BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

DOCKET NO. 090009-EI
FLORIDA POWER & LIGHT COMPANY

MARCH 2, 2009

IN RE: NUCLEAR POWER PLANT COST RECOVERY TRUE-UP FOR THE YEARS ENDING DECEMBER 2006, 2007 AND 2008

EXHIBIT SDS-7

COM ____
ECR ____
GCL ____
OPC ____
RCP ____
SSC ____
SGA ____
ADM ____
CLK ____

FLORIDA POWER & LIGHT COMPANY
PROJECT BLUEGRASS
NEW NUCLEAR POWER GENERATION

FINAL

SITE SELECTION STUDY REPORT

October 2006

Florida Power & Light Company
Project Bluegrass
Nuclear Power Plant Site Selection Study Report

FINAL

October 2006

Acronyms and Abbreviations

%g	percent of gravity
AAA	American Automobile Association
AFB	Air Force Base
bgs	below ground surface
CFR	Code of Federal Regulations
cfs	cubic feet per second
CH	Critical Habitat
COL	Combined Operating License
COLA	Combined Operating License Application
E	Endangered
EIS	Environmental Impact Statement
EPA	Environmental Protection Agency
EPRI	Electric Power Research Institute
F	Fahrenheit
FDEP	Florida Department of Environmental Protection
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Maps
FPL	Florida Power & Light Company
ft	feet
ft^2	square feet
gpd	gallons per day
gpm	gallons per minute
in	inches

kV	kilovolts
MDWASD	Miami-Dade County Water and Sewer Department
mgd	million gallons per day
mi	miles
MSA	Metropolitan Statistical Area
MSL	Mean Sea Level
NAVD	North American Vertical Datum
NCDC	National Climate Data Center
NEI	Nuclear Energy Institute
NEPA	National Environmental Policy Act
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NP	Nuclear Plant
NRC	Nuclear Regulatory Commission
NRHP	National Register of Historic Places
NUREG	Nuclear Regulatory Commission Regulation
NWI	National Wetlands Inventory
NWR	National Wildlife Refuge
OFW	Outstanding Florida Waters
Okee	Okeechobee
PE	Probability of Exceedance
PGA	Peak Ground Acceleration
PPE	Plant, Property, and Equipment
psm	persons per square mile
ROI	Region of Interest
ROW	Right of Way
RR	Railroad
RTE	Rare, Threatened, and Endangered
S/A	Similar in Appearance
sq. mi.	square miles
T	Threatened
T&E	Threatened and Endangered
tbd	to be determined
USDA	U.S. Department of Agriculture
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
WCA	Water Conservation Area
WMA	Wildlife Management Area
WWTP	Waste Water Treatment Plant
yr	year

1.0 Background and Introduction

Florida Power & Light Company (FPL) intends to prepare a Combined Operating License Application (COLA) for a new nuclear power plant. An early step in this process is selection of a site that will provide the geographic setting for the COLA. This *Siting Plan* provides a description of the bases, assumptions, and processes applied in selecting the FPL COL site.

The purpose of the new Nuclear Power Plant Project is to provide needed generating capacity to FPL's customers that will enhance the fuel diversity and fuel supply reliability of FPL's fleet, reduce emissions from the FPL system on a per-kilowatt basis, and help balance the generation and load in Southeast Florida.

The overall objective of the siting process was to identify a nuclear power plant site that 1) meets FPL's business objectives for the COL project, 2) satisfies applicable Nuclear Regulatory Commission (NRC) site suitability requirements, and 3) is compliant with National Environmental Policy Act (NEPA) requirements regarding the consideration of alternative sites.

Sites were evaluated based on a bounding set of site-related plant characteristics that define the nuclear plant physical site suitability requirements. This set of parameters is analogous to the Plant Parameter Envelope defined in NEI-01-04, "Industry Guideline for an Early Site Permit License Application – 10 CFR Part 52, Subpart A." Site requirements and plant interface parameters used in the siting evaluations were derived from "Florida Power & Light Company, Project Bluegrass New Nuclear Power Generation Project: Site Requirements Document to support Combined Construction and Operating License Application (COLA)", Revision B, July 24, 2006.

Processes for site selection also take into account that existing sites have special status with NRC regarding consideration of alternative sites. For example, guidance provided to NRC staff on their review of alternative site analyses (NUREG-1555, Section 9.3, III [8]) states, in part [emphasis added]:

> "*Recognize that there will be special cases in which the proposed site was not selected on the basis of a systematic site-selection process*. Examples include facilities proposed to be constructed on the site of an existing nuclear power facility previously found acceptable on the basis of a NEPA review and/or demonstrated to be environmentally satisfactory on the basis of operating experience..."

An overall description of the siting process is provided in Section 2.0; additional detail on component steps in the site selection process is provided in succeeding sections.

2.0 Siting Process Overview

Site selection was conducted in accordance with the overall process outlined in the EPRI *Siting Guide: Site Selection and Evaluation Criteria for an Early Site Permit Application* (Siting Guide), March 2002. This process, as adapted for the FPL site selection study, is depicted in Figure 2-1.

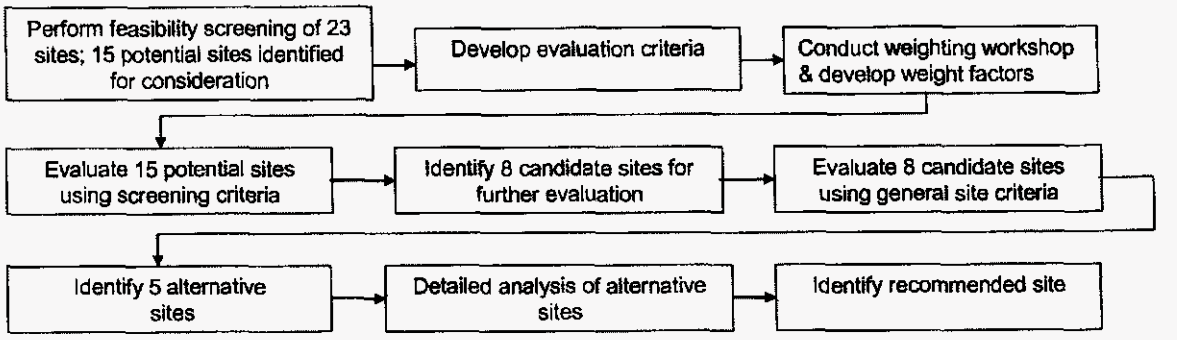


Figure 2-1 Site Selection Process Overview

A team composed of personnel from Enercon Services, Inc. and McCallum-Turner, Inc. was established to perform the analyses required under the site-selection process. The Enercon/McCallum-Turner team initiated data collection and analysis to support evaluation of the 15 identified potential sites. Screening-level criteria developed from the EPRI Existing Site Criteria (Table 4.2 of the EPRI *Siting Guide*) were developed and applied. Based on the results of evaluation of the 15 sites potential sites against the screening criteria, a down-select of eight candidate sites was made.

Using available data and criteria developed based on the EPRI general site criteria (Section 3.0 of the EPRI *Siting Guide*), detailed site-suitability evaluations of the candidate sites was conducted. Overall composite site-suitability ratings were developed for the eight candidate sites. Based on these ratings, five sites were identified as alternative sites. A recommended site for the new nuclear power plant was selected based on the composite ratings and other applicable considerations related to FPL business plans and objectives.

3.0 Potential Site Selection

The Region of Interest (ROI) for the FPL siting study was defined as areas within or immediately adjacent to the FPL service territory. Within that ROI, 23 sites were identified by FPL as locations that could be evaluated for the COL and, potentially, a new nuclear power plant. These sites, which included existing power plant sites and greenfield sites previously identified by FPL, represented the full suite of siting tradeoffs available within the ROI and therefore provided a basis for evaluation of a reasonable set of alternative locations.

FPL and Enercon/McCallum-Turner team personnel reviewed this set of sites in a joint meeting on August 1, 2006, to identify the final set of potential sites for this study. The following groups of sites were reviewed.

FPL Existing Sites

Twelve existing FPL power-generating sites were considered. Two of the sites are existing nuclear power generating plants.

- Canaveral
- Cutler
- Ft. Myers
- Lauderdale
- Manatee
- Martin
- Port Everglades
- Putnam
- Riviera
- Sanford
- St. Lucie (existing nuclear)
- Turkey Point (existing nuclear)

Additionally, three FPL-owned greenfield sites were considered:

- Andytown
- DeSoto
- West County

Finally, eight non-FPL-owned greenfield sites were considered; these sites were identified by the FPL corporate real estate department as being potentially available and feasible sites for new power generation projects:

- Charlotte
- Glades
- Hardee
- Hendry (2 locations)
- Highlands
- Okeechobee (2 locations)

Each of the sites was evaluated qualitatively with respect to the following considerations:

- Sufficient land currently exists for new nuclear power plant construction;
- Sufficient land can be obtained for new nuclear power plant construction;
- Adequate sources of water; and
- Transmission feasibility.

