



Florida Power & Light Company
Turkey Point Plant, Units 6 & 7
COL Application

COLA Table of Contents

Part 1 — General and Financial Information

Part 2 — Final Safety Analysis Report (FSAR)

Part 3 — Applicant's Environmental Report (ER)

Part 4 — Technical Specifications

Part 5 — Emergency Plan

Part 6 — Limited Work Authorization (LWA)/Redress Plan

Part 7 — Departures and Exemption Requests

Part 9 — Withheld Information

Part 10 — License Conditions (Including ITAAC)

Part 11 — Enclosures

Turkey Point Units 6 & 7
COL Application
Part 3 — Environmental Report

ER MASTER TABLE OF CONTENTS

Chapter 1	Introduction	1.1-1
1.1	The Proposed Project	1.1-1
1.1.1	Purpose and Need	1.1-2
1.1.2	Project Description	1.1-2
1.1.2.1	The Applicant and Owners	1.1-2
1.1.2.2	Site Location	1.1-2
1.1.2.3	Reactor Information	1.1-2
1.1.2.4	Cooling System Information	1.1-3
1.1.2.5	Transmission System Information	1.1-3
1.1.2.6	Public Involvement	1.1-3
1.1.2.7	Schedule for Major Activities	1.1-4
1.2	Status of Reviews, Approvals, and Consultations	1.2-1
Chapter 2	Environmental Description.....	2.1-1
2.1	Station Location	2.1-1
2.2	Land	2.2-1
2.2.1	The Site and Vicinity	2.2-1
2.2.1.1	The Site	2.2-1
2.2.1.2	The Vicinity	2.2-10
2.2.2	Transmission Corridors and Offsite Areas	2.2-13
2.2.2.1	Existing Circuits	2.2-13
2.2.2.2	Proposed Circuits	2.2-14
2.2.2.3	Makeup and Potable Water Systems	2.2-18
2.2.2.4	Fill Material	2.2-19
2.2.2.5	Emergency Operations Facility	2.2-20
2.2.2.6	Roads and Highways	2.2-20
2.2.3	The Region	2.2-21
2.2.3.1	Broward County	2.2-22
2.2.3.2	Collier County	2.2-23
2.2.3.3	Miami-Dade County	2.2-24
2.2.3.4	Monroe County	2.2-25
2.3	Water	2.3-1
2.3.1	Hydrology	2.3-1
2.3.1.1	Surface Water Resources	2.3-1
2.3.1.2	Groundwater	2.3-12
2.3.2	Water Use	2.3-36
2.3.2.1	Surface Water Use	2.3-36
2.3.2.2	Groundwater Use	2.3-43
2.3.3	Water Quality	2.3-48
2.3.3.1	Surface Water	2.3-49
2.3.3.2	Groundwater	2.3-53
2.4	Ecology	2.4-1
2.4.1	Terrestrial Ecology	2.4-7
2.4.1.1	Terrestrial Wildlife	2.4-7
2.4.1.2	Threatened and Endangered Species	2.4-9
2.4.1.3	Other Important Species and Habitats	2.4-13

Turkey Point Units 6 & 7
COL Application
Part 3 — Environmental Report

ER MASTER TABLE OF CONTENTS (CONT.)

2.4.2	Aquatic Ecology	2.4-14
2.4.2.1	Aquatic Communities	2.4-14
2.4.2.2	Important Species of Biscayne Bay and Card Sound	2.4-23
2.4.2.3	Other Important Species	2.4-24
2.4.2.4	Habitat Importance	2.4-27
2.4.2.5	Preexisting Environmental Stresses	2.4-32
2.4.2.6	Reclaimed Water Pipelines Aquatic Resources	2.4-33
2.4.2.7	Radial Collector Wells and Pipelines Aquatic Resources	2.4-33
2.4.2.8	Aquatic Resources Along Transmission Corridors	2.4-34
2.5	Socioeconomics	2.5-1
2.5.1	Demography	2.5-3
2.5.1.1	Population Data by Sector	2.5-3
2.5.1.2	Population Data by Political Jurisdiction	2.5-4
2.5.1.3	Transient Populations	2.5-6
2.5.1.4	Turkey Point Units 3 & 4 Workforce	2.5-7
2.5.2	Community Characteristics	2.5-7
2.5.2.1	Economy	2.5-8
2.5.2.2	Transportation	2.5-11
2.5.2.3	Taxes	2.5-15
2.5.2.4	Land Use	2.5-22
2.5.2.5	Aesthetics and Recreation	2.5-26
2.5.2.6	Housing	2.5-31
2.5.2.7	Public Services and Community Infrastructure	2.5-33
2.5.2.8	Education	2.5-39
2.5.3	Historic Properties	2.5-40
2.5.3.1	Applicable Federal, State, and Local Historic Preservation Regulations	2.5-40
2.5.3.2	Consultation with the Florida Division of Historical Resources	2.5-41
2.5.3.3	Cultural Resource Reports and Work Plans	2.5-42
2.5.3.4	Native American Consultation	2.5-48
2.5.3.5	Significant Cultural Resources within 10 Miles	2.5-49
2.5.3.6	Significant Cultural Resources within 1.2 Miles of Offsite Areas	2.5-50
2.5.4	Environmental Justice	2.5-51
2.5.4.1	Methodology	2.5-51
2.5.4.2	Minority Populations	2.5-52
2.5.4.3	Low-Income Populations	2.5-54
2.5.4.4	Potential for Disproportionate Impacts	2.5-55
Appendix 2.5A	SHPO/Native Tribe Correspondence	
2.6	Geology	2.6-1
2.6.1	Geological Conditions	2.6-1
2.6.1.1	Physiography	2.6-1
2.6.1.2	Stratigraphy	2.6-1
2.6.1.3	Structural Geology	2.6-2
2.7	Meteorology, Air Quality, and Noise	2.7-1
2.7.1	Regional Climatology	2.7-1
2.7.1.1	Data Sources	2.7-1

