

TABLE OF CONTENTS

LIST OF TABLES.....	xiii
LIST OF FIGURES	xv
ACRONYMS AND ABBREVIATIONS.....	xvii
EXECUTIVE SUMMARY	xix
1.0 INTRODUCTION.....	1
1.1 Application.....	1
1.2 Purpose of Action and Need for Power	1
1.2.1 Purpose of Action	1
1.2.2 Need for Power	2
1.3 Consultation	2
1.3.1 Scoping	2
1.3.2 Interventions	3
1.3.3 Comments on the Application	3
1.3.4 Settlement Agreement.....	4
1.3.5 Comments on the Draft Environmental Impact Statement.....	5
2.0 PROPOSED ACTION AND ALTERNATIVES	7
2.1 No-action Alternative.....	7
2.1.1 Existing Project Facilities and Operation	7
2.1.2 Project Boundary	8
2.1.3 Project Safety	9
2.1.4 Current License Requirements	9
2.2 Proposed Action.....	9
2.2.1 Project Facilities and Operation.....	9
2.2.2 Environmental Enhancement Measures	9
2.3 Modifications to SCPSA'S Proposal	10
2.3.1 Final Settlement Agreement.....	10
2.3.2 Additional Recommendations of Signatory and Non-Signatory Organizations	12
2.3.3 Statutory Requirements.....	13
2.3.3.1 Water Quality Certification.....	13
2.3.3.2 Coastal Zone Management Act Consistency Certification.....	13
2.3.3.3 Section 18 Fishway Prescriptions	14
2.3.3.4 Section 10(j) Conditions	20
2.3.3.5 Section 10(a) Conditions	23
2.3.3.6 Section 4(e) Conditions.....	23
2.3.3.7 Endangered Species Act	24
2.3.3.8 Marine Mammal Protection Act	26
2.3.3.9 Magnuson-Stevens Fishery Conservation Act.....	27

2.3.3.10	National Environmental Policy Act of 1969.....	28
2.3.3.11	National Historic Preservation Act	28
2.3.4	Staff Alternative.....	29
2.4	Alternatives Considered but Eliminated from Detailed Study	30
2.4.1	Issuing a Nonpower License.....	30
2.4.2	Retiring the Project	31
3.0	ENVIRONMENTAL ANALYSIS	33
3.1	General Description of the Santee and Cooper River Basins	33
3.2	Cumulative Effects.....	33
3.2.1	Geographic Scope	34
3.2.2	Temporal Scope	34
3.3	Proposed Action and Action Alternatives	34
3.3.1	Water Resources	34
3.3.1.1	Affected Environment.....	34
3.3.1.2	Environmental Effects	45
3.3.1.3	Cumulative Effects.....	66
3.3.1.4	Unavoidable Adverse Effects	67
3.3.2	Aquatic Resources	67
3.3.2.1	Affected Environment.....	67
3.3.2.2	Environmental Effects	78
3.3.2.3	Cumulative Effects.....	103
3.3.2.4	Unavoidable Adverse Effects	105
3.3.3	Terrestrial Resources	105
3.3.3.1	Affected Environment.....	105
3.3.3.2	Environmental Effects	112
3.3.3.3	Unavoidable Adverse Effects	124
3.3.4	Rare, Threatened and Endangered Species.....	125
3.3.4.1	Affected Environment.....	125
3.3.4.2	Environmental Effects	125
3.3.5	Recreation Resources.....	140
3.3.5.1	Affected Environment.....	140
3.3.5.2	Environmental Effects	150
3.3.6	Land Management and Aesthetic Resources	158
3.3.6.1	Affected Environment.....	158
3.3.6.2	Environmental Effects	161
3.3.6.3	Unavoidable Adverse Effects	163
3.3.7	Cultural Resources	163
3.3.7.1	Affected Environment.....	163
3.3.7.2	Environmental Effects	166
3.3.7.3	Unavoidable Adverse Effects	171
3.3.8	Socioeconomic Resources	171
3.3.8.1	Affected Environment.....	171

3.3.8.2 Environmental Effects	173
3.3.8.3 Unavoidable Adverse Effects	179
3.4 No-action Alternative.....	179
3.5 Irreversible and Irretrievable Commitment of Resources.....	179
3.6 Relationship between Short-term Uses and Long-term Productivity	179
4.0 DEVELOPMENTAL ANALYSIS	181
4.1 Power and Economic Benefits of the Project	181
4.1.1 No-action Alternative	183
4.1.2 Proposed Action.....	183
4.1.3 Final Settlement Alternative	183
4.2 Cost of Env. Measures and Economic Comparison of Alternatives	197
5.0 CONCLUSIONS AND RECOMMENDATIONS	199
5.1 Comprehensive Development and Recommended Alternative.....	199
5.1.1 Statutory Requirements.....	199
5.1.2 Recommended Alternative	200
5.2 Recommendations of Fish and Wildlife Agencies	225
5.3 Consistency with Comprehensive Plans	230
6.0 LITERATURE CITED	233
7.0 LIST OF PREPARERS.....	247
8.0 LIST OF RECIPIENTS.....	249
APPENDIX A—FIGURES.....	A-1
APPENDIX B—RESPONSE TO COMMENTS ON DEIS	B-1
APPENDIX C— WATER ALLOCATION MODEL RESULTS	C-1

This page intentionally left blank.