Using this process, the following 15 potential sites were identified for further consideration; these sites are depicted in Figure 3-1:

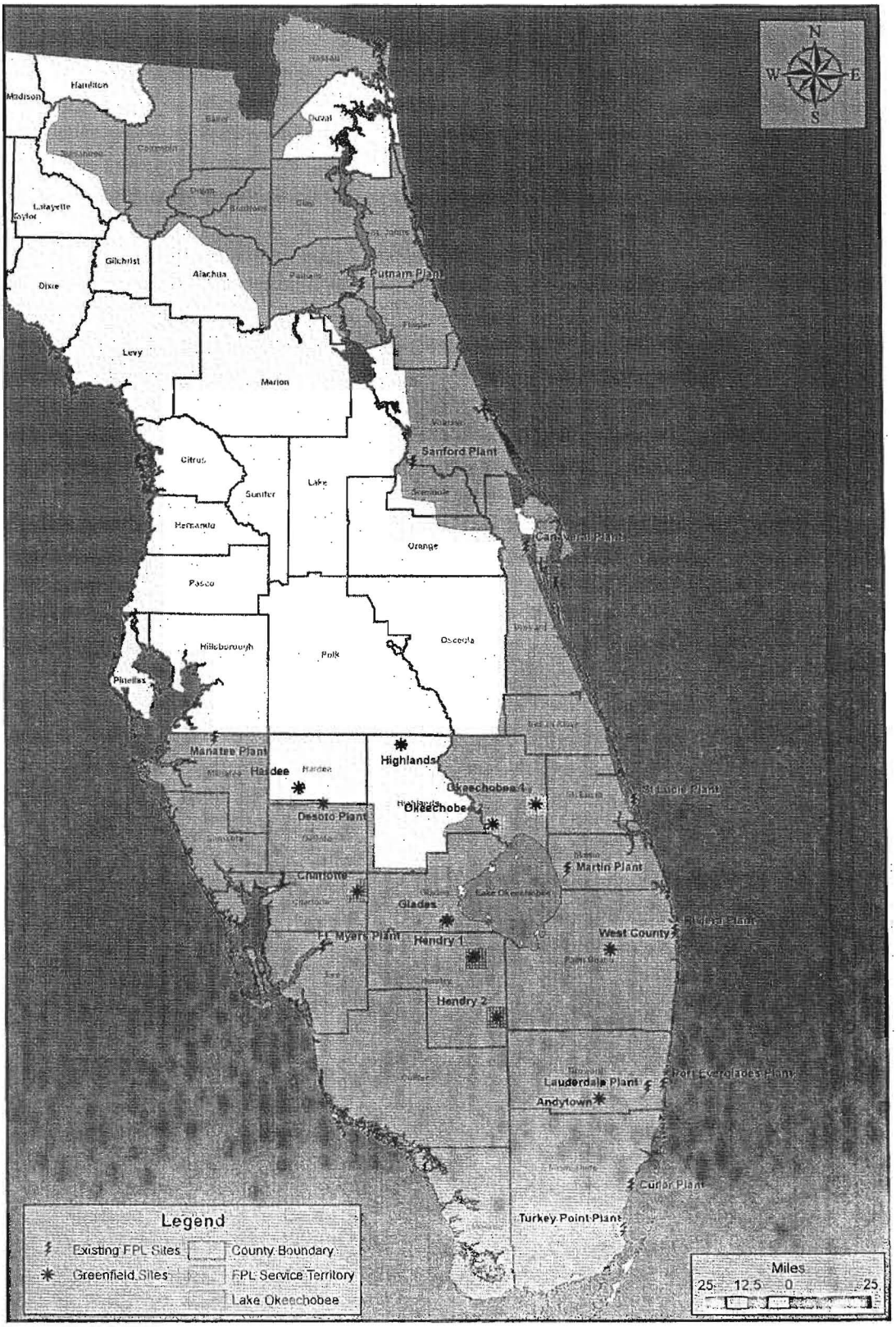
- Charlotte
- DeSoto

- Ft. Myers
- Glades
- Hardee
- Hendry (2 locations)
- Highlands
- Manatee
- Martin
- Okeechobee (2 locations)
- St. Lucie
- Turkey Point
- West County

Sites in the northern part of the ROI (Putnam, Sanford, Canaveral), as well as the Cutler site, were eliminated due to transmission feasibility; these sites are located far from the FPL load centers, and/or right-of-way acquisition would be difficult, and/or their transmission connections would have to be coordinated with other utilities. In addition, the Cutler, Sanford and Canaveral sites do not have adequate land area, and additional land could not feasibly be acquired.

The Andytown, Lauderdale, Port Everglades, and Riviera sites were eliminated from further consideration because these sites do not include enough land for a new nuclear power plant and additional land cannot be feasibly acquired in the time-frame required to support the FPL COLA schedule.

Figure 3-1 Potential Site Locations



4.0 Evaluation of Potential Sites and Identification of Candidate Sites

4.1 Potential Site Evaluation

The overall process for screening-level evaluation of potential sites was composed of the following elements; each element is described in the following paragraphs.

- Develop criterion ratings for each site;
- Develop weight factors reflecting the relative importance of each criterion; and
- Develop composite site-suitability ratings.

Criterion Ratings – Each potential site was assigned a rating of 1 to 5 (1 = least suitable, 5 = most suitable) for each of the screening criteria, using the rationale listed in Table 4-1. Information sources for these evaluations included publicly available data, data available from FPL files and personnel, and large-scale satellite photographs.

Weight Factors – Weight factors reflecting the relative importance of these criteria were developed by a multi-disciplinary committee in the areas of nuclear power plant site suitability that was convened at FPL offices on August 29, 2006; this committee was composed of subject matter experts in water use and availability, engineering, real estate, ecology, transmission, land use, health & safety, socioeconomics and public relations. The weight factors were derived using methodology consistent with the modified Delphi process specified in the Siting Guide (see Appendix A). Weight factors used (1 = least important, 10 = most important) are listed in the table below.

Criterion Number	Criterion	Weight Factor
P1	Cooling Water Supply	9.5
P2	Flooding	3.9
P3	Population	7.6
P4	Hazardous Land Uses	5.0
P5	Ecology	6.1
P6	Wetlands	6.4
P7	Railroad Access	5.6
P8	Transmission Access	8.5
P9	Land Acquisition	6.5

Composite Suitability Ratings – Ratings reflecting the overall suitability of each site were developed by multiplying criterion ratings by the criterion weight factors and summing over all criteria for each site.

Criteria presented in Table 4-1 were derived from the larger set of more detailed criteria listed in Chapter 3 of the EPRI *Siting Guide: Site Selection and Evaluation Criteria for an Early Site Permit Application* (Siting Guide), March 2002. They are intended to provide insights into the overall site suitability trade-offs between the potential sites and to take advantage of data available at this stage of the site selection process.

Table 4-1 Screening Evaluation Criteria

Criterion Number	Criterion	Measure of Suitability	
		Metric	Rating Rationale
P1	Water Supply	Composite ratings were based on an average of ratings for the following four aspects: **Flow –** Surface water: Low daily mean flow for the period of record as reported by USGS. Reclaimed water: WWTP flow reported by FDEP available for re-use on a county basis. Groundwater: Flow estimated based on FPL familiarity with Floridan aquifer, where feasible. Lake Okeechobee: Conservatively estimated to be at least the lower of the low daily mean flow reported for the C44 and C43 canals.	5 = No practical restriction 4 = Greater than 5 times the requirement 3 = 3-5 times the requirement 2 = Less than 3 times the requirement 1 = Insufficient flow *Note: A sensitivity analysis was performed regarding the rating rationale presented above. An alternate rating scale was developed that consisted of:* *1= Insufficient flow* *2=1 times the required flow* *3=1 to 3 times the required flow* *4=3 to 5 times the required flow* *5= No practical restriction.* *Applying this alternate rating rationale resulted in no substantial changes in the composite ratings [a flow sub-rating change at one of the sites (+1 at Charlotte) was calculated]. The original rationale presented above was used for the final criterion rating.*
		Flexibility – Number of alternate source(s) of water present and capable of providing substantial portion of required flow.	5 = Multiple sources each capable of full flow required 4 = Additional sources capable of providing substantial portion of flow 3 = One source capable of providing full flow 2 = Multiple sources each capable of providing substantial portion of flow with no single source providing full flow requirements 1 = Insufficient flow regardless of number of sources

Criterion Number	Criterion	Measure of Suitability	
		Metric	Rating Rationale
		Risk – Associated with flow variability, longer pumping distances and/or other reliability aspects of water supply.	5= All aspects favorable 4= Some favorable aspects 3= Neutral 2= Some risk 1= Substantial risk
		Regulatory Challenge – Known areas with elevated competition for water resources, a high number of water users, difficult supply conditions or challenging compliance situation are ranked lower than those without such challenges, based on judgment.	5= All aspects favorable 4= Some favorable aspects 3= Neutral 2= Some challenges 1= Substantial challenges
P2	Flooding	Difference between mean site elevation and mean water elevation from USGS topographic maps, USGS gaging station measurements.	5 = Greater than 20 feet 4 = Between 20 feet and 10 feet 3 = Between 10 feet and 6 feet 2 = Between 6 feet and 3 feet (or near swamp lands) 1 = Less than 3 feet (or in swamp lands)

Criterion Number	Criterion	Measure of Suitability	
		Metric	Rating Rationale
P3	Population	Composite ratings were based on an average of ratings based on the following two conditions: (1) Distance to nearest population center (high density); and (2) Population density of host county (based on 2000 census). In addition, a rating point was deducted or added if the site is or is not in a particularly densely populated area.	5 = No population centers within 20 miles 4 = Population centers between 20 and 15 miles 3 = Population centers between 15 and 10 miles 2 = Population centers between 10 and 5 miles 1= Population centers within 5 miles *County Population Density Ratings:* 5 = Less than 50 persons per square mile (psm) 4 = Between 250 psm and 50 psm 3 = Between 350 psm and 250 psm 2 = Between 500 psm and 350 psm 1 = Greater than 500 psm A point was added if no densely populated area is found within 40 miles of the site; a point deducted if a densely populated area is found within 15 miles of the site or if a large grouping of densely populated areas are located within 15-40 miles of the site.
P4	Hazardous Land Uses	Number of airports, pipelines, and other known hazardous industrial facilities (including *Air Force Bases and Kennedy* Space Center/Cape Canaveral), as determined from publicly available data.	5 = No major airport, city or county airport, military base, or rail within 10 miles [small air fields/landing strips are allowed if no more than 2 within 5 miles] 4 = No major airport (or Air Force Base) within 10 miles, no rail, pipeline small city or county airport within 5 miles [1-2 small air fields/landings strips are ok] 3 = Rail and small airports (multiple) < 5 miles 2 = Major airport or Air Force Base < 10 miles 1 = Major airport or Air Force Base < 10 miles, rail and multiple small airports < 5 miles, and existing plant location
P5	Ecology	Number of Federal Threatened, Endangered and Rare Species in County [aquatic and terrestrial]	5 = 0 species 4 = 1-10 species 3 = 11-20 species 2 = 21-30 species 1 = over 30 species
P6	Wetlands	Number of mapped wetland acres within a 5,000 acre nominal site area*, excluding riverine or marine areas.	5 = 0 acres 4 = Between 0 acres and 250 acres 3 = Between 250 acres and 500 acres 2 = Between 500 acres and 1,500 acres 1 = Greater than 1,500 acres