Turkey Point Units 6 & 7
COL Application
Part 3 — Environmental Report

ER MASTER TABLE OF CONTENTS (CONT.)

2.7.1.2	General Climate Description	2.7-2
2.7.1.3	Normal, Mean, and Extreme Climatological Conditions	2.7-4
2.7.2	Air Quality	2.7-8
2.7.2.1	Regional Air Quality Conditions	2.7-9
2.7.2.2	Projected Air Quality Conditions	2.7-9
2.7.2.3	Restrictive Dispersion Conditions	2.7-10
2.7.3	Severe Weather	2.7-12
2.7.3.1	Thunderstorms and Lightning	2.7-12
2.7.3.2	Extreme Winds	2.7-13
2.7.3.3	Tornadoes	2.7-14
2.7.3.4	Hailstorms, Snowstorms, and Ice Storms	2.7-16
2.7.3.5	Tropical Cyclones	2.7-17
2.7.4	Local Meteorology and Topography	2.7-20
2.7.4.1	Normal, Mean, and Extreme Values	2.7-21
2.7.4.2	Fog	2.7-23
2.7.4.3	Average Wind Direction and Wind Speed Conditions	2.7-24
2.7.4.4	Wind Direction Persistence	2.7-26
2.7.4.5	Atmospheric Stability	2.7-26
2.7.4.6	Topographic Description	2.7-28
2.7.5	Short-Term Diffusion Estimates	2.7-29
2.7.5.1	Regulatory Basis and Technical Approach	2.7-29
2.7.5.2	PAVAN Modeling Results	2.7-31
2.7.6	Long-Term (Routine) Diffusion Estimates	2.7-32
2.7.6.1	Regulatory Basis and Technical Approach	2.7-32
2.7.6.2	XOQDOQ Modeling Results	2.7-33
2.7.7	Noise	2.7-34
2.8	Related Federal Project Activities	2.8-1
2.8.1	Land Acquisition and Use	2.8-1
2.8.2	Cooling Water Source and Supply	2.8-2
2.8.3	Projects Affecting Construction or Operation	2.8-2
2.8.4	Plans or Commitments Resulting in Significant Power Purchases	2.8-3
2.8.5	Other Federal Activities	2.8-3
Chapter 3	Plant Description	3.1-1
3.1	External Appearance and Plant Layout	3.1-1
3.1.1	Existing Site	3.1-1
3.1.2	Proposed Site	3.1-1
3.2	Reactor Power Conversion System	3.2-1
3.2.1	Engineered Safety Features	3.2-2
3.2.1.1	Containment	3.2-2
3.2.1.2	Containment Isolation System	3.2-3
3.2.1.3	Passive Core Cooling System	3.2-3
3.2.1.4	Main Control Room Emergency Habitability System	3.2-3
3.2.1.5	Fission Product Control	3.2-3
3.2.2	Turbine Generator	3.2-3

Turkey Point Units 6 & 7
COL Application
Part 3 — Environmental Report

ER MASTER TABLE OF CONTENTS (CONT.)

