.6.4.2.1 Chacahoula Groundwater: Affected Environment	3-129
		3.6.4.2.2 Chacahoula Groundwater: Construction Impacts	3-130
		3.6.4.2.3 Chacahoula Groundwater: Operations and Maintenance Impacts	3-130
3.6.5	Richton Storage Site		3-130
	3.6.5.1 Richton Surface Water		3-130
		3.6.5.1.1 Richton Surface Water: Affected Environment	3-130
		3.6.5.1.2 Richton Surface Water: Construction Impacts	3-131
		3.6.5.1.3 Richton Surface Water: Operations and Maintenance Impacts	3-139
	3.6.5.2 Richton Groundwater		3-140
		3.6.5.2.1 Richton Groundwater: Affected Environment	3-140
		3.6.5.2.2 Richton Groundwater: Construction Impacts	3-140
		3.6.5.2.3 Richton Groundwater: Operations and Maintenance Impacts	3-141
3.6.6	Stratton Ridge Storage Site		3-141
	3.6.6.1 Stratton Ridge Surface Water		3-141
		3.6.6.1.1 Stratton Ridge Surface Water: Affected Environment	3-141
		3.6.6.1.2 Stratton Ridge Surface Water: Construction Impacts	3-142
		3.6.6.1.3 Stratton Ridge Surface Water: Operations and Maintenance Impacts	3-146
	3.6.6.2 Stratton Ridge Groundwater		3-146
		3.6.6.2.1 Stratton Ridge Groundwater: Affected Environment	3-146
		3.6.6.2.2 Stratton Ridge Groundwater: Construction Impacts	3-146
		3.6.6.2.3 Stratton Ridge Groundwater: Operations and Maintenance Impacts	3-147
3.6.7	Bayou Choctaw Storage Site and Associated Infrastructure		3-147
	3.6.7.1 Bayou Choctaw Surface Water		3-147
		3.6.7.1.1 Bayou Choctaw Surface Water: Affected Environment	3-147

Table of Contents

		3.6.7.1.2 Bayou Choctaw Surface Water: Construction Impacts	3-148
		3.6.7.1.3 Bayou Choctaw Surface Water: Operations and Maintenance Impacts	3-151
	3.6.7.2	Bayou Choctaw Groundwater	3-151
		3.6.7.2.1 Bayou Choctaw Groundwater: Affected Environment	3-151
		3.6.7.2.2 Bayou Choctaw Groundwater: Construction Impacts	3-151
		3.6.7.2.3 Bayou Choctaw Groundwater: Operations and Maintenance Impacts	3-152
3.6.8		Big Hill Storage Site and Associated Infrastructure	3-152
	3.6.8.1	Big Hill Surface Water	3-153
		3.6.8.1.1 Big Hill Surface Water: Affected Environment	3-153
		3.6.8.1.2 Big Hill Surface Water: Construction Impacts	3-153
		3.6.8.1.3 Big Hill Surface Water: Operations and Maintenance Impacts	3-157
	3.6.8.2	Big Hill Groundwater	3-157
		3.6.8.2.1 Big Hill Groundwater: Affected Environment	3-157
		3.6.8.2.2 Big Hill Groundwater: Construction Impacts	3-157
		3.6.8.2.3 Big Hill Groundwater: Operations and Maintenance Impacts	3-158
3.6.9		West Hackberry Storage Site	3-158
	3.6.9.1	West Hackberry Surface Water	3-159
		3.6.9.1.1 West Hackberry Surface Water: Affected Environment	3-159
		3.6.9.1.2 West Hackberry Surface Water: Construction Impacts	3-159
		3.6.9.1.3 West Hackberry Surface Water: Operations and Maintenance Impacts	3-162
	3.6.9.2	West Hackberry Groundwater	3-162
		3.6.9.2.1 West Hackberry Groundwater: Affected Environment	3-162
		3.6.9.2.2 West Hackberry Groundwater: Construction Impacts	3-163
		3.6.9.2.3 West Hackberry Groundwater: Operations and Maintenance Impacts	3-163
3.6.10		No-Action Alternative	3-163
3.7		BIOLOGICAL RESOURCES	3-165
	3.7.1	Methodology	3-165
		3.7.1.1 Plants, Wetlands, and Wildlife	3-165
		3.7.1.2 Special Status Species	3-168
		3.7.1.3 Essential Fish Habitat	3-170
		3.7.1.4 Special Status Areas	3-170
	3.7.2	Impacts Common to Multiple Sites	3-170
		3.7.2.1 Construction Impacts	3-171