Criterion Number	Criterion	Measure of Suitability	
		Metric	Rating Rationale
P7	Railroad Access	Estimated cost of constructing a rail spur to the site, based on distance in miles to the nearest in-service rail line.	Ratings computed by scaling costs from lowest (rating = 5) to highest (rating = 1). 1 = More than 15 miles 2 = Between 15 miles and 10 miles 3 = Between 10 miles and 5 miles 4 = Between 5 miles and 2 miles 5 = Fewer than 2 miles Note: Ratings may be adjusted if barge access is located in the immediate vicinity in lieu of railroad access.
P8	Transmission Access	Transmission access is evaluated in the preliminary screening in terms of distance to the load center in the greater Miami area (Palm Beach, Broward, and Miami-Dade Counties) and amount of new right-of-way that would have to be acquired.	Ratings computed by measuring distances to greater Miami Area Load Center and considering high-level evaluation of transmission issues. 1 = More than 200 miles 2 = Between 200 miles and 100 miles 3 = Between 100 miles and 70 miles 4 = Between 70 miles and 50 miles 5 = Fewer than 50 miles Ratings points adjusted based on amount of new right-of-way that must be acquired and the relative difficulty of acquisition. The plant switchyard is assumed to be the same for all sites.
P9	Land Acquisition	Estimated cost of acquiring land (nominally 3,000 acres**) at the site, based on the following cost/acre assumptions: – very remote areas - $8,000 - $12,000 [used $10,000] – farm areas - $15,000 - $20,000 per acre [used $17,500] – land near population centers - $30,000 - $40,000 per acre [used $35,000]	Ratings computed by scaling costs from lowest (rating = 5) to highest (rating = 1)

Criterion Number	Criterion	Measure of Suitability	
		Metric	Rating Rationale

* In the screening phase wetlands criterion, a 5,000-acre general area was evaluated for each site to provide a general characterization of the presence of wetlands and to provide flexibility in the eventual plant layout. This general area size is consistent with the upper end of the Desired Owner Buffer Area identified in the FPL site requirements document.

** The low end of the Desired Owner Buffer Area (i.e., 3,000 acres) was used for the land acquisition criterion evaluation as the actual acreage that would be placed under FPL ownership.

4.2 Identification of Candidate Sites

Results of the screening evaluation are presented in Table 4-2 and Figure 4-1; the technical basis for the individual criterion ratings is detailed in Appendix B.

The screening evaluation process identified four sites that were clearly less suitable than the remaining eleven sites. As a result, the set of candidate sites was derived by taking the top eight ranked sites, but with the following optimizations:

Okeechobee 1 – Deferred in favor of Okeechobee 2, due to their close geographic proximity and the resulting expectation that no important siting trade-offs or opportunities would be eliminated. Okeechobee 1 is also farther from the proposed water source for these sites, leading to the expectation that it would encounter more cost and regulatory difficulties in water supply compared to Okeechobee 2.

Hendry 2 – Deferred in favor of the higher-rated Hendry 1, due to their close geographic proximity and the resulting expectation that no important siting trade-offs or opportunities would be eliminated. Hendry 2 is also farther from the proposed water source for these sites, leading to the expectation that it would encounter more cost and regulatory difficulties in water supply compared to Hendry 1.

Manatee – Deferred due to the expectation that the site is questionable with regard to the engineering and regulatory feasibility of developing a water supply and would encounter significant local resistance based on experience from previous FPL plant development activities in the site vicinity.

St. Lucie – Included based on the fact that it is an existing, operating nuclear power plant site. Inclusion of this site in the set of candidate sites allows detailed evaluation of the advantages of this existing site, including confidence in site characteristics, existing infrastructure, and public acceptance.

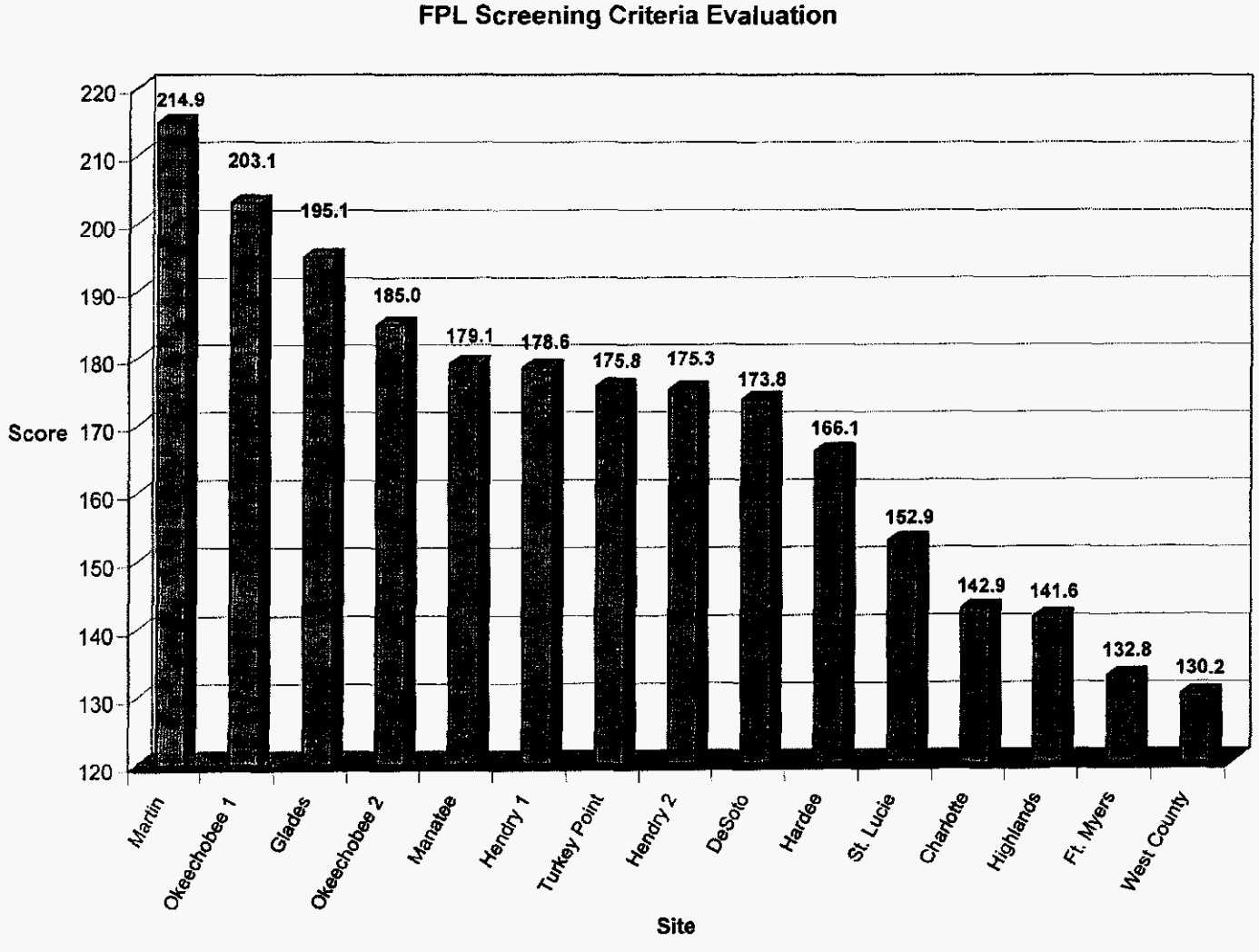
The eight candidate sites identified for further evaluation include:

- DeSoto
- Glades
- Hardee
- Hendry 1
- Martin
- Okeechobee 2
- St. Lucie
- Turkey Point

Table 4-2 Screening Criteria Site Ratings

	Cooling Water Supply	Flooding	Popula-tion	Hazard-ous Land Uses	Ecology	Wetlands	Railroad Access	Transmis-sion Access	Land Acquisi-tion	
	Weight Factor									
Potential Site Name	**9.5**	**3.9**	**7.6**	**5.0**	**6.1**	**6.4**	**5.6**	**8.5**	**6.5**	**Site Rating**
Charlotte	2	2	4	5	2	1	1	2	3	**142.9**
DeSoto	1	4	3	4	3	2	3	3	5	**173.8**
Ft. Myers	3	2	1	1	2	2	4	2	3	**132.8**
Glades	3	2	4	3	3	3	4	4	3	**195.1**
Hardee	1	4	4	3	3	2	5	2	3	**166.1**
Hendry 1	2	2	4	4	3	2	3	4	3	**178.6**
Hendry 2	2	1	5	5	3	1	2	4	3	**175.3**
Highlands	1	5	4	2	1	2	3	2	3	**141.6**
Manatee	3	5	2	3	3	3	4	1	5	**179.1**
Martin	3	2	3	3	2	4	5	5	5	**214.9**
Okeechobee 1	2	5	4	4	3	4	3	4	3	**203.1**
Okeechobee 2	3	3	3	3	3	2	4	4	3	**185.0**
St. Lucie	4	1	1	3	2	2	4	1	5	**152.9**
Turkey Point	4	1	1	2	1	2	4	5	5	**175.8**
West County	3	2	1	4	2	1	2	2	3	**130.2**

Figure 4-1 Screening Criteria Ratings



5.0 Evaluation of Candidate Sites and Identification of Alternative Sites

The objective of this component of the site-selection process was to further evaluate the top eight ranked candidate sites and select a smaller set of alternative sites (an initial target for the number of alternative sites was four) for detailed evaluation and ultimate selection of the proposed site for the FPL COL. Section 5.1 outlines the process for evaluating candidate sites, while Section 5.2 describes process results and the selection of alternate sites.

5.1 Process for Evaluating Candidate Sites

General siting criteria used to evaluate the eight candidate sites were derived from those presented in Chapter 3.0 of the *Siting Guide: Site Selection and Evaluation Criteria for an Early Site Permit Application*, EPRI, Palo Alto, CA: 2002 (Siting Guide); criteria from the siting guide were tailored to reflect issues applicable to – and data available for – the FPL candidate sites. A list of the criteria appears in Table 5-1.

The overall process for applying the general site criteria was analogous to that described in Section 4.1 and was composed of the same three elements identified below. Results from applying the process are described in Section 5.2. Appendix C provides the detailed technical basis for the general site-criteria ratings.

Criterion Ratings – Each site was assigned a rating of 1 to 5 (1 = least suitable, 5 = most suitable) for each of the potential site evaluation criteria using the rationale described in Appendix C. Information sources for these evaluations included publicly available data, information available from FPL files and personnel, and USGS topographic maps.

Weight Factors – Weight factors reflecting the relative importance of these criteria were developed by a multi-disciplinary committee in the areas of nuclear power plant site suitability that was convened at FPL offices on August 29, 2006; this committee was composed of subject matter experts in water use and availability, engineering, real estate, ecology, transmission, land use, health & safety, socioeconomics and public relations. The weight factors were derived using methodology consistent with the modified Delphi process specified in the Siting Guide. Weight factors used (1 = least important, 10 = most important) are included in Table 5-2 below.