3.3	Plant Water Use	3.3-1
3.3.1	Water Consumption	3.3-1
3.3.1.1	Plant Water Demand	3.3-2
3.3.1.2	Plant Water Discharges	3.3-2
3.3.2	Water Treatment	3.3-3
3.3.2.1	Cooling Tower Makeup	3.3-3
3.3.2.2	Demineralized Water	3.3-3
3.3.2.3	Potable Water System	3.3-4
3.3.2.4	Fire Protection Water System	3.3-4
3.4	Cooling System	3.4-1
3.4.1	Description and Operational Modes	3.4-1
3.4.1.1	Normal Plant Cooling	3.4-1
3.4.1.2	Operational Modes	3.4-4
3.4.1.3	Additional Information	3.4-4
3.4.2	Component Descriptions	3.4-5
3.4.2.1	Raw Water System	3.4-5
3.4.2.2	Final Plant Discharge	3.4-6
3.4.2.3	Heat Dissipation System	3.4-7
3.5	Radioactive Waste Management System	3.5-1
3.5.1	Liquid Radioactive Waste Management System	3.5-1
3.5.1.1	Waste Input Streams	3.5-2
3.5.1.2	Radioactive Releases	3.5-5
3.5.1.3	Doses	3.5-6
3.5.1.4	Cost Benefit Analysis of Population Doses	3.5-6
3.5.2	Gaseous Radioactive Waste Management System	3.5-6
3.5.2.1	System Description	3.5-7
3.5.2.2	Radioactive Releases	3.5-10
3.5.2.3	Doses	3.5-11
3.5.2.4	Cost Benefit Analysis of Population Doses	3.5-11
3.5.3	Solid Radioactive Waste Management System	3.5-11
3.5.3.1	System Description	3.5-12
3.6	Nonradioactive Waste Systems	3.6-1
3.6.1	Effluents Containing Chemicals or Biocides	3.6-1
3.6.2	Sanitary System Effluents	3.6-2
3.6.3	Other Effluents	3.6-3
3.6.3.1	Gaseous Effluents	3.6-3
3.6.3.2	Liquid Effluents	3.6-3
3.6.3.3	Solid Effluents	3.6-4
3.7	Power Transmission System	3.7-1
3.7.1	Switchyard Interfaces	3.7-1
3.7.2	Transmission System	3.7-2
3.7.2.1	Design Parameters	3.7-2
3.7.3	Transmission Line Corridors	3.7-3
3.7.3.1	Transmission Line Corridor Ecological and Cultural Surveys	3.7-3
3.7.3.2	Transmission Corridor Maintenance	3.7-4

Turkey Point Units 6 & 7
COL Application
Part 3 — Environmental Report

ER MASTER TABLE OF CONTENTS (CONT.)

3.7.3.3	Transmission System Operation	3.7-4
3.7.3.4	Noise	3.7-5
3.7.3.5	General Methods of Construction	3.7-5
3.8	Transportation of Radioactive Materials	3.8-1
3.8.1	Transportation of Unirradiated Fuel	3.8-1
3.8.2	Transportation of Irradiated Fuel	3.8-1
3.8.3	Transportation of Radioactive Waste	3.8-2
3.9	Preconstruction and Construction Activities	3.9-1
3.9.1	Preconstruction Activities	3.9-3
3.9.1.1	Clearing, Grubbing, and Spoils Area Establishment	3.9-4
3.9.1.2	Access Road, Heavy Haul Road, and Equipment Barge Unloading Area Improvement	3.9-4
3.9.1.3	Construction Security	3.9-5
3.9.1.4	Construction Utilities	3.9-5
3.9.1.5	Construction Facilities and Preparation Activities	3.9-6
3.9.1.6	Earthwork — Units 6 & 7 Plant Area	3.9-6
3.9.1.7	Earthwork — Units 6 & 7 Power Block	3.9-8
3.9.1.8	Makeup Water Reservoir, Cooling Towers, and Makeup Water Supply Pipelines	3.9-10
3.9.1.9	Reclaimed Water Pipelines and Potable Water Pipelines	3.9-11
3.9.1.10	Radial Collector Wells	3.9-11
3.9.1.11	Deep Injection Wells	3.9-12
3.9.1.12	Module Assembly	3.9-12
3.9.2	COL Construction Activities	3.9-12
3.9.2.1	Structural Construction	3.9-13
3.9.3	Other Facilities and Site Completion	3.9-15
3.10	Workforce Characterization	3.10-1
3.10.1	Construction Workforce Characterization	3.10-1
3.10.1.1	Preconstruction Activities Workforce	3.10-2
3.10.1.2	Units 6 & 7 Construction Activities	3.10-2
3.10.2	Construction Worker Relocation and Commuting	3.10-2
3.10.3	Operations Work Force	3.10-3
Chapter 4	Environmental Impacts of Construction	4.0-1
4.0	Environmental Impacts of Construction	4.0-1
4.1	Land Use Impacts	4.1-1
4.1.1	The Site and Vicinity	4.1-1
4.1.1.1	The Site	4.1-1
4.1.1.2	The Vicinity	4.1-4
4.1.2	Transmission Corridors and Offsite Facilities and Areas	4.1-4
4.1.2.1	Proposed Transmission Corridors	4.1-4
4.1.2.2	Offsite Substations	4.1-7
4.1.2.3	FPL-Owned Fill Source	4.1-8
4.1.2.4	Makeup and Potable Water Systems	4.1-8
4.1.2.5	Access Roadways	4.1-9

Turkey Point Units 6 & 7
COL Application
Part 3 — Environmental Report

ER MASTER TABLE OF CONTENTS (CONT.)