Table of Contents

	3.7.2.1.1	Clearing, Grading, and Construction Activities	3-171
	3.7.2.1.2	Right-of-Way Construction Activities	3-173
	3.7.2.1.3	Wetland Mitigation Common to Multiple Sites	3-175
	3.7.2.1.4	Brine Disposal Systems	3-178
	3.7.2.1.5	Essential Fish Habitat	3-179
3.7.2.2		Operations and Maintenance Impacts	3-181
	3.7.2.2.1	New and Expansion Storage Sites and Terminals	3-181
	3.7.2.2.2	Raw Water Intake Structure	3-181
	3.7.2.2.3	Rights-of-Way	3-183
	3.7.2.2.4	Brine Disposal Systems	3-185
	3.7.2.2.5	Impacts of a Brine or Petroleum Release	3-185
3.7.3		Bruinsburg Storage Site	3-186
	3.7.3.1	Affected Environment	3-187
	3.7.3.1.1	Bruinsburg Storage Site	3-187
	3.7.3.1.2	Bruinsburg Rights-of-Way	3-188
	3.7.3.1.3	Raw Water Intake Structure	3-191
	3.7.3.1.4	Peetsville Terminal	3-192
	3.7.3.1.5	Anchorage Terminal	3-192
	3.7.3.1.6	Brine Injection Wells	3-193
	3.7.3.2	Impacts	3-194
	3.7.3.2.1	Bruinsburg Storage Site	3-194
	3.7.3.2.2	Bruinsburg Rights-of-Way	3-196
	3.7.3.2.3	Raw Water Intake	3-198
	3.7.3.2.4	Peetsville Terminal	3-200
	3.7.3.2.5	Anchorage Terminal	3-201
	3.7.3.2.6	Brine Injection Wells	3-202
3.7.4		Chacahoula Storage Site	3-203
	3.7.4.1	Affected Environment	3-203
	3.7.4.1.1	Chacahoula Storage Site and Access Road	3-203
	3.7.4.1.2	Chacahoula Rights-of-Way	3-204
	3.7.4.1.3	Raw Water Intake and Access Road	3-206
	3.7.4.1.4	Offshore Brine Disposal	3-207
	3.7.4.2	Impacts	3-207
	3.7.4.2.1	Chacahoula Storage Site and Access Road	3-207
	3.7.4.2.2	Chacahoula Pipeline Rights-of-Way	3-209
	3.7.4.2.3	Raw Water Intake	3-211
	3.7.4.2.4	Offshore Brine Disposal	3-213
3.7.5		Richton Storage Site	3-214
	3.7.5.1	Affected Environment	3-214
	3.7.5.1.1	Richton Storage Site and Access Road	3-214
	3.7.5.1.2	Richton Rights-of-Ways	3-216
	3.7.5.1.3	Raw Water Intake and Access Road	3-219
	3.7.5.1.4	Terminal in Pascagoula	3-221
	3.7.5.1.5	Terminal at Liberty Station	3-221
	3.7.5.1.6	Offshore Brine Disposal	3-222
	3.7.5.2	Impacts	3-223
	3.7.5.2.1	Richton Storage Site	3-223
	3.7.5.2.2	Richton Pipeline Rights-of-Way	3-225