Composite Suitability Ratings – Ratings reflecting the overall suitability of each site were developed by multiplying criterion ratings by the criterion weight factors and summing all criteria for each site, as summarized in Table 5-2.

Table 5-1 Site Criteria

Siting Criteria
1.1 Health and Safety Criteria: Accident Cause-Related Criteria
1.1.1 Geology and Seismology
1.1.2.1 Cooling System Requirements: Cooling Water Supply
1.1.2.2 Cooling Water System: Ambient Temperature Requirements
1.1.3 Flooding
1.1.4 Nearby Hazardous Land Uses
1.1.5 Extreme Weather Conditions
1.2 Health and Safety Criteria: Accident Effects-Related
1.2.1 Population
1.2.2 Emergency Planning
1.2.3 Atmospheric Dispersion
1.3 Health and Safety Criteria: Operational Effects-Related
1.3.1 Surface Water – Radionuclide Pathway
1.3.2 Groundwater Radionuclide Pathway
1.3.3 Air Radionuclide Pathway
1.3.4 Air – Food Ingestion Pathway
1.3.5 Surface Water – Food Radionuclide Pathway
1.3.6 Transportation Safety
2.1 Environmental Criteria: Construction-Related Effects on Aquatic Ecology
2.1.1 Disruption of Important Species/Habitats
2.1.2 Bottom Sediment Disruption Effects
2.2 Environmental Criteria: Construction-Related Effects on Terrestrial
2.2.1 Disruption of Important Species/Habitats and Wetlands
2.2.2 Dewatering Effects on Adjacent Wetlands
2.3 Environmental Criteria: Operational-Related Effects on Aquatic Ecology
2.3.1 Thermal Discharge Effects

Siting Criteria
Environmental Criteria: Operational-Related Effects on Aquatic Ecology, cont'd.
2.3.2 Entrainment/Impingement Effects
2.3.3 Dredging/Disposal Effects
2.4 Environmental Criteria: Operational-Related Effects on Terrestrial Ecology
2.4.1 Drift Effects on Surrounding Areas
3 Socioeconomic Criteria
3.1 Socioeconomic – Construction Related Effects
3.2 Socioeconomics – Operation (deleted from evaluation, see Appendix C)
3.3 Environmental Justice
3.4 Land Use
4.1 Engineering and Cost-Related Criteria: Health and Safety Related Criteria
4.1.1 Water Supply
4.1.2 Pumping Distance
4.1.3 Flooding
4.1.4 Vibratory Ground Motion (deleted from evaluation, see Appendix C)
4.1.5 Civil Works
4.2 Engineering and Cost: Transportation or Transmission Related Criteria
4.2.1 Railroad Access
4.2.2 Highway Access
4.2.3 Barge Access
4.2.4 Transmission Access
4.3 Engineering and Cost-Related Criteria: Related to Socioeconomic & Land Use
4.3.1 Topography
4.3.2 Land Rights
4.3.3 Labor Rates

5.2 Identification of Alternative Sites

Results of applying the evaluation process described in Section 5.1 to the eight candidate sites are summarized in Table 5-2 and Figure 5-1. Detailed discussions of the basis for site ratings for each of the criteria are provided in Appendix C.

The general criteria evaluation process identified three sites clearly less suitable than the remaining five sites. Based on these results, the following five alternative sites were identified for further, more detailed evaluation and consideration:

- Glades
- Martin
- Okeechobee 2
- St. Lucie
- Turkey Point

The DeSoto, Hardee, and Hendry 1 sites rated lower than the above sites in the general criteria evaluations, and were deferred from further analysis. Limited water availability was shown to be a factor in the general criteria evaluations for both the DeSoto and Hardee sites. The Hendry 1 site was observed to be similar to the Glades site, but was deferred from further consideration at this time due its lower composite rating.

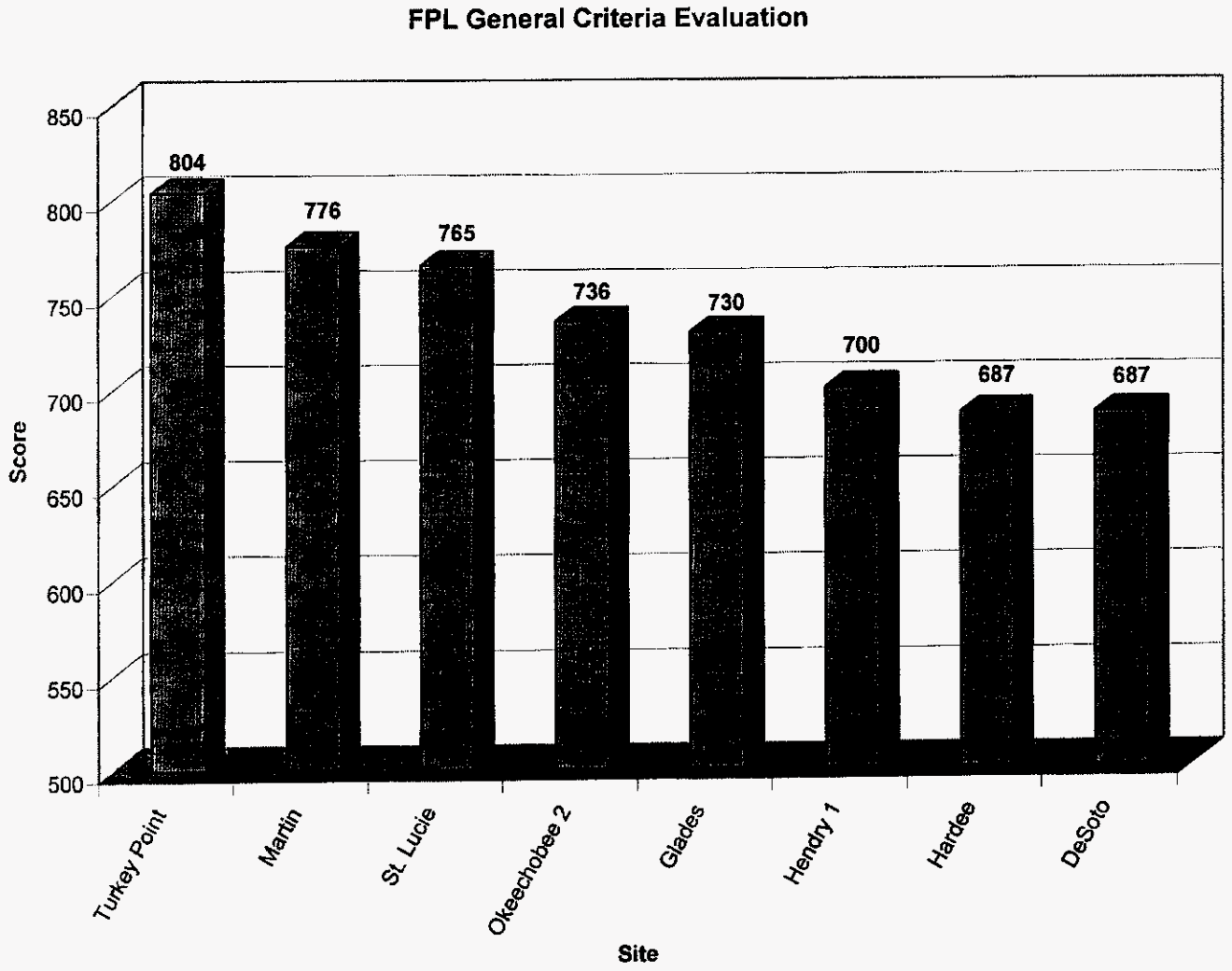
Table 5-2 General Site Criteria Site Ratings

Criteria		Weight Factor	DeSoto		Glades		Hardee		Hendry 1		Martin		Okeechobee 2		St. Lucie		Turkey Point	
			Rating	Score	Rating	Score	Rating	Score	Rating	Score	Rating	Score	Rating	Score	Rating	Score	Rating	Score
1.1.1	Geology/Seismology	7.9	5	39.5	5	39.5	5	39.5	5	39.5	5	39.5	5	39.5	5	39.5	5	39.5
1.1.2	Cooling System Requirements	9.6	2	19.2	3	28.8	2	19.2	3	28.8	3.5	33.6	3.5	33.6	3.5	33.6	3.5	33.6
1.1.3	Flooding	3.9	5	19.5	1	3.9	5	19.5	2	7.8	3	11.7	3	11.7	1	3.9	1	3.9
1.1.4	Nearby Hazardous Land Uses	4.2	4	16.8	3	12.6	3	12.6	4	16.8	3	12.6	3	12.6	3	12.6	2	8.4
1.1.5	Extreme Weather Conditions	4.6	3	13.8	3	13.8	3	13.8	3	13.8	3	13.8	3	13.8	2	9.2	2	9.2
1.2	Accident Effect Related	8.1	4	32.4	4	32.4	4	32.4	4	32.4	3	24.3	4	32.4	3	24.3	3	24.3
1.3.1	Surface Water – Radionuclide Pathway	7.4	4	29.6	4	29.6	4	29.6	4	29.6	4	29.6	4	29.6	5	37	5	37
1.3.2	Groundwater Radionuclide Pathway	7.2	3	21.6	3	21.6	3	21.6	3	21.6	3	21.6	2	14.4	2	14.4	2	14.4
1.3.3	Air Radionuclide Pathway	7.4	4	29.6	4	29.6	4	29.6	4	29.6	4	29.6	4	29.6	5	37	5	37
1.3.4	Air – Food Ingestion Pathway	7.5	1	7.5	1	7.5	1	7.5	1	7.5	2	15	1	7.5	5	37.5	5	37.5
1.3.5	Surface Water – Food Radionuclide Pathway	7.4	1	7.4	2	14.8	1	7.4	1	7.4	1	7.4	2	14.8	5	37	5	37
1.3.6	Transportation Safety	5.4	3	16.2	3	16.2	3	16.2	3	16.2	3	16.2	3	16.2	3	16.2	3	16.2