4.1.3	Historic Properties	4.1-11
4.1.3.1	Onsite Facilities and Construction Areas	4.1-11
4.1.3.2	Offsite Transmission Line Corridors	4.1-12
4.1.3.3	Other Offsite Areas	4.1-12
4.1.3.4	Discovery Provisions	4.1-13
4.2	Water-Related Impacts	4.2-1
4.2.1	Hydrologic Alterations	4.2-1
4.2.1.1	Onsite Facilities	4.2-2
4.2.1.2	Offsite Facilities	4.2-14
4.2.2	Water Use Impacts	4.2-21
4.2.2.1	Surface Water	4.2-21
4.2.2.2	Groundwater	4.2-22
4.2.3	Water-Quality Impacts	4.2-24
4.2.3.1	Surface Water	4.2-24
4.2.3.2	Groundwater	4.2-25
4.3	Ecological Impacts	4.3-1
4.3.1	Terrestrial Ecosystems	4.3-3
4.3.1.1	Potential Impacts to the Units 6 & 7 Plant Area and Other Plant Property Areas	4.3-3
4.3.1.2	Potential Impacts of Makeup Water Systems	4.3-10
4.3.1.3	Potential Impacts to Offsite Areas	4.3-12
4.3.1.4	Summary	4.3-15
4.3.2	Aquatic Ecosystems - Construction Impacts	4.3-15
4.3.2.1	General Impacts to Aquatic Resources	4.3-15
4.3.2.2	Potential Impacts to the Units 6 & 7 Plant Area and Other Onsite Aquatic Resources	4.3-18
4.3.2.3	Potential Impacts to Offsite Aquatic Resources	4.3-22
4.3.2.4	Summary	4.3-26
4.4	Socioeconomic Impacts	4.4-1
4.4.1	Physical Impacts of Construction	4.4-1
4.4.1.1	Noise	4.4-1
4.4.1.2	Air	4.4-3
4.4.1.3	Aesthetics	4.4-5
4.4.1.4	Traffic	4.4-7
4.4.1.5	Conclusion	4.4-8
4.4.2	Social and Economic Impacts	4.4-8
4.4.2.1	Demography	4.4-10
4.4.2.2	Impacts to the Community	4.4-13
4.4.3	Environmental Justice	4.4-46
4.4.3.1	Health and Environmental Impacts	4.4-47
4.4.3.2	Socioeconomic Impacts	4.4-48
4.5	Radiation Exposure to Construction Workers	4.5-1
4.5.1	Site Layout	4.5-1
4.5.2	Radiation Sources	4.5-1
4.5.3	Construction Worker Doses	4.5-2

Turkey Point Units 6 & 7
COL Application
Part 3 — Environmental Report

ER MASTER TABLE OF CONTENTS (CONT.)

4.5.3.1	Gaseous Effluent Doses	4.5-2
4.5.3.2	Direct Radiation Doses	4.5-3
4.5.3.3	Total Doses	4.5-3
4.6	Measures and Controls to Limit Adverse Impacts During Construction	4.6-1
4.7	Cumulative Impacts Related to Construction Activities	4.7-1
4.7.1	Land Use	4.7-2
4.7.2	Hydrology and Water Use	4.7-3
4.7.2.1	Surface Water	4.7-3
4.7.2.2	Groundwater	4.7-4
4.7.2.3	Water Use	4.7-4
4.7.2.4	Water Quality	4.7-4
4.7.3	Ecology (Terrestrial and Aquatic)	4.7-5
4.7.3.1	Terrestrial	4.7-5
4.7.3.2	Aquatic	4.7-6
4.7.4	Socioeconomic Resources	4.7-7
4.7.5	Summary	4.7-10
4.8	Nonradiological Health Impacts	4.8-1
4.8.1	Public Health	4.8-1
4.8.2	Occupational Health	4.8-1
Chapter 5	Environmental Impacts of Operation	5.0-1
5.0	Environmental Impacts of Operation	5.0-1
5.1	Land Use Impacts	5.1-1
5.1.1	The Site and Vicinity	5.1-1
5.1.1.1	The Site	5.1-1
5.1.1.2	The Vicinity	5.1-2
5.1.2	Transmission Corridors and Offsite Areas	5.1-3
5.1.2.1	Transmission Corridors and Substations	5.1-3
5.1.2.2	Makeup Water Sources	5.1-4
5.1.2.3	FPL-Owned Fill Source	5.1-4
5.1.2.4	Access Roadways	5.1-5
5.1.3	Historic Properties and Cultural Resources	5.1-6
5.2	Water-Related Impacts	5.2-1
5.2.1	Hydrologic Alterations and Plant Water Supply	5.2-1
5.2.1.1	Facilities on the Turkey Point Plant Property	5.2-2
5.2.1.2	Offsite Facilities	5.2-12
5.2.2	Water Use Impacts	5.2-15
5.2.2.1	Surface Water	5.2-16
5.2.2.2	Groundwater	5.2-18
5.2.3	Water Quality Impacts	5.2-20
5.2.3.1	Surface Water	5.2-20
5.2.3.2	Groundwater	5.2-22
5.2.3.3	Offsite	5.2-24
5.3	Cooling System Impacts	5.3-1
5.3.1	Intake System	5.3-1

Turkey Point Units 6 & 7
COL Application
Part 3 — Environmental Report

ER MASTER TABLE OF CONTENTS (CONT.)