Table of Contents

	3.7.5.2.3	Raw Water Intake	3-228
	3.7.5.2.4	Terminal in Pascagoula	3-233
	3.7.5.2.5	Terminal at Liberty Station	3-234
	3.7.5.2.6	Offshore Brine Disposal	3-235
3.7.6		Stratton Ridge Storage Site and Associated Infrastructure	3-237
	3.7.6.1	Affected Environment	3-238
	3.7.6.1.1	Stratton Ridge Storage Site	3-238
	3.7.6.1.2	Stratton Ridge Rights-of-Way	3-240
	3.7.6.1.3	Raw Water Intake	3-243
	3.7.6.1.4	Texas City Terminal	3-244
	3.7.6.2	Impacts	3-245
	3.7.6.2.1	Stratton Ridge Storage Site and Associated Infrastructure	3-245
	3.7.6.2.2	Stratton Ridge Rights-of-Way	3-248
	3.7.6.2.3	Raw Water Intake	3-250
	3.7.6.2.4	Texas City Terminal	3-253
3.7.7		Bayou Choctaw Expansion Site	3-254
	3.7.7.1	Affected Environment	3-254
	3.7.7.1.1	Bayou Choctaw Expansion Storage Site	3-254
	3.7.7.1.2	Bayou Choctaw Rights-of-Way	3-255
	3.7.7.1.3	Bayou Choctaw Brine Injection Wells	3-256
	3.7.7.2	Impacts	3-257
	3.7.7.2.1	Bayou Choctaw Expansion Site	3-257
	3.7.7.2.2	Bayou Choctaw Rights-of-Way	3-258
	3.7.7.2.3	Bayou Choctaw Brine Injection Wells	3-259
3.7.8		Big Hill Expansion Site	3-260
	3.7.8.1	Affected Environment	3-260
	3.7.8.1.1	Big Hill Expansion Storage Site	3-260
	3.7.8.1.2	Big Hill Rights-of-Way	3-262
	3.7.8.2	Impacts	3-264
	3.7.8.2.1	Big Hill Expansion Storage Site	3-264
	3.7.8.2.2	Big Hill Rights-of-Ways	3-266
3.7.9		West Hackberry Expansion Site	3-268
	3.7.9.1	Affected Environment	3-269
	3.7.9.1.1	West Hackberry Expansion Storage Site	3-269
	3.7.9.2	Impacts	3-270
	3.7.9.2.1	West Hackberry Expansion Storage Site	3-270
	3.7.10	No-Action Alternative	3-271
3.8		SOCIOECONOMICS	3-273
	3.8.1	Methodology	3-273
	3.8.2	Affected Environments at Storage and Expansion Sites and Associated Infrastructure	3-275
	3.8.3	Impacts	3-281
	3.8.3.1	Construction Impacts	3-282
	3.8.3.2	Operations and Maintenance Impacts	3-284
	3.8.4	No-Action Alternative	3-284
3.9		CULTURAL RESOURCES	3-286
	3.9.1	Methodology	3-286
	3.9.1.1	Identification of Historic Properties and Other Cultural Resources	3-286

Table of Contents

	3.9.1.2	Contacts with American Indian Tribes	3-287
	3.9.1.3	Assessing Project Effects	3-287
3.9.2		Common Impacts	3-288
	3.9.2.1	Construction Impacts	3-288
	3.9.2.2	Operations and Maintenance Impacts	3-288
	3.9.2.3	Mitigation	3-289
3.9.3		Bruinsburg Storage Site	3-289
	3.9.3.1	Affected Environment	3-289
	3.9.3.2	Impacts	3-291
	3.9.3.3	Mitigation	3-291
3.9.4		Chacahoula Storage Site	3-292
	3.9.4.1	Affected Environment	3-292
	3.9.4.2	Impacts	3-292
	3.9.4.3	Mitigation	3-292
3.9.5		Richton Storage Site	3-292
	3.9.5.1	Affected Environment	3-292
	3.9.5.2	Impacts	3-293
	3.9.5.3	Mitigation	3-294
3.9.6		Stratton Ridge Storage Site	3-294
	3.9.6.1	Affected Environment	3-294
	3.9.6.2	Impacts	3-294
	3.9.6.3	Mitigation	3-294
3.9.7		Bayou Choctaw Expansion Site	3-295
	3.9.7.1	Affected Environment	3-295
	3.9.7.2	Impacts	3-295
	3.9.7.3	Mitigation	3-295
3.9.8		Big Hill Expansion Site	3-295
	3.9.8.1	Affected Environment	3-295
	3.9.8.2	Impacts	3-296
	3.9.8.3	Mitigation	3-296
3.9.9		West Hackberry Expansion Site	3-296
	3.9.9.1	Affected Environment	3-296
	3.9.9.2	Impacts	3-296
	3.9.9.3	Mitigation	3-296
3.9.10		No Action Alternative	3-296
3.10		NOISE	3-298
	3.10.1	Methodology	3-298
	3.10.1.1	Methodology to Estimate Existing Ambient Noise Levels	3-298
	3.10.1.2	Methodology to Estimate Construction Noise	3-298
	3.10.1.3	Methodology to Estimate Operations and Maintenance Noise	3-300
	3.10.2	Impact Analysis	3-301
	3.10.2.1	Construction Impacts	3-301
	3.10.2.2	Operations and Maintenance Impacts	3-303
3.11		ENVIRONMENTAL JUSTICE	3-304
	3.11.1	Methodology	3-304
	3.11.2	Affected Environment	3-305
	3.11.3	Impacts	3-305
	3.11.4	No-Action Alternative	3-308