Criteria		Weight Factor	DeSoto		Glades		Hardee		Hendry 1		Martin		Okeechobee 2		St. Lucie		Turkey Point	
			Rating	Score	Rating	Score	Rating	Score	Rating	Score	Rating	Score	Rating	Score	Rating	Score	Rating	Score
2.1.1	Disruption of Important Species/Habitats	6.4	4	25.6	4	25.6	5	32	4	25.6	4	25.6	4	25.6	3	19.2	3	19.2
2.1.2	Bottom Sediment Disruption Effects	5.1	3	15.3	3	15.3	3	15.3	3	15.3	3	15.3	3	15.3	4	20.4	4	20.4
2.2.1	Disruption of Important Species/Habitats and Wetlands	6.5	4	26	4.5	29.25	3.5	22.75	3.5	22.75	3.5	22.75	4	26	3	19.5	2.5	16.25
2.2.2	Dewatering Effects on Adjacent Wetlands	5.6	4	22.4	3	16.8	3	16.8	2	11.2	4	22.4	3	16.8	3	16.8	3	16.8
2.3.1	Thermal Discharge Effects	6.1	2	12.2	3	18.3	3	18.3	3	18.3	3	18.3	3	18.3	4	24.4	4	24.4
2.3.2	Entrainment/ Impingement Effects	6.1	4	24.4	4	24.4	4	24.4	4	24.4	3	18.3	4	24.4	3	18.3	3	18.3
2.3.3	Dredging/Disposal Effects	4.9	5	24.5	5	24.5	5	24.5	5	24.5	5	24.5	5	24.5	4	19.6	5	24.5
2.4.1	Drift Effects on Surrounding Areas	5.9	3	17.7	4	23.6	4	23.6	4	23.6	4	23.6	4	23.6	2	11.8	2	11.8
3.1.1	Socioeconomics – Construction-Related Effects	5.2	3	15.6	2	10.4	3	15.6	3	15.6	5	26	3	15.6	5	26	5	26
3.3.1	Environmental Justice	4.3	5	21.5	5	21.5	5	21.5	5	21.5	5	21.5	5	21.5	5	21.5	5	21.5
3.4.1	Land Use	5.4	3	16.2	3	16.2	3	16.2	3	16.2	3	16.2	3	16.2	3	16.2	4	21.6
4.1.1	Water Supply	8.5	1	8.5	4	34	1	8.5	3	25.5	4	34	4	34	5	42.5	5	42.5

Criteria		Weight Factor	DeSoto		Glades		Hardee		Hendry 1		Martin		Okeechobee 2		St. Lucie		Turkey Point	
			Rating	Score	Rating	Score	Rating	Score	Rating	Score	Rating	Score	Rating	Score	Rating	Score	Rating	Score
4.1.2	Pumping Distance	5.6	2	11.2	4	22.4	2	11.2	3	16.8	4	22.4	4	22.4	5	28	5	28
4.1.3	Flooding	4.1	5	20.5	3	12.3	5	20.5	4	16.4	5	20.5	4	16.4	2	8.2	2	8.2
4.1.5	Civil Works	4.8	3	14.4	2	9.6	2	9.6	2	9.6	2.5	12	2	9.6	3	14.4	3	14.4
4.2.1	Railroad Access	6.7	3	20.1	4	26.8	5	33.5	3	20.1	5	33.5	4	26.8	4	26.8	4	26.8
4.2.2	Highway Access	6.6	5	33	5	33	5	33	4	26.4	5	33	5	33	5	33	5	33
4.2.3	Barge Access	6.7	1	6.7	3	20.1	4	26.8	3	20.1	4	26.8	3	20.1	4	26.8	5	33.5
4.2.4	Transmission Access	8.6	3	25.8	4	34.4	2	17.2	4	34.4	5	43	4	34.4	1	8.6	5	43
4.3.1	Topography	3.4	5	17	5	17	4	13.6	5	17	5	17	5	17	5	17	5	17
4.3.2	Land Rights	5.6	5	28	3	16.8	3	16.8	3	16.8	5	28	3	16.8	5	28	5	28
4.3.3	Labor Rates	5.4	5	27	5	27	3	16.2	5	27	3	16.2	4	21.6	3	16.2	2	10.8
	Composite Site Rating		687		730		687		700		776		736		765		824	

Figure 5-1 General Site Criteria Ratings



6.0 Selection of Proposed Site

As discussed in Section 5.2, the Glades, Martin, Okeechobee 2, St. Lucie, and Turkey Point sites were selected as alternative sites for the FPL COL. Based on the comprehensive evaluations conducted to this point, all of these sites appear to be feasible locations for a new nuclear power plant.

To select a proposed site for the COL from this set of alternatives, additional considerations were evaluated to provide further insight on their relative suitability to support FPL's objectives for the COL and a future nuclear plant. Scope and results of these studies are described in Section 6.1. The rationale for selecting a proposed site from the alternatives considered is provided in Section 6.2.

6.1 Analysis of Alternative Sites

The objective of these additional considerations for the five alternative site studies was to provide further insight into site conditions and/or to provide further confidence on specific issues that were viewed as important to the COL site decision. Specific factors considered in this evaluation were as follows:

- Environmental impact – Existence of ecological or environmental permitting issues;
- Transmission – Availability of existing right-of-way and cost of upgrades;
- Land acquisition – Existing land ownership and expected difficulty of acquiring site (if applicable);
- Reliability (transmission) – Analysis of reliability from a power-transmission perspective;
- Reliability (generation) – Qualitative analysis of risk factors for reliable power production and supply;
- Public acceptance – Ability to obtain public acceptance to support siting activities;
- Political (local) – Governmental/organizational support at the local level;
- Political (state) – Governmental and regulatory support at the state and Federal level;
- Transmission takeaway – Feasibility of constructing the necessary upgrades to deliver power to the system;
- Schedule compatibility – Level of confidence that site will support commencement of COLA activities in January 2007; and
- Site layout feasibility – Ability of site to accommodate plant layout.

Evaluation of these factors was conducted by a multi-disciplinary team of FPL professionals with specific expertise, experience, and ongoing involvement in the areas being evaluated; for example, personnel involved in environmental permitting throughout the FPL service territory provided input on environmental matters, and public relations staff provided judgments on public acceptance and political factors.

Results of these evaluations were reported by assigning ratings for each alternative site that ranged from 1 to 3 (1 = more favorable, 3 = less favorable), based on experience and best professional judgment. Each of the ratings was discussed by personnel from FPL, Enercon

Services, and McCallum-Turner. The resulting ratings are summarized in Table 6-1; information on the basis for these ratings, along with results of the General Site Criteria evaluations (Section 5.0), are provided in the following paragraphs.

Environmental Impact

The St. Lucie site was rated least favorable because much of the land proposed for development contains red and black mangrove habitat and would incur significant environmental impact. Turkey Point was rated average with respect to environmental impact. Some of the land proposed for development at the Turkey Point site is designated as critical crocodile habitat. Some mitigation may be implemented because the entire cooling canal system is designated as critical habitat and the proposed area of development is small in relation to the whole canal system. The Glades, Martin, and Okeechobee 2 sites were rated as more favorable because environmental impacts can be mitigated more effectively than at the St. Lucie or Turkey Point sites.

Transmission

Transmission access was originally evaluated in terms of distance to the load center in the greater Miami area and the amount of new right-of-way that would have to be acquired; these factors are described in the screening criteria rating description in Section 4.0. Based on those evaluations the following ratings were applied to the alternative sites:

Glades – 2
Martin – 1
Okeechobee 2 – 2
St. Lucie – 3
Turkey Point – 1

Land Acquisition

The Turkey Point, St. Lucie, and Martin sites are all rated more favorable as these sites are FPL owned properties. The Glades site is rated average because while the property is not owned by FPL, options to purchase exist. The Okeechobee 2 site is rated less favorable because the property is not owned by FPL and purchasing options have not been developed.

Reliability (Transmission)

The Turkey Point and Martin sites are rated more favorable with respect to transmission reliability. Power generation from a new power plant at Turkey Point could be routed on a geographically diverse corridor, thereby minimizing reliability risks. Transmission from all other sites would be co-located with existing transmission lines with varying degrees of congestion and crossings. Transmission from the St. Lucie site is less favorable as co-location within one heavily used right-of-way would be required.

Reliability (Generation)

The Glades site is rated more favorable due to a lower hurricane frequency and resulting site evacuation and shut-down requirements. The Turkey Point site is rated less favorable due to the slightly higher frequency of hurricanes.

Public Acceptance

The Turkey Point site is rated more favorable because the existing nuclear plant's license renewal received strong local community support. The Glades site also is rated favorable due to demonstrated local government support. The Okeechobee 2 site is rated average because local political leaders have indicated they would support a nuclear power generation project. The Martin and St. Lucie sites do not appear to have a similarly strong supportive base and are rated less favorable.

Political Acceptance (Local)

The Glades and Okeechobee 2 sites are rated more favorable because no rezoning or comprehensive plan amendments would be required for a new nuclear power plant. The Turkey Point site was rated average because no comprehensive plan amendments would be necessary, but some level of rezoning or land use definition appears to be required. The Martin and St. Lucie sites are rated less favorable because both sites would require significant effort with local planning issues.

Political Acceptance (State/Federal)

With respect to regulatory requirements, there is no significant distinction between the alternative sites. The Florida State government has shown strong support for new nuclear power generation. The Martin site could present some resistance due to previously observed political perception surrounding water use issues and Lake Okeechobee water levels. As such, all sites have been rated more favorable, with the exception of the Martin site, which has been rated less favorable.

Transmission Takeaway Feasibility

The Turkey Point and St. Lucie sites are rated more favorable because neither site would require significant acquisition of new transmission right-of-way. The Glades site would require a significant acquisition of new right-of-way, but was rated average because a coal-fired power plant is proposed in the vicinity of the Glades location, and a nuclear plant at the site would benefit from earlier work to obtain some portion of the necessary right-of-way. The Martin site also was rated average because existing right-of-way could be utilized, although they are congested in areas. The Okeechobee 2 site is rated less favorable because significant amounts of right-of-way acquisition and new line construction would be required.

Schedule Compatibility

The ability to meet schedule requirements at a site closely parallels the land-acquisition evaluation above. The Turkey Point, St. Lucie, and Martin sites were rated more favorable because they are located on FPL-owned property. The Glades site was rated average as the property is not owned by FPL, but options to purchase exist. The Okeechobee 2 site was rated less favorable because the property is not owned by FPL and purchasing options have not been developed.