5.3.1.1	Hydrodynamic Descriptions and Physical Impacts	5.3-1
5.3.1.2	Aquatic Resources	5.3-2
5.3.2	Impacts of Cooling System Discharge System on Aquatic Ecosystems	5.3-3
5.3.3	Heat Discharge System	5.3-4
5.3.3.1	Heat Dissipation to the Atmosphere	5.3-4
5.3.3.2	Impacts of Heat Discharge System on Terrestrial Ecosystems	5.3-7
5.3.4	Impacts to Members of the Public	5.3-11
5.3.4.1	Etiological Agent Impacts	5.3-11
5.3.4.2	Noise	5.3-13
5.3.4.3	Conclusion	5.3-13
5.4	Radiological Impacts of Normal Operation	5.4-1
5.4.1	Exposure Pathways	5.4-1
5.4.1.1	Liquid Pathways	5.4-1
5.4.1.2	Gaseous Pathways	5.4-3
5.4.1.3	Direct Radiation	5.4-4
5.4.2	Radiation Doses to Members of the Public	5.4-4
5.4.3	Impacts to Members of the Public	5.4-5
5.4.4	Impacts to Biota Other Than Members of the Public	5.4-5
5.4.5	Occupational Doses	5.4-6
5.5	Environmental Impacts of Waste	5.5-1
5.5.1	Nonradioactive Waste System Impacts	5.5-2
5.5.1.1	Impacts of Discharges to Land	5.5-2
5.5.1.2	Impacts of Discharges to Water	5.5-3
5.5.1.3	Impacts of Discharges to Air	5.5-4
5.5.2	Mixed Waste Impacts	5.5-5
5.5.2.1	Plant Systems Producing Mixed Waste	5.5-5
5.5.2.2	Mixed Waste Storage and Disposal Plans	5.5-6
5.5.2.3	Waste Minimization Plan	5.5-6
5.5.2.4	Environmental Impacts of Mixed Waste	5.5-8
5.5.3	Conclusions	5.5-8
5.6	Environmental Impacts of Transmission Systems	5.6-1
5.6.1	Impacts to Terrestrial Resources	5.6-1
5.6.2	Impacts to Aquatic Resources	5.6-4
5.6.3	Impacts to Members of the Public	5.6-6
5.6.3.1	Visual Impacts	5.6-6
5.6.3.2	Induced Current	5.6-6
5.6.3.3	Electromagnetic Field Exposure	5.6-8
5.6.3.4	Noise	5.6-8
5.6.3.5	Radio and Television Interference	5.6-9
5.7	Uranium Fuel Cycle and Transportation Impacts	5.7-1
5.7.1	Uranium Fuel Cycle Impacts	5.7-1
5.7.1.1	Land Use	5.7-3
5.7.1.2	Water Use	5.7-3
5.7.1.3	Fossil Fuel Impacts	5.7-4
5.7.1.4	Chemical Effluents	5.7-4

Turkey Point Units 6 & 7
COL Application
Part 3 — Environmental Report

ER MASTER TABLE OF CONTENTS (CONT.)