Chapter 4 . Cumulative Impacts	4-1
4.1 INTRODUCTION	4-1
4.2 METHODOLOGY	4-1
4.2.1 U.S. Army Corps of Engineers	4-2
4.2.2 Coastal Wetlands Planning, Protection and Restoration Act (CWPPRA) Projects in Louisiana	4-3
4.2.3 State Transportation Improvement Programs	4-4
4.2.4 City and County Governments	4-5
4.2.5 Federal Energy Regulatory Commission	4-5
4.2.6 Hurricane Recovery	4-6
4.2.7 Gulf of Mexico Coastal Wetlands and Floodplains	4-6
4.3 BRUINSBURG STORAGE SITE AND ASSOCIATED INFRASTRUCTURE	4-7
4.3.1 Reasonably Foreseeable Activities On or Near the Bruinsburg Storage Site	4-7
4.3.2 Reasonably Foreseeable Activities Near the Associated Infrastructure for Bruinsburg	4-8
4.3.3 Cumulative Impacts Discussion	4-8
4.3.3.1 Biology	4-8
4.3.3.2 Water	4-9
4.4 CHACAHOU LA STORAGE SITE AND ASSOCIATED INFRASTRUCTURE	4-10
4.4.1 Chacahoula Storage Site	4-10
4.4.2 Reasonably Foreseeable Activities Near the Associated Infrastructure for Chacahoula	4-10
4.4.3 Cumulative Impacts Discussion	4-11
4.4.3.1 Biology	4-11
4.4.3.2 Water	4-12
4.5 RICHTON STORAGE SITE AND ASSOCIATED INFRASTRUCTURE	4-12
4.5.1 Richton Storage Site	4-12
4.5.2 Reasonably Foreseeable Activities Near the Associated Infrastructure for Richton	4-13
4.5.3 Cumulative Impacts Discussion	4-13
4.5.3.1 Biology	4-13
4.5.3.2 Water	4-14
4.6 STRATTON RIDGE STORAGE SITE AND ASSOCIATED INFRASTRUCTURE	4-15
4.6.1 Stratton Ridge Storage Site	4-15
4.6.2 Reasonably Foreseeable Activities Near the Associated Infrastructure for Stratton Ridge	4-15
4.6.3 Cumulative Impacts Discussion	4-16
4.6.3.1 Biology	4-16
4.6.3.2 Water	4-17
4.7 BAYOU CHOCTAW EXPANSION SITE AND ASSOCIATED INFRASTRUCTURE	4-17
4.7.1 Bayou Choctaw Expansion Site	4-17
4.7.2 Cumulative Impacts Discussion	4-17
4.7.2.1 Biology	4-17
4.7.2.2 Water	4-18
4.8 BIG HILL EXPANSION SITE AND ASSOCIATED INFRASTRUCTURE	4-18
4.8.1 Big Hill Expansion Site	4-18

4.8.2	Reasonably Foreseeable Activities Near the Associated Infrastructure for Big Hill	4-18
4.8.3	Cumulative Impacts Discussion	4-19
	4.8.3.1 Biology	4-19
	4.8.3.2 Water	4-19
4.9	WEST HACKBERRY EXPANSION SITE AND ASSOCIATED INFRASTRUCTURE	4-19
4.9.1	West Hackberry Expansion Site	4-19
4.9.2	West Hackberry Associated Infrastructure	4-20
4.9.3	Cumulative Impacts Discussion	4-20
	4.9.3.1 Biology	4-20
	4.9.3.2 Water	4-20
 Chapter 5 . Irreversible and Irretrievable Commitment of Resources		 5-1
5.1	LAND RESOURCES	5-1
5.2	WATER RESOURCES	5-4
5.3	MATERIAL AND ENERGY RESOURCES	5-4
 Chapter 6. List of Preparers		 6-1
6.1	DEPARTMENT OF ENERGY OFFICE OF PETROLEUM RESERVES	6-1
6.2	CONTRACTORS	6-1
 Chapter 7. List of Agencies, Organizations, and People Receiving Copies of the Final Environmental Impact Statement		 7-1
7.1	FEDERAL AGENCIES	7-1
7.2	STATE AGENCIES	7-1
	7.2.1 Louisiana	7-1
	7.2.2 Mississippi	7-1
	7.2.3 Texas	7-2
7.3	TRIBAL GOVERNMENTS	7-2
7.4	COUNTY AND LOCAL GOVERNMENT	7-2
	7.4.1 Louisiana	7-2
	7.4.2 Mississippi	7-3
	7.4.3 Texas	7-3
7.5	ELECTED OFFICIALS	7-3
	7.5.1 Congressional Committees	7-3
	7.5.1.1 Senate	7-3
	7.5.1.2 House of Representatives	7-4
	7.5.2 Louisiana	7-4
	7.5.2.1 Federal	7-4
	7.5.2.2 State	7-4
	7.5.2.3 Local	7-5
	7.5.3 Mississippi	7-6
	7.5.3.1 Federal	7-6
	7.5.3.2 State	7-6
	7.5.3.3 Local	7-7
	7.5.4 Texas	7-7
	7.5.4.1 Federal	7-7
	7.5.4.2 State	7-8
	7.5.4.3 Local	7-8