Site Layout

The Glades and Okeechobee 2 sites were rated more favorable. Both sites are greenfield sites and would allow the greatest flexibility in developing layouts for a new nuclear power plant. The Martin site was also rated more favorable because a considerable amount of FPL-owned property exists that would provide a similar amount of flexibility. Both existing nuclear power plant sites were rated lower than the greenfield sites because layout flexibility is reduced at each site due to the existing facilities. The Turkey Point site was rated average because there are several potential locations that can be developed. St. Lucie was rated less favorable because the restrictions to available land and surrounding natural features would significantly limit the ability to site new nuclear facilities.

Table 6-1 FPL Site Selection Study – Alternative Site Ratings*

	Technical Analysis Composite Rating/Score	Environ-mental Impact	Trans-mission	Land Acquisition	Reliability (Trans-mission)	Reliability (Generation)	Public Acceptance	Political (Local)	Political (State)	Transmission Takeaway Feasibility	Schedule Compati-bility	Site Layout
Glades	730 3	1	2	2	1	1	1	1	1	2	2	1
Martin	776 2	1	1	1	2	2	3	3	3	2	1	2
Okeechobee 2	736 3	1	2	3	2	2	2	1	1	3	3	1
St. Lucie	765 2	3	3	1	3	2	3	3	1	1	1	3
Turkey Point	804 1	2	1	1	1	2	1	2	1	1	1	2

* Note: A scale of 1 (more favorable) to 3 (less favorable) is used in this Table.

6.2 Selection of Proposed Site

The results of the 11 additional site selection considerations (section 6.1), combined with the results of the general criteria evaluations (section 5.2), were used to identify a recommended site as described below.

Results of the evaluations as described in Section 6.1 confirm that all of the five alternative sites are viable locations for a nuclear power plant. However, these evaluations do serve to further distinguish among the five alternative sites and identify the most favorable site. The Turkey Point site rates more favorable in 8 of the 12 considerations, and does not rate less favorable in any. Each of the other alternative sites rates more favorable in fewer considerations and rates less favorable in at least one.

Based on these results, the overall ranking of the five alternative sites is as follows:

1. Turkey Point
2. Glades
3. Martin
4. Okeechobee 2
5. St. Lucie

Thus, taking into consideration the results of each evaluation conducted (including satisfying the overall business objectives for the FPL COL), the **Turkey Point** site was selected as the recommended site for Project Bluegrass.

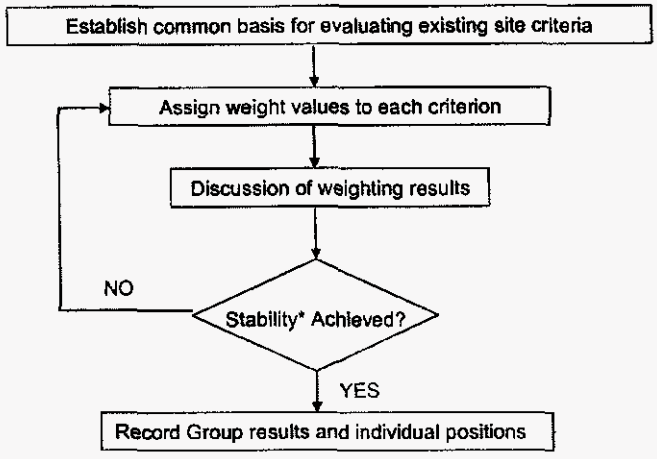
FLORIDA POWER & LIGHT COMPANY
PROJECT BLUEGRASS
NEW NUCLEAR POWER GENERATION

APPENDIX A
WEIGHT FACTOR DEVELOPMENT

Appendix A – Weight-Factor Development

For the potential and candidate site evaluation phases of the site selection process (Sections 4.0 and 5.0, respectively), weight factors were developed that reflect the relative importance of individual criteria in judging the overall suitability of nuclear power plant sites. As described below, weight factors were used in developing overall composite suitability ratings for sites under consideration.

Weight factors reflecting the relative importance of the screening criteria used to evaluate potential sites were developed consistent with the modified Delphi method suggested in the EPRI Siting Guide. The process used for weight-factor development is summarized in the diagram below.



*- Group average weights do not change significantly from one voting round to the next

Weight factors reflecting the relative importance of these criteria were developed by a multi-disciplinary committee in the areas of nuclear power plant site suitability that was convened at FPL offices on August 29, 2006; this committee was composed of subject matter experts in water use and availability, engineering, real estate, ecology, transmission, land use, health & safety, socioeconomics and public relations.

A brief description of the screening site criteria, data inputs, and rating methodologies was provided. Weights were assigned on a 1 to 10 scale, with 10 being most important and 1 being least. Individual weight scores were averaged to arrive at group composite criterion weighting factors.

After the first round of voting, a group discussion was held in which each committee member provided the rationale for his or her weight-factor assignments. Following this discussion, another polling of the group was conducted and committee members modified their weights, as they deemed appropriate, based on the discussions and arguments presented after the first round. A second discussion was held after the second round of voting. When polled, no members of the

committee indicated that they had been persuaded to change their weight assignments, and the Delphi session was terminated. The resulting weight factors are provided in Section 4.1.

The same process (described above) was applied to develop weight factors for the general site criteria. Again, after two rounds of voting, no members of the committee indicated that they had been persuaded to change their weight assignments, and the Delphi session was terminated. The resulting weight factors are provided in Table 5-2.

FLORIDA POWER & LIGHT COMPANY
PROJECT BLUEGRASS
NEW NUCLEAR POWER GENERATION

APPENDIX B
TECHNICAL BASIS FOR SCREENING CRITERION RATINGS

Appendix B – Technical Basis for Screening Criterion Ratings

Descriptions of the methodology, rationale, and data used in evaluating potential sites are provided in Table 4-1. Results of the evaluations are provided in the following tables. All ratings are assigned on a scale of 1 to 5, with 5 representing a more suitable site from the perspective of each criterion and 1 representing a less suitable site.

Criterion P1 – Cooling Water Supply							
Site	Water Source[1]	Estimated Flow[1]	Rating[2]				
			Flow	Flexibility	Risk	Regulatory Challenge	Composite Rating
Charlotte	Combination – - Peace River - Reclaimed Water[4] (Charlotte Co) - Groundwater	 - 209 cfs - 11 cfs - tbd[5]	1	3	2	2	2
De Soto	Combination – - Peace River - Reclaimed Water[4] (DeSoto Co) - Groundwater	 - 62 cfs - 1 cfs - tbd[5]	1	1	2	2	1
Ft. Myers	- Caloosahatchee River - Orange River - Ocean (18 miles) - Reclaimed Water[4] (Lee Co.)	- 404 cfs - tbd[5] - Unlimited - 60 cfs	5	4	3	2	3
Glades	- Groundwater - C43 (2.5 miles) - Lake Okeechobee (5 miles) - Reclaimed Water[4] (Glades Co)	- 155 cfs[7] - 482 cfs - 360+ cfs - 0 cfs	3	5	2	2	3
Hardee	Combination – - Peace River - Groundwater - Reclaimed Water[4] (Hardee Co)	 - 62 cfs - tbd[5] - 1 cfs	1	1	1	2	1

Criterion P1 – Cooling Water Supply							
Site	Water Source[1]	Estimated Flow[1]	Rating[2]				
			Flow	Flexibility	Risk	Regulatory Challenge	Composite Rating
Hendry 1	- Groundwater - Lake Okeechobee (11 miles) - Reclaimed Water[4] (Hendry Co)	- 155 cfs[7] - 360+ cfs - 3 cfs	3	3	2	2	2
Hendry 2	- Groundwater - Lake Okeechobee (24 miles) - Reclaimed Water[4] (Hendry Co)	- 155 cfs[7] - 360+ cfs - 3 cfs	3	3	2	2	2
Highlands	- Kissimmee River (10 miles) - Reclaimed Water[4] (Highlands Co)	- 105 cfs - 2 cfs	1	1	1	2	1
Manatee	- Tampa Bay (13 miles) - Reclaimed Water[4] (Manatee Co.)	- Unlimited - 45 cfs	5	3	3	2	3
Martin	- Lake Okeechobee - C-44 - Pond - Reclaimed Water[4] (Martin Co)	- 360+ cfs - 360 cfs - tbd[5] - 7 cfs	3	5	3	3	3
Okeechobee 1	- Groundwater - Lake Okeechobee (10 miles) - Reclaimed Water[4] (Ok Co)	- 155 cfs[7] - 360+ cfs - 1 cfs	3	3	2	2	2

Criterion P1 – Cooling Water Supply							
Site	Water Source[1]	Estimated Flow[1]	Rating[2]				
			Flow	Flexibility	Risk	Regulatory Challenge	Composite Rating
Okeechobee 2	- Groundwater - Kissimmee River (2 miles) - Lake Okeechobee (8 miles) - Reclaimed Water[4] (Ok. Co)	- 155 cfs[7] - 475 cfs - 360+ cfs - 1 cfs	3	5	2	2	3
St. Lucie	- Ocean Intake - Reclaimed Water[4] (St. Lucie Co.)	- Unlimited - 17 cfs	5	3	4	4	4
Turkey Point	- Ocean Intake[3] (7 miles) - Reclaimed Water[4] (8 miles) - Groundwater - Canals (ltd)	- Unlimited - 142 cfs - tbd[5] - tbd[5]	5	4	4	4	4
West County	- Hydrostorage Pits - Groundwater - Lake Okeechobee (15 miles) - Ocean (24 miles) - Reclaimed Water[4] (Palm Beach Co)	- ~176 cfs[6] - tbd[5] - 360+ cfs - Unlimited - 130 cfs	5	5	2	1	3

Criterion P1 – Cooling Water Supply							
Site	Water Source[1]	Estimated Flow[1]	Rating[2]				
			Flow	Flexibility	Risk	Regulatory Challenge	Composite Rating

Notes:

1. 178 cfs required. Water sources identified by water supply subcommittee.
2. See Table 4-1 for description.
3. Seven-mile pipeline to avoid Biscayne Bay.
4. All reclaimed water shown as total available for the county as reported by FDEP. Exception is for Turkey Point where flow for MDWASD South District WWTP is shown. This represents an indication of potential water for reuse and is not intended to determine feasibility.
5. Selected flows were not possible to quantify at this time. These values, if known, are not anticipated to significantly alter the ratings. At Ft. Myers, the Orange River flow is near zero per FPL. At Martin, source water for pond is the C-44 Canal.
6. Flow potentially available form L8 (low daily mean flow for last 10 years) used as representation of possible flow available from new hydrostorage pit.
7. Groundwater flow assumed to be 100 MGD based on FPL familiarity with aquifer. This withdrawal needs confirmed if any of these sites are carried forward.