5.7.1.5	Radioactive Effluents	5.7-4
5.7.1.6	Radioactive Waste	5.7-6
5.7.1.7	Occupational Dose	5.7-7
5.7.1.8	Transportation	5.7-7
5.7.1.9	Summary	5.7-7
5.7.2	Transportation of Radioactive Materials	5.7-7
5.7.2.1	Transportation Assessment	5.7-7
5.7.2.2	Incident-Free Transportation Impacts Analysis	5.7-12
5.7.2.3	Conclusion	5.7-17
5.8	Socioeconomic Impacts	5.8-1
5.8.1	Physical Impacts of Station Operation	5.8-1
5.8.1.1	Noise	5.8-2
5.8.1.2	Air	5.8-3
5.8.1.3	Aesthetics	5.8-4
5.8.1.4	Traffic	5.8-6
5.8.1.5	Conclusion	5.8-7
5.8.2	Social and Economic Impacts of Station Operation	5.8-7
5.8.2.1	Demography	5.8-8
5.8.2.2	Impacts to the Community	5.8-10
5.8.3	Environmental Justice Impacts	5.8-39
5.8.3.1	Health and Environmental Impacts	5.8-40
5.8.3.2	Socioeconomic Impacts	5.8-42
5.9	Decommissioning	5.9-1
5.9.1	Environmental Impacts Related to Decommissioning	5.9-1
5.9.2	DOE-Funded Study on Decommissioning Costs	5.9-5
5.9.3	Units 6 & 7 Decommissioning Cost Estimate	5.9-7
5.9.4	Conclusions	5.9-7
5.10	Measures and Controls to Limit Adverse Impacts During Operations	5.10-1
5.11	Cumulative Impacts Related to Station Operation	5.11-1
5.11.1	Land Use	5.11-2
5.11.2	Hydrology and Water Use	5.11-4
5.11.2.1	Surface Water	5.11-4
5.11.2.2	Groundwater	5.11-5
5.11.2.3	Water Quality	5.11-5
5.11.3	Ecology (Terrestrial and Aquatic)	5.11-6
5.11.3.1	Terrestrial	5.11-6
5.11.3.2	Aquatic	5.11-7
5.11.4	Socioeconomic Resources	5.11-7
5.11.5	Atmospheric and Meteorological	5.11-9
5.11.6	Radiological	5.11-10
5.11.7	Waste	5.11-10
5.11.8	Human Health	5.11-11
5.11.9	Summary	5.11-11
5.12	Nonradiological Health Impacts	5.12-1
5.12.1	Public Health	5.12-1

Turkey Point Units 6 & 7
COL Application
Part 3 — Environmental Report

ER MASTER TABLE OF CONTENTS (CONT.)

5.12.2	Occupational Health	5.12-1
Chapter 6	Environmental Measurements and Monitoring Programs	6.0-1
6.0	Environmental Measurements and Monitoring Programs	6.0-1
6.1	Thermal Monitoring	6.1-1
6.1.1	Pre-Application Thermal Monitoring	6.1-1
6.1.2	Construction and Preoperational Thermal Monitoring	6.1-1
6.1.2.1	Surface Water	6.1-1
6.1.2.2	Groundwater	6.1-2
6.1.3	Operational Thermal Monitoring	6.1-2
6.1.3.1	Surface Water	6.1-2
6.1.3.2	Groundwater	6.1-2
6.2	Radiological Monitoring	6.2-1
6.2.1	Radiological Environmental Monitoring Program Basis	6.2-1
6.2.2	Radiological Environmental Monitoring Program Contents	6.2-1
6.2.2.1	Preoperational and Operational Radiological Monitoring Programs	6.2-2
6.2.3	Radiological Environmental Monitoring Program Reporting	6.2-3
6.3	Hydrological Monitoring	6.3-1
6.3.1	Pre-Application Hydrological Monitoring	6.3-1
6.3.1.1	Groundwater Monitoring — Units 6 & 7 Plant Area	6.3-1
6.3.1.2	Groundwater Monitoring — Pumping Tests	6.3-1
6.3.2	Construction Hydrological Monitoring	6.3-1
6.3.2.1	Surface Water	6.3-2
6.3.2.2	Groundwater	6.3-2
6.3.3	Preoperational Hydrological Monitoring	6.3-3
6.3.3.1	Surface Water	6.3-3
6.3.3.2	Groundwater	6.3-4
6.3.4	Operational Hydrological Monitoring	6.3-5
6.3.4.1	Surface Water	6.3-5
6.3.4.2	Groundwater	6.3-5
6.4	Meteorological Monitoring	6.4-1
6.4.1	General Description — Onsite Meteorological Measurements Program	6.4-2
6.4.2	Preoperation Monitoring Program	6.4-2
6.4.2.1	Location, Elevation, and Exposure of Instruments	6.4-3
6.4.2.2	Tower Siting and Instrument Conformance	6.4-3
6.4.2.3	Obstructions	6.4-4
6.4.2.4	Heat and Moisture Sources	6.4-5
6.4.2.5	Wind Loss	6.4-6
6.4.2.6	Meteorological Parameters Measured	6.4-6
6.4.2.7	Meteorological Data Processing	6.4-9
6.4.2.8	Meteorological Data Used for Application	6.4-12
6.4.3	Operational Monitoring	6.4-13
6.4.4	Emergency Preparedness Support	6.4-14
6.5	Ecological Monitoring	6.5-1
6.5.1	Terrestrial Ecology and Land Use	6.5-1

Turkey Point Units 6 & 7
COL Application
Part 3 — Environmental Report

ER MASTER TABLE OF CONTENTS (CONT.)