7.6	ORGANIZATIONS AND INDUSTRY	7-9
7.7	MEDIA	7-11
	7.7.1 Louisiana	7-11
	7.7.2 Mississippi	7-12
	7.7.3 Texas	7-12
7.8	LIBRARIES	7-13
7.9	PRIVATE CITIZENS	7-13
Chapter 8. Draft EIS Comment-Response		8-1
8.1	INTRODUCTION	8-1
8.2	METHODOLOGY	8-1
8.3	HOW TO FIND COMMENTS AND RESPONSES	8-1
8.4	COMMENTS AND RESPONSES	8-15

References	R-1
-------------------------	------------

Index	I-1
--------------------	------------

APPENDICES

A:	Air Quality	A-1
B:	Floodplains and Wetlands Assessment	B-1
C:	Brine Plume Modeling of Strategic Petroleum Reserve Expansion Sites	C-1
D:	Common and Scientific Names of Species	D-1
E:	Essential Fish Habitat Assessment	E-1
F:	Evaluation of Federally Listed Species in Louisiana	F-1
G:	Evaluation of Federally Listed Species in Mississippi	G-1
H:	Evaluation of Federally Listed Species in Texas	H-1
I:	State Listed Species Screening Evaluation	I-1
J:	Environmental Justice Populations	J-1
K:	Consultations with Agencies	K-1
L:	Applicable Laws, Regulations, Executive Orders, and DOE Orders	L-1
M:	Contractor Disclosure Statement	M-1
N:	Comments Received on the Site Selection for the Expansion of the Strategic Petroleum Reserve Draft Environmental Impact Statement	N-1
O:	Conceptual Compensation Plan for Impacts to Wetlands and Waters	O-1

Appendix B Attachment: Large Format Maps

LIST OF TABLES

	<u>Page</u>
Table 1.4.1-1: Scoping Meetings	1-3
Table 1.4.3-1: Public Hearings on the Draft EIS	1-6
Table 2.2.3-1: Alternatives	2-3
Table 2.3.9-1: Typical Widths of Pipeline Easements	2-16
Table 2.3.10-1: Typical Quantities of Hazardous Materials Stored at Existing SPR Sites	2-18
Table 2.4-1: Key Details of the Alternatives	2-23

Table of Contents

Table 2.6.6-1:	Potential Acreage of Wetlands Affected by Alternatives with Three Expansion Sites	2-69
Table 2.7.11-1:	Comparison of Potential Impacts for Alternatives with Three Expansion Sites and No-Action Alternative	2-75
Table 2.7.11-2:	Differences in Potential Impacts for Alternatives with Two Expansion Sites (Comparison with Table 2.7.11-1)	2-82
Table 3.2.1-1:	Reportable Brine Spills from Pipeline Systems at Existing SPR Sites	3-5
Table 3.2.1-2:	Existing SPR Site Spills Other than Crude Oil and Brine from 2003 to 2004	3-6
Table 3.2.1-3:	Reported Fire Incidents at Existing SPR Sites and Terminals	3-7
Table 3.2.2-1:	Oil Spill Predictions by Site for Initial Fill	3-10
Table 3.2.2-2:	Predicted Number of Brine Spills by Site for Cavern Construction and Initial Fill	3-12
Table 3.4.1-1:	DOE SPR Level III Design Criteria on Cavern Dimensions	3-44
Table 3.5.1-1:	National Ambient Air Quality Standards	3-65
Table 3.5.2-1:	Combined Emissions from a 1,200-Horsepower Diesel Generator and a 340-Horsepower Diesel Generator Operating 500 Hours per Year (tons per year)	3-68
Table 3.5.2-2:	Emissions from Three 2,000-Horsepower Diesel Generators Operating 500 Hours per Year (tons per year)	3-69
Table 3.5.2-3:	Permit Limits for Emissions from Operations and Maintenance of Current Big Hill Facility (tons per year)	3-71
Table 3.5.2-4:	Estimated Maximum Emissions During the Operations and Maintenance at Proposed Expansion and New Sites (tons per year)	3-71
Table 3.5.2-5:	Annual Average Emissions of Greenhouse Gases Associated with Site Construction and Expansion (million tons of CO2 equivalents)	3-72
Table 3.5.3-1:	Design Values for 8-Hour Ozone, Annual, and 24-Hour PM2.5 at Monitoring Sites Near Bruinsburg Storage Site	3-73
Table 3.5.3-2:	Maximum Direct Emissions during Construction of Proposed Bruinsburg Site (emissions are in total tons except those lasting > 1 year, which are in tons per year)	3-74
Table 3.5.3-3:	Indirect Emissions (tons per year) from Worker Commutes Associated with Construction Activities at the Proposed Bruinsburg Site	3-75
Table 3.5.3-4:	Modeled SCREEN3 PM2.5 Concentrations and Local Monitored Concentrations at the Proposed Bruinsburg Site	3-76
Table 3.5.4-1:	Design Values for 8-hour Ozone in Lafourche Parish and Annual and 24-Hour PM2.5 in Terrebonne Parish	3-77
Table 3.5.4-2:	Maximum Direct Emissions during Construction of Proposed Chacahoula Site (total tons except emissions lasting > 1 year, which are in tons per year)	3-78
Table 3.5.4-3:	Indirect Emissions (tons per year) from Worker Commutes Associated with Construction Activities at Proposed Chacahoula Site	3-79
Table 3.5.4-4:	Modeled PM2.5 SCREEN3 Concentrations and Local Monitored Concentrations for the Proposed Chacahoula Site	3-79
Table 3.5.5-1:	Design Values for 8-Hour Ozone, Annual, and 24-Hour PM2.5 at Monitoring Sites Near Richton, MS	3-80
Table 3.5.5-2:	Maximum Direct Emissions during Construction of Proposed Richton Site (Emissions are in total tons except those lasting > 1 year, which are in tons per year)	3-82