Note: This evaluation has been performed in the absence of agency contact using publicly available flow data. Flow in the source water systems is complex and requires further investigation and contact with the respective water management district.

Criterion P2 – Flooding		
Site	Rating	Comments and Discussion
Charlotte	2	Charlotte elevation = 57 feet. Fisheating Creek elevation = 29 feet, flood stage = 34 feet. Difference = 23 feet above flood stage. Site is located in/near swamp lands. Site is located at border of Zone A and Zone X. Site is at border of 100-year flood zone.
DeSoto	4	DeSoto elevation = 81 feet. Peace River current elevation (at Arcadia, FL) ~ 10 feet. River flood stage = 17 feet. Difference = 64 feet above flood stage. Site is located in Zone X (outside 500-year flood zone). Swamp areas exist in the vicinity of the proposed site. Site is not located in 100-year flood zone.
Ft. Myers	2	Ft. Myers elevation = 9 feet. Site is located in Zone AE with base flood elevations of 8 feet. Site is located in 100-year flood zone.
Glades	2*	Glades elevation = 15 feet. Caloosahatchee Canal (Okeechobee Waterway) and Lake Hicpochee elevation = 11 feet. Difference = 4 feet. Site is in Zone A (located in 100-year flood zone).
Hardee	4	Highlands elevation = 63 feet. Peace River current elevation (at Zolfo Springs, FL) ~ 39 feet. River flood stage = 46 feet. Difference = 17 feet above flood stage. Site is in Zone X (not located in 100-year flood zone).

Criterion P2 – Flooding		
Site	Rating	Comments and Discussion
Hendry 1	2	Hendry 1 elevation = 19 feet. Lake Okeechobee elevation = 14 feet. *Difference = 5 feet.* Site is located near swamp areas. Site is located in Zone A3 (located in 100-year flood zone).
Hendry 2	1	Hendry 2 elevation = 14 feet. Site is located in swamp areas (east of canal and Levee 3). Site is in Zone A (located in 100-year flood zone). In the event of canal flooding, areas immediately northeast of the canal are primarily impacted as levees protect areas southwest of canals. Flexibility in locating the proposed site within the Hendry 2 parcel could result in improved flood conditions. Moving the site to the southwest of the canal and Levee 3 would increase elevation 2-3 feet, move the site out of swamp areas, and improve flood protection by utilizing Levee 3. The proposed site could be located in Zone C (not located in 100-year flood zone), and the site rating could be increased to a rating of 2 (or possibly 3).
Highlands	5	Highlands elevation = 74 feet. River stage data not available for Palmetto Creek or Arbuckle Creek. Topographic maps show approximate river elevation at 50 feet. Difference = 24 feet. Given site coordinates are located near swamp lands, but ample areas outside of swamp lands exist in the immediate vicinity of the proposed site. Site is located on border of Zone A (100-year flood zone) and Zone C (outside of 100-year flood zone). However, the exact proposed site location can be located in Zone C areas (not located in 100-year flood zone).

Criterion P2 – Flooding		
Site	Rating	Comments and Discussion
Manatee	5	*Manatee elevation = 46 feet* Little Manatee River current elevation ~ 3 feet. River flood stage = 11 feet. Difference = 35 feet above flood stage. Site is located in Zone X (outside 500-year flood zone). Site is not located in 100-year flood zone. Flood Insurance Rate Map is old (circa 1971) and does not reflect current conditions. However, area flooding is not expected to differ significantly from prior surveys (i.e., reservoir is not expected to impact area flood potential).
Martin	2	Martin site elevation = 28 feet. Lake Okeechobee elevation = 14 feet. Difference = 14 feet. Site is located near swamp lands. Site is in Zone X (area of 500-year flood, area of 100-year flood with average depths of < 1 foot or with drainage area < 1 sq. mi., or area protected by levees from 100-year flood). Site is located east of boundary limit of flooding from Lake Okeechobee caused by breaching of Herbert Hoover Dike. Site is not located in 100-year flood zone.
Okeechobee 1	5	Okeechobee 1 elevation = 59 feet. Lake Okeechobee elevation = 14 feet. Difference = 45 feet. Swamp areas exist in the vicinity of the proposed site, but specific location could be moved to avoid these areas. Site is located in Zone C. Site is not located in 100-year flood zone.

Criterion P2 – Flooding		
Site	Rating	Comments and Discussion
Okeechobee 2	3	Okeechobee 2 elevation = 28 feet. Kissimmee River ~ 20 feet. Difference = 8 feet. Swamp areas exist in the vicinity of the proposed site. Site is at border of Zone A and Zone C. Site is at border of 100-year flood zone.
St. Lucie	1	St. Lucie elevation = 0-5 feet. Atlantic Ocean elevation = 0 feet. Difference = 0-5 feet. Site is located in Zone AE with base flood elevations of 7-8 feet. Site is located in 100-year flood zone.
Turkey Point	1	Turkey Point elevation = 1-2 feet. Site is located in Zone AE with base flood elevations of 12 feet. Site is located in 100-year flood zone.
West County	2	West County elevation = 14 feet. Lake Okeechobee elevation = 14 feet. Difference = 0 feet. Site is located in/near swamp lands. Site is in Zone B (area between limit of 100-year flood and 500-year flood, area of 100-year flood with average depths of < 1 foot or with drainage area < 1 sq. mi., or area protected by levees from 100-year flood). In the event of canal flooding, areas *immediately northeast* of the canal are primarily impacted as levees protect areas southwest of canals. Flooding of West Palm Beach Canal could impact proposed site. Site is not located in 100-year flood zone.

Criterion P2 – Flooding		
Site	Rating	Comments and Discussion
* Glades site is located within the 100-year floodplain, based on FEMA Flood Insurance Rate Maps and consistent with FPL information that the 1-in-100-year event is based on lake elevation at 21' NAVD. Screening level evaluation does not consider a dike breach of Lake Okeechobee, such site-specific factors is addressed in a subsequent phase of the evaluation. References: FEMA Digital Flood Insurance Rate Maps, http://www.msc.fema.gov Google Earth, http://earth.google.com; NOAA Stream and Flood Data, http://www.weather.gov/ahps/. USGS Topographic Maps (1 x 100,000 metric); U.S. Flood Hazard Areas, http://www.esri.com/hazards/makemap.html.		

Criterion P3 – Population					
Site and County Population (2000 and 2005)	Rating				Comments and Discussion Population center data is for 2000
	County Density	Closest Pop Center	Average Rating*	Adjusted Rating**	
Charlotte (Charlotte) 141,627 (2000) 157,536 (2005) (11% growth rate 204.2 psm	4	5	4	4	No large population centers within 10 miles Population centers within 25 miles: Fort Myers Shores (5,733) – 16 miles SW La Belle (4,210) – 16.3 miles SE Ft. Myers (48,208) – 21 miles SW Arcadia (6,604) – 23 miles NW Port Charlotte (46,451) – 23 miles WNW
DeSoto (De Soto) 32,309 (2000) 35,406 (2005) (9.9% growth rate) 50.5 psm	5	2	3	3	Population centers within 10 miles: Arcadia (6,604) – 8.5 miles SW Population Centers within 20 miles: Zollo Springs (no pop data) - 12.1 miles N Wauchula (4,368) – 15.4 miles N Sebring (3667)/Lake Placid area(1668) – 20 miles ENE Port Charlotte (46,451) – 30 miles SW
Ft. Myers (Lee County) 440,888 (2000) 544,758 (2005) (23.6% growth rate); 548.6 psm	1	1	1	1	Population Centers within 5 miles: Tice (4,538) - 1.6 miles W Ft. Myers Shores (5,733) - 1.6 miles E Population Centers within 10 miles: Fort Myers (48,208) - 6.4 miles SW [North Ft. Myers]- Lehigh Acres (33,430) - 8 miles SE Cape Coral (102,286) - 11.2 miles SW

Criterion P3 – Population					
Site and County Population (2000 and 2005)	Rating				Comments and Discussion Population center data is for 2000
	County Density	Closest Pop. Center	Average Rating*	Adjusted Rating**	
Glades (Glades) 10,576 (2000) 11,252 (2005) (6.4% growth rate) 13.7 psm	5	1	3	4	Population centers within 5 miles: Moore Haven (1,635) – 2 miles E Population centers within 20 miles: Clewiston (6460) – 12 miles ESE Belle Glade (14, 906) – 12 miles E La Belle (4,210) – 18.4 miles W Population Centers within 50 miles Okeechobee (5.376) – 35 miles NE Fort Myers (western fringe, Lehigh Acres, 33,430) – 45 miles W
Hardee (Hardee Co) 26,938 (2000) 28,286 (2005) (5.0% growth rate) 42.3 psm	5	3	4	4	Population centers within 20 miles: Zollo Springs (no pop data) – 12 miles NE Wauchula (4,368) – 13.5 miles NE Arcadia (6,604) – 14 miles SE Population Centers within 30 miles: Sarasota (52,715) – 35 miles W Port Charlotte (46,461) – 26 miles SW
Hendry 1 (Hendry) 36,210 (2000) 39,561 (2005) (9.3% growth rate) 31.4 psm	5	2	3	4	Population centers within 10 miles Clewiston (6460) – 7.3 miles Population Centers within 25 miles: Belle Glade (14,906) 19.9 miles E La Belle (4,210) – 25 miles W

Criterion P3 – Population					
Site and County Population (2000 and 2005)	Rating				Comments and Discussion Population center data is for 2000
	County Density	Closest Pop Center	Average Rating*	Adjusted Rating**	
Hendry 2 (Hendry) 36,210 (2000) 39,561 (2005) (9.3% growth rate) 31.4 psm	5	5	5	5	Population centers within 30 miles: Clewiston (6460) – 28 miles NW Belle Glade (14,906) – 28 miles NE Immokalee (13,763) – 27.6 miles W Population Centers within 50 miles Boca Raton/Atlantic coast (western fringe) 42 miles to Coral Springs
Highlands (Highlands) 87,366 (2000) 95,496 (2005) (9.3% growth rate) 85 psm	4	2	3	4	Population centers within 10 miles: Avon Park, (8,542), 4.6 miles W Sebring, (9667), 7 miles SW Population Centers within 20 miles Lake Wales (10,194), 20.7 miles NW Closest densely populated area: Vero Beach/ (17,705 – city; 20,362 – Vero beach South, CDP)/coastal development – 50 miles
Manatee (Manatee; site close to Hillsborough county border) 264,002 (2000) 306,779 (2005) (16.2% growth rate) 356.3 psm	3	2	2	2	Population centers within 10 miles: Parrish (no pop data) – 4.8 miles W Wimauma (4,246) – 7.2 miles N Ruskin (8,321) – 8 miles NW Population Centers within 20 miles Palmetto (12,571) – 13 miles SW Bradenton (49,504) – 14 miles SW Sarasota (52.715) – 19 miles SW St. Petersburg (248,232) – 20 miles NW Tampa (303,447) – 22 miles NW

Criterion P3 – Population					
Site and County Population (2000 and 2005)	Rating				Comments and Discussion Population center data is for 2000
	County Density	Closest Pop Center	Average Rating*	Adjusted Rating**	
Martin (Martin) 126,731(2000) 139,728 (2005) (10.3% growth rate) 228.1 psm	4	2	3	3	Population centers within 10 miles: Indiantown (5,588) 7 miles SE Population Center within 25 miles: Port St. Lucie (88,769) – 20 miles E Stuart (14,633) – 25 miles NE Okeechobee (5,376) - 20 miles NW Site is 40 miles NW of West Palm Beach and 25 miles from Atlantic Coast development
Okeechobee 1 (Okeechobee) 35,910 (2000) 39,836 (2005) (10.9% growth rate) 46.4 psm	5	2	3	4	Population centers within 10 miles: Cypress Quarters (1,150) – 8 miles to SW Okeechobee (5,376) – 9 miles to SW Population Centers within 25 miles: Port St. Lucie (88,769) - 19 miles E (although western edge of development is at around 17 miles) Ft. Pierce (37,516) – 22 miles NE
Okeechobee 2 (Okeechobee) 35,910 (2000) 39,836 (2005) (10.9% growth rate) 46.4 psm	5	2	3	3	Population centers within 10 miles: Okeechobee (5,376) – 8 miles Population Centers within 20 miles: Lake Placid outskirts (1668) – 19.2 miles W Closest densely populated areas: Port St. Lucie (western edge) (88,769) – 30 miles E

Criterion P3 – Population					
Site and County Population (2000 and 2005)	Rating				Comments and Discussion: Population center data is for 2000
	County Density	Closest Pop Center	Average Rating*	Adjusted Rating**	
St. Lucie (St Lucie County) 192,695 (2000) 241,305 (2005) (25.2% growth rate) 336.3 psm	3	1	2	1	Population center within 5 miles: Port St. Lucie (88,769) – 4.5 miles W Population Centers within 10 miles: Ft Pierce (37,516) – 7 miles NW Stuart (14,633) – 8 miles S
Turkey Point (Miami Dade County) 2,253,362 (2000) 2,376,014 (2005) (5.4% growth rate) 1,157.9 (persons per square mile, psm)	1	2	1	1	No population centers within 5 miles Population Centers within 10 miles: Leisure City (22,152)- 7.2 miles N Homestead (31,909)– 9 miles NW Florida City (7,843) – 8 miles W Key Largo (11,806)– 10 miles S Major population center within 50 miles Miami (450,403 for Miami and Miami Beach)– 20-25 miles N, although S. Miami development within 10 miles N (9.6 miles Goulds and Cutler Ridge)
West County (Palm Beach Co) 1,131,184 (2000) 1,268,548 (2005) (12.1% growth rate) 573 psm	1	1	1	1	Population centers within 5 miles: Wellington (38,216) – 4 miles E Population Centers within 20 miles Belle Glade (14,506) – 17 miles W West Palm Beach (82,103) – 18 miles E (but 3-5 miles to residential/development); and coastal development extends below West Palm down to Miami.

Criterion P3 – Population					
Site and County Population (2000 and 2005)	Rating				Comments and Discussion
	County Density	Closest Pop Center	Average Rating*	Adjusted Rating**	Population center data is for 2000

* Average of ratings based on host county population density and rating based on distance to nearest population center (identified using screening map and USGS 100,000 scale topographic map).

** Point added if no densely populated area is found within 40 miles of the site; point deducted if a densely populated area is found within 15 miles of the site or if a large grouping of densely populated areas are located within 15-40 miles of the site.

References: US Census Bureau (2000 Census data); Enercon Screening Map; USGS 100,000 scale topographic maps; AAA Florida State Map.

Criterion P4 – Hazardous Land Uses		
Site	Rating	Comments and Discussion
Charlotte	5	Airports: Closest major airport is Regional Southwest Airport in Ft. Myers, 28.4 miles away; Charlotte County airport is 24 miles W and Arcadia airport is 24 miles NW; Smaller airports located 3.2, 7.4, 8.7, 12.9, 15.8, 16.3 and 18.1 miles away Rail: Closest is 18 miles E
DeSoto	4	Airports: No major airports; smaller airports at Arcadia (9.6 miles SW) and Sebring (24.8 miles to NW) Other small airport/landing strips at 2.5, 7.4, 8.2, 8.4, 12.7, 13.5, and 15.4 miles Rail: 7.1 miles W
Ft. Myers	1	Airport: Regional Southwest (Ft. Myers) – 10 miles S Other smaller airports: 2.1 miles, 4.8 miles (Lehigh Acres SE); 9.6 miles (Page Field SW), 9 and 10 miles Rail: 2.4 miles SW Natural gas pipeline service to site 1.5 miles from I-75 Existing power plant on site with natural gas pipeline service to site
Glades	3	Airports: Clewiston is 12.4 miles SE of site; other smaller airports at 2 and 3 miles from site (landing strips) Rail: 3.1 miles NE; 11 miles W
Hardee	3	Airports: No major airports; airport at Arcadia (9 miles) and smaller airstrips located 9.5 and 12.5 miles away Rail: Located 0.4 miles W [more like 4 miles from my site location]
Hendry 1	4	Airports: Clewiston Airport (7.3 miles); smaller airports at 4.5, 9.8, 10.5, 10.9, 16.6 miles Rail: 8.7 miles NE
Hendry 2	5	Airports: Small airports nearby at 2.2, 4.4 and 6.7 miles Rail: 12.8 miles N

Criterion P4 – Hazardous Land Uses		
Site	Rating	Comments and Discussion
Highlands	2	Airports: Sebring Regional Airport 10.3 miles SE; MacDill AFB auxiliary/Avon Park AFB 3.7 miles NE; [also appears to be abandoned airfield on Avon Park Bombing Range, just NE of AFB airfield]; Avon Park Municipal 8 miles W; another smaller landing strip (for ranch) also further to the west. The Avon Park Airport fixed base operator is Avon Park Jet Center. The maximum runway length for the Avon Park Airport is 5,364 feet. Rail: 5.75 miles SE [railroad freight service provided by CSX includes side-track service to several industrial areas. Passenger service is provided by Amtrak which has scheduled arrivals and departures from Sebring.] Pipeline: None identified within 5 miles. Military Installations: Avon Park AFB/Avon Park Bombing Range – 4 miles NE
Manatee	3	Major Airports: 30 miles St Pete airport (NW); 18 miles MacDill AFB (NW); 27 miles Tampa airport (N); 18 miles Sarasota Bradenton airport (SW) Rail: 2.6 miles N Existing power plant with natural gas pipeline service to site
Martin	3	Airports: No major airports; Stuart Airport 25 miles E; smaller airports at 2.5, 6.4, 6.8, and 11 miles away Rail: 1.5 miles NE and 2.8 miles W Existing power plant with natural gas pipeline service to site
Okeechobee 1	4	Airports: Okeechobee County airport 9.6 miles SW; Sebring Airport over 25 miles NW; smaller airports located 3.5, 6.4, 6.6, 10, 12 and 13 miles away. Rail: 8.3 miles SW and 13.1 miles SE No pipelines identified
Okeechobee 2	3	Airports: Okeechobee County airport 7.3 miles E; smaller airports located 1.3, 4.3, 8.1 and 10 miles away Avon Bombing Range – 27 miles NW Rail: 2.2 miles NW

Criterion P4 – Hazardous Land Uses		
Site	Rating	Comments and Discussion
St. Lucie	3	Airports: Major airport 12.4 miles NW (St. Lucie County International); smaller airport (Witham field in Stuart) 10.4 miles SW Pipeline: Did not see on topographic maps, but other reports show line extending down Atlantic Coast Rail located 2.1 miles W Site located on navigable waterway Existing nuclear plant
Turkey Point	2	Airport/Military Base: Homestead AFB—5.2 miles NW [unclear what operations occur at base now – has been some realigning and proposals to use air base as commercial airport; assume fully operational as AFB for now] Other Airports: Homestead general aviation airport – 14+ miles NW Rail: 10 miles W Site located on navigable waterway US Naval Reservation with heliport and radio facility, located 7 miles SW Pipelines: did not see any major pipeline routes marked on topographic maps, but natural gas pipeline service to site Existing power plants [2 nuclear units, 2 conventional boiler fossil units plus building new combined cycle unit]
West County	4	Airports: West Palm Beach airport 18.3 miles E; other smaller airports 12.7 and 13.4 miles away Rail: 13.6 miles NE; 14.1 miles NW Pipeline: 13.5 miles W Property is adjacent to existing Corbett Substation and soon to be used for new greenfield combined cycle natural gas power plant; surrounding land use is predominantly sugar cane and limestone mining (site previously used for mining operations). [Site could qualify as 5 based on criteria but the fact that a new power plant is going in and mining occurs in area drops its rating to a 4.]
References: Google Earth, http://earth.google.com. USGS Topographic Maps (1 x 100,000 metric).		

Criterion P5 – Ecology/Federal RTE Species (by County)		
Site	Rating	Comments and Discussion
Charlotte	2	20 T&E species: 3 mammals, 9 birds (although documentation for 2 is very old), 7 fish and 1 plant
DeSoto	3	13 T&E species: 3 mammals (including manatee), 8 birds, 2 reptiles
Ft. Myers (Lee County)	2	20 T&E species: 3 mammals, 8 birds, 6 reptiles, 2 fish, 1 plant
Glades	3	16 T&E species: 3 mammals, 9 birds, 2 reptiles, 2 plants
Hardee County	3	12 T&E species: 2 mammals, 6 birds, 2 reptiles, 2 plants
Hendry 1	3	14 T&E species: 3 mammals, 9 birds, 2 reptiles
Hendry 2	3	14 T&E species: 3 mammals, 9 birds, 2 reptiles