6.5.1.1	Pre-Application Terrestrial Ecological Monitoring	6.5-1
6.5.1.2	Construction, Preoperational, and Operational Monitoring	6.5-3
6.5.2	Aquatic Ecological Monitoring	6.5-4
6.5.2.1	Pre-Application Aquatic Ecological Monitoring	6.5-4
6.5.2.2	Construction, Preoperational and Operational Monitoring	6.5-6
6.6	Chemical Monitoring	6.6-1
6.6.1	Pre-Application Chemical Monitoring	6.6-1
6.6.1.1	Surface Water	6.6-1
6.6.1.2	Groundwater	6.6-1
6.6.2	Construction and Preoperational Monitoring	6.6-1
6.6.2.1	Surface Water	6.6-1
6.6.2.2	Groundwater	6.6-2
6.6.3	Operational Monitoring	6.6-2
6.6.3.1	Surface Water	6.6-3
6.6.3.2	Groundwater	6.6-3
6.7	Summary of Monitoring Programs	6.7-1
6.7.1	Pre-Application Monitoring	6.7-1
6.7.2	Preconstruction/Construction Monitoring	6.7-1
6.7.3	Preoperational Monitoring	6.7-2
6.7.4	Operational Monitoring	6.7-3
Chapter 7	Environmental Impacts of Postulated Accidents Involving Radioactive Materials	7.0-1
7.1	Design Basis Accidents	7.1-1
7.1.1	Selection of Accidents	7.1-1
7.1.2	Evaluation Methodology	7.1-1
7.1.3	Source Terms	7.1-2
7.1.4	Radiological Consequences	7.1-2
7.2	Severe Accidents	7.2-1
7.2.1	Westinghouse Methodology	7.2-1
7.2.2	FPL Methodology	7.2-3
7.2.3	Consequences to Population Groups	7.2-5
7.2.3.1	Air Exposure Pathways	7.2-5
7.2.3.2	Surface Water Exposure Pathways	7.2-5
7.2.3.3	Groundwater Exposure Pathways	7.2-6
7.2.4	Comparison to NRC Safety Goals	7.2-6
7.2.4.1	Individual Risk Goal	7.2-6
7.2.4.2	Societal Risk Goal	7.2-6
7.2.5	Conclusions	7.2-7
7.3	Severe Accident Mitigation Alternatives	7.3-1
7.3.1	The Severe Accident Mitigation Alternative Analysis Process	7.3-1
7.3.2	The AP1000 SAMDA Analysis	7.3-2
7.3.3	Monetization of the Units 6 & 7 Base Case	7.3-4
7.4	Transportation Accidents	7.4-1
7.4.1	Radiological Impacts of Transportation Accidents	7.4-1

Turkey Point Units 6 & 7
COL Application
Part 3 — Environmental Report

ER MASTER TABLE OF CONTENTS (CONT.)

7.4.1.1	Transporting Unirradiated Fuel	7.4-1
7.4.1.2	Transporting Spent Fuel	7.4-1
7.4.1.3	Transporting Radioactive Waste	7.4-4
7.4.2	Nonradiological Impacts of Transportation Accidents	7.4-4
7.4.2.1	Transporting Unirradiated Fuel	7.4-4
7.4.2.2	Transporting Spent Fuel	7.4-4
7.4.2.3	Transporting Radioactive Waste	7.4-5
7.4.3	Conclusion	7.4-5
Chapter 8	Need For Power	8.1-1
8.1	State of Florida Process for Determining Need for Power	8.1-1
8.1.1	Ten-Year Site Plans	8.1-2
8.1.2	Determination of Need	8.1-3
8.1.3	Description of Service Area	8.1-6
8.1.4	FPL-Owned Resources	8.1-7
8.1.5	Florida Reliability Coordinating Council	8.1-7
8.2	Power Demand	8.2-1
8.2.1	Environmental Standard Review Plans (ESRPs)	8.2-1
8.2.2	Power and Energy Requirements	8.2-1
8.2.3	Factors Affecting Growth of Demand	8.2-6
8.3	Satisfaction of NRC Criteria	8.3-1
8.3.1	Systematic	8.3-1
8.3.2	Comprehensive	8.3-1
8.3.3	Subject to Confirmation	8.3-2
8.3.4	Responsive to Forecasting Uncertainty	8.3-3
8.3.5	Conclusion	8.3-3
Chapter 9	Alternatives to the Proposed Action	9.0-1
9.0	Alternatives to the Proposed Action	9.0-1
9.1	No-Action Alternative	9.1-1
9.2	Energy Alternatives	9.2-1
9.2.1	Alternatives That Do Not Require New Generation Capacity	9.2-1
9.2.1.1	Purchase Power from Other Utilities or Power Generators	9.2-3
9.2.1.2	Reactivate or Extend Service Life of Existing Plants, or Extend the Capacity	9.2-3
9.2.1.3	Demand Side Management	9.2-5
9.2.1.4	Use an Existing Peaking Facility to Provide Baseload Power	9.2-6
9.2.1.5	Conclusion	9.2-7
9.2.2	Alternatives That Require New Generation Capacity	9.2-7
9.2.2.1	Introduction	9.2-7
9.2.2.2	Wind	9.2-9
9.2.2.3	Solar Technologies	9.2-12
9.2.2.4	Hydroelectric Power	9.2-16
9.2.2.5	Geothermal	9.2-19
9.2.2.6	Fuel Cells	9.2-21
9.2.2.7	Biomass	9.2-23
9.2.2.8	Municipal Solid Waste/Landfill Gas	9.2-25

Turkey Point Units 6 & 7
COL Application
Part 3 — Environmental Report

ER MASTER TABLE OF CONTENTS (CONT.)