Table of Contents

Table 3.5.5-3:	Indirect Emissions (tons per year) from Worker Commutes Associated with Construction Activities at Proposed Richton Site	3-82
Table 3.5.5-4:	Modeled SCREEN3 PM2.5 Concentrations and Locally Monitored Concentrations for Proposed Richton Site	3-82
Table 3.5.6-1:	Design Values for 8-hour Ozone and Annual and 24-Hour PM2.5 in Brazoria County	3-83
Table 3.5.6-2:	Maximum Direct Emissions during Construction of Stratton Ridge Site (emissions are in total tons except those lasting > 1 year, which are in tons per year)	3-84
Table 3.5.6-3:	Indirect Emissions (tons per year) from Worker Commutes Associated with Construction Activities at Proposed Stratton Ridge Site	3-85
Table 3.5.6-4:	Modeled SCREEN3 PM2.5 Concentrations and Local Monitored Concentrations for Proposed Stratton Ridge Site	3-87
Table 3.5.7-1:	Design Values for 8-hour Ozone and Annual and 24-Hour PM2.5 Near Bayou Choctaw	3-87
Table 3.5.7-2:	Maximum Direct Emissions from Expansion of Existing Bayou Choctaw Site (Emissions are in total tons except those lasting > 1 year, which are in tons per year)	3-88
Table 3.5.7-3:	Indirect Emissions (tons per year) from Worker Commutes Associated with Expansion of Bayou Choctaw Site	3-89
Table 3.5.7-4:	Modeled SCREEN3 PM2.5 Concentrations and Local Monitored Concentrations for Proposed Bayou Choctaw Expansion	3-90
Table 3.5.8-1:	Design Values for 8-hour Ozone, Annual, and 24-Hour PM2.5 in Jefferson County	3-91
Table 3.5.8-2:	Maximum Direct Emissions from Expansion of Big Hill Site (emissions are in total tons except those lasting > 1 year, which are in tons per year)	3-91
Table 3.5.8-3:	Indirect Emissions (tons per year) from Worker Commutes Associated with Expansion of Big Hill Site	3-93
Table 3.5.8-4:	Modeled SCREEN3 Concentrations and Locally Monitored Concentrations for Proposed Big Hill Expansion	3-93
Table 3.5.9-1:	Design Values for 8-Hour Ozone, Annual, and 24-Hour PM2.5 in Calcasieu Parish	3-94
Table 3.6.1-1:	Types of Surface Water Impacts Analyzed	3-97
Table 3.6.1-2:	Types of Groundwater Impacts Analyzed	3-98
Table 3.6.2-1:	Estimated Extent of Brine Plumes Caused by Brine Disposal in the Gulf of Mexico	3-100
Table 3.6.3-1:	Potentially Impacted Surface Waters, Bruinsburg	3-114
Table 3.6.3-2:	Total Area of Floodplains Affected by the Bruinsburg Project	3-118
Table 3.6.4-1:	Potentially Impacted Surface Waters, Chacahoula	3-124
Table 3.6.4-2:	Total Area of Floodplains Affected by the Chacahoula Project	3-128
Table 3.6.5-1:	Potentially Affected Surface Waters, Richton	3-132
Table 3.6.6-1:	Potentially Affected Surface Waters, Stratton Ridge	3-143
Table 3.6.6-2:	Total Area of Floodplains Impacted by the Stratton Ridge Project	3-142
Table 3.6.6-3:	Aquifers Underlying the Proposed Stratton Ridge SPR Site Area	3-146
Table 3.6.7-1:	Potentially Affected Surface Waters, Bayou Choctaw	3-149
Table 3.6.7-2:	Total Area of Floodplains Impacted by the Bayou Choctaw Project	3-151
Table 3.6.8-1:	Potentially Affected Surface Waters, Big Hill	3-154
Table 3.6.8-2:	Characterization of Aquifers Underlying the Big Hill Site	3-157
Table 3.6.9-1:	Potentially Impacted Surface Waters, West Hackberry	3-160
Table 3.6.9-2:	Aquifers in Vicinity of West Hackberry Expansion Site	3-162