LIST OF TABLES

Table 1.	Lake Marion water levels for years 2000 to 2005.	38
Table 2.	Mean and maximum flows – Santee Cooper Project (1985-1999).....	39
Table 3.	Pinopolis lock operations for boat passage (2001 to 2005)	41
Table 4.	Water classifications and uses for project waters	43
Table 5.	Non-signatory agency and nongovernmental organization minimum flow recommendations for the Santee Cooper Project.....	49
Table 6.	Fish collected in the Santee River bypass in 1991, 2002, and 2003	70
Table 7.	Hydroacoustic estimates of fish (herring units), biomass, the number of lock operations conducted per season, and annual average herring units per lock, for the Pinopolis lock, 1975-2005.....	74
Table 8.	Annual and total number of selected fish species passed at the St. Stephen fishway, 1986-2005.....	76
Table 9.	WUA, in acres, and percent increase in WUA for each flow increment, for various species, life stages, and flows, Santee River downstream of Santee dam.....	82
Table 10.	WUA, in acres, and percent increase in WUA for each flow increment, at Riffle 4 in the Santee River bypassed reach	83
Table 11.	WUA, in acres, and percent increase in WUA for each flow increment, at Riffle 5 in the Santee River bypassed reach	83
Table 12.	Comparison of the Interior and NMFS section 18 fishway prescriptions.	92
Table 13.	Estimated average survival rate of juvenile and adult fish during downstream passage at the Santee Cooper Project.....	100
Table 14.	Examples of upland habitat types in the Santee Cooper Project area.....	106
Table 15.	Wetland habitat types with plant communities of concern in the Santee Cooper Project area.....	107
Table 16.	Modeled floodplain inundation for four flows in a 37-mile section below Santee dam	120
Table 17.	Recreation sites at the Santee Cooper Project.....	142
Table 18.	Staff parameters for economic analysis of the Santee Cooper Project.	182
Table 19.	Summary of annual costs of the proposed and recommended measures for the Santee Cooper Project.....	186
Table 20.	Summary of annual net benefits of the alternatives for the Santee Cooper Project	197
Table 21.	Analysis of fish and wildlife agency section 10(j) recommendations for the Santee Cooper Project.....	226

This page intentionally left blank.

LIST OF FIGURES

Figure 1.	Santee Cooper Project location map	A-1
Figure 2.	Project facilities map and project boundary.....	A-2
Figure 3.	Santee Cooper Project waters and tributaries.....	A-3
Figure 4.	Lake Marion rule curve	37
Figure 5.	Monthly average Lake Marion water surface elevations from 1998 to 2005 (USGS gage no. 2171000)	38
Figure 6.	Recreation resources in the Santee Cooper Project area	A-4

This page intentionally left blank.

ACRONYMS AND ABBREVIATIONS

°C	degrees Celsius
°F	degrees Fahrenheit
Advisory Council	Advisory Council on Historic Preservation
BO	biological opinion
CCL	Coastal Conservation League
cfs	cubic feet per second
CLMP	Comprehensive Land Management Plan
Commission	Federal Energy Regulatory Commission
Corps	U.S. Army Corps of Engineers
CWA	Clean Water Act
DO	dissolved oxygen
EFH	Essential Fish Habitat
EIS	environmental impact statement
ESA	Endangered Species Act
FEMP	fishway evaluation and modification plan
FERC	Federal Energy Regulatory Commission
Forest Service	U.S. Department of Agriculture, Forest Service
FPA	Federal Power Act
FSA	final settlement agreement
FTC	Fisheries Technical Committee
FWS	U.S. Fish and Wildlife Service
HPMP	Historic Properties Management Plan
mg/L	milligrams per liter
MMPA	Marine Mammal Protection Act
MW	megawatt
MWh	megawatt-hour
National Register	National Register of Historic Places
NEPA	National Environmental Policy Act
NGVD	National Geodetic Vertical Datum
NMFS	National Oceanic and Atmospheric Administration, National Marine Fisheries Service
PA	Programmatic Agreement
ppt	parts per thousand
REA	ready for environmental analysis
RMP	Recreation Management Plan
RTE	rare, threatened, and endangered
Santee NWR	Santee National Wildlife Refuge
SCDHEC	South Carolina Department of Health and Environmental Control
SCDNR	South Carolina Department of Natural Resources
SCORP	Statewide Comprehensive Outdoor Recreation Plan
SCPSA	South Carolina Public Service Authority

SERC	Southeastern Electric Reliability Council
SHPO	State Historic Preservation Officer
SMP	Shoreline Management Plan
USGS	U.S. Geological Survey
WMA	Wildlife Management Area
WUA	Weighted Usable Area
WQC	water quality certification