9.2.2.9	Coal	9.2-28
9.2.2.10	Natural Gas	9.2-31
9.2.2.11	Petroleum	9.2-33
9.2.2.12	Integrated Gasification Combined Cycle	9.2-34
9.2.2.13	Conclusion	9.2-36
9.2.3	Assessment of Competitive Alternative Energy Sources and Systems	9.2-36
9.2.3.1	Pulverized Coal-Fired Generation	9.2-37
9.2.3.2	Natural Gas Generation	9.2-47
9.2.3.3	Combination of Alternatives	9.2-53
9.2.4	Conclusion	9.2-55
9.3	Site Selection Process	9.3-1
9.3.1	Region of Interest	9.3-3
9.3.2	Overview of Site Selection Process	9.3-3
9.3.2.1	Alternative Site Selection Process	9.3-4
9.3.3	Alternative Site Review	9.3-16
9.3.3.1	Evaluation of the Glades Site	9.3-17
9.3.3.2	Evaluation of the Martin Site	9.3-44
9.3.3.3	Evaluation of the Okeechobee 2 Site	9.3-66
9.3.3.4	Evaluation of the St. Lucie Site	9.3-88
9.3.4	Summary and Conclusions	9.3-112
9.4	Alternative Plant and Transmission Systems	9.4-1
9.4.1	Heat Dissipation Systems	9.4-1
9.4.1.1	Screening of Alternative Heat Dissipation Systems	9.4-1
9.4.1.2	Feasible Alternatives	9.4-5
9.4.1.3	Summary	9.4-5
9.4.2	Circulating Water Systems	9.4-6
9.4.2.1	Intake Systems	9.4-6
9.4.2.2	Discharge Systems	9.4-11
9.4.2.3	Water Supply	9.4-15
9.4.2.4	Water Treatment	9.4-21
9.4.3	Transmission Systems	9.4-23
9.4.3.1	Alternatives to the Proposed Transmission System Design	9.4-23
9.4.3.2	Corridor Selection	9.4-26
9.4.3.3	Preferred Corridors	9.4-29
9.4.3.4	Community Outreach Program	9.4-35
Chapter 10 Environmental Consequences of the Proposed Action		10.1-1
10.1	Unavoidable Adverse Environmental Impacts	10.1-1
10.1.1	Unavoidable Adverse Environmental Impacts of Construction	10.1-1
10.1.2	Unavoidable Adverse Environmental Impacts of Operations	10.1-2
10.2	Irreversible and Irrecoverable Commitments of Resources	10.2-1
10.2.1	Irreversible Commitments of Resources	10.2-1
10.2.1.1	Land Use	10.2-1
10.2.1.2	Hydrological and Water Use	10.2-1
10.2.1.3	Aquatic and Terrestrial Biota	10.2-2

Turkey Point Units 6 & 7
COL Application
Part 3 — Environmental Report

ER MASTER TABLE OF CONTENTS (CONT.)

10.2.1.4	Socioeconomic	10.2-2
10.2.1.5	Releases to Air and Surface Water	10.2-2
10.2.1.6	Disposal of Hazardous and Radioactively Contaminated Waste	10.2-3
10.2.1.7	Uranium Fuel Cycle	10.2-3
10.2.2	Irretrievable Commitments of Resources	10.2-4
10.3	Relationship Between Short-Term Uses and Long-Term Productivity of the Human Environment	10.3-1
10.3.1	Construction of Units 6 and 7 and Long-Term Productivity	10.3-1
10.3.2	Operation of UNITS 6 & 7 and Long-Term Productivity	10.3-2
10.3.3	Summary of Relationship Between Short-Term Uses and Long-Term Productivity	10.3-3
10.4	Benefit–Cost balance	10.4-1
10.4.1	Benefits	10.4-1
10.4.1.1	Need for Power	10.4-1
10.4.1.2	Fuel Diversity	10.4-2
10.4.1.3	Avoided Emissions	10.4-3
10.4.1.4	Advantage of Nuclear Power	10.4-4
10.4.1.5	Tax Payments	10.4-4
10.4.1.6	Local and State Economy	10.4-5
10.4.1.7	Other Benefits	10.4-5
10.4.1.8	Benefit Summary	10.4-6
10.4.2	Costs	10.4-6
10.4.2.1	Internal Costs — Proposed Action	10.4-6
10.4.2.2	Internal Costs — Generation Alternatives	10.4-9
10.4.2.3	External Costs	10.4-9
10.4.2.4	Alternative Sites	10.4-11
10.4.3	Summary	10.4-11