Table of Contents

Table 3.7.1-1:	Wetland Types and Description	3-166
Table 3.7.2-1:	Approximate Wetland Mitigation Ratios	3-178
Table 3.7.5-1:	State-listed Species Within 2 miles of Richton ROWs	3-218
Table 3.7.6-1:	State-Listed Species With Potentially Suitable Habitat at Stratton Ridge Storage Site	3-240
Table 3.7.6-2:	State-Listed Species With Potentially Suitable Habitat Along Stratton Ridge ROWs	3-242
Table 3.7.6-3:	State-Listed Species With Potentially Suitable Habitat At Stratton Ridge RWI	3-244
Table 3.7.8-1:	Species on State Lists of Threatened and Endangered Species With Potentially Suitable Habitat at the Proposed Big Hill Expansion Site	3-262
Table 3.7.8-2:	Threatened Species on State Lists Compared With Potentially Suitable Habitat Along Big Hill ROWs	3-264
Table 3.8.2-1:	Population in Jurisdictions near Proposed Storage Sites (persons)	3-276
Table 3.8.3-1:	Peak Construction Employment by Site	3-282
Table 3.8.3-2:	Peak In-Migration Populationa by Site (Number of People)	3-283
Table 3.10-1:	Estimated Construction Activity Noise Level Contributions at 500 feet (150 meters)	3-299
Table 3.10-2:	FTA Construction Noise Guidelines	3-300
Table 3.10-3:	HUD Land Use Compatibility Guidelines for Noise	3-300
Table 3-10.4:	Site-Specific Noise Analysis	3-302
Table 3.11-1:	Potential Environmental Justice Populations	3-306
Table 4.2-1:	Sources for Projects for Potential Inclusion in Cumulative Impacts Analysis	4-2
Table 4.2.1-1:	USACE Districts and SPR Sites	4-2
Table 4.2.1-2:	USACE Project Results by Screening Stage	4-3
Table 4.2.2-1:	Coastal Wetlands Planning, Protection and Restoration Act Screening	4-4
Table 4.2.3-1:	State Transportation Improvement Programs and SPR Sites	4-4
Table 4.2.3-2:	Transportation Project Results by Screening Stage	4-5
Table 4.2.7-1:	Summary of Cumulative Impacts by Alternative	4-7
Table 5.1-1:	Commitment of Land for Proposed New and Expansion SPR Sites (acres)	5-2
Table 5.1-2:	Commitment of Land for Proposed New and Expansion SPR Alternatives (acres)	5-3
Table 5.2-1:	Water Required for Construction and Operation of Proposed New and Expansion SPR Sites (MMB)	5-5
Table 5.2-2:	Water Required for Construction and Operation of SPR Expansion Alternatives (MMB)	5-5
Table 8.3-1:	Index of Comment Documents and Comments	8-3
Table 8.3-2:	Outline of Comment Responses in Section 8.5	8-11

LIST OF FIGURES

	<u>Page</u>	
Figure 2.2.2-1:	Existing and Proposed SPR Facility Locations and Crude Oil Distribution Complexes	2-4

Figure 2.3-1:	Cavern Creation in Construction of a Typical SPR Cavern	2-7
Figure 2.3-2:	Filling a Typical SPR Storage Site	2-8
Figure 2.3.2-1:	RWI Typical Structure (Chacahoula and Stratton Ridge)	2-11
Figure 2.3.9-1:	Uplands and Wetlands Pipeline ROW Requirements for a Single Pipeline	2-17
Figure 2.4.1-1:	Location of Proposed Bruinsburg Storage Site	2-25
Figure 2.4.1-2:	Proposed Layout of Bruinsburg Storage Site	2-26
Figure 2.4.1-3:	Proposed Pipelines for Bruinsburg Storage Site	2-28
Figure 2.4.1-4:	Proposed Layout of Peetsville Tank Farm	2-29
Figure 2.4.1-5:	Proposed Layout of Anchorage Tank Farm	2-30
Figure 2.4.2-1:	Location of Proposed Chacahoula Storage Site	2-32
Figure 2.4.2-2:	Proposed Layout of Chacahoula Storage Site	2-33
Figure 2.4.2-3:	Proposed Pipelines of Chacahoula Storage Site	2-34
Figure 2.4.3-1:	Location of Proposed Richton Storage Site	2-36
Figure 2.4.3-2:	Proposed Layout of Richton Storage Site	2-37
Figure 2.4.3-3:	RWI Structure on the Leaf River (Richton alternatives)	2-39
Figure 2.4.3-4:	RWI Structure at Pascagoula (Richton alternatives)	2-40
Figure 2.4.3-5:	Proposed Pipelines for Richton Storage Site	2-41
Figure 2.4.3-6:	Proposed Layout of the Liberty Tank Farm	2-43
Figure 2.4.3-7:	Proposed Layout of the Pascagoula Terminal	2-44
Figure 2.4.4-1:	Location of Proposed Stratton Ridge Storage Site	2-45
Figure 2.4.4-2:	Proposed Layout for Stratton Ridge Storage Site	2-47
Figure 2.4.4-3:	Proposed Pipelines for Stratton Ridge Storage Site	2-48
Figure 2.4.4-4:	Proposed Layout of Texas City Tank Farm	2-49
Figure 2.5.1-1:	Location of Proposed Bayou Choctaw Expansion Site	2-51
Figure 2.5.1-2:	Layout and Proposed Expansion for Bayou Choctaw Storage Site	2-52
Figure 2.5.2-1:	Location and Pipelines of Proposed Big Hill Expansion Site	2-54
Figure 2.5.2-2:	Layout and Proposed Expansion for Big Hill Storage Site	2-55
Figure 2.5.3-1:	Location of Proposed West Hackberry Expansion Site	2-57
Figure 2.5.3-2:	Layout and Proposed Expansion of West Hackberry Storage Site	2-58
Figure 3.3.2-1:	Coastal Zone Management Areas in Louisiana	3-27
Figure 3.3.2-2:	Coastal Zone Management Areas in Mississippi	3-28
Figure 3.3.2-3:	Coastal Zone Management Areas in Texas	3-29
Figure 3.4.2.3-1:	Peak Acceleration with 2 Percent Probability of Exceedance in 50 Years in the Gulf Coast Area	3-47
Figure 3.4.3-1:	Cross-Section Diagram of the Bruinsburg Dome	3-51
Figure 3.4.4-1:	Cross-Section Diagram of the Chacahoula Dome	3-53
Figure 3.4.5-1:	Cross-Section Diagram of the Richton Dome	3-54
Figure 3.4.6-1:	Cross-Section Diagram of the Stratton Ridge Dome	3-56
Figure 3.4.7-1:	Cross-Section Diagram of the Bayou Choctaw Dome	3-58
Figure 3.4.8-1:	Cross-Section Diagram of the Big Hill Dome	3-60
Figure 3.4.9-1:	Cross-Section Diagram of the West Hackberry Dome	3-62
Figure 3.6.3-1:	Regional Surface Water Map for Bruinsburg Site	3-117
Figure 3.6.4-1:	Regional Surface Water Map for Chacahoula Site	3-127
Figure 3.6.5-1:	Regional Surface Water Map for Richton Site	3-136
Figure 3.6.5-2:	Local Surface Water Map for Richton Site	3-137
Figure 3.6.6-1:	Regional Surface Water Map for Stratton Ridge Site	3-145
Figure 3.6.7-1:	Local Surface Water Map for Bayou Choctaw Site	3-150
Figure 3.6.8-1:	Regional Surface Water Map for Big Hill Site	3-156

Table of Contents

Figure 3.6.9-1: Regional Surface Water Map for West Hackberry Site 3-161

Figure 3.8.2-1: MSAs for Mississippi Sites 3-271

Figure 3.8.2-2: MSAs for Louisiana Sites 3-272

Figure 3.8.2-3: MSAs for Texas Sites 3-274

Figure 3.9.3-1: Cultural Resources in Vicinity of Bruinsburg Facility 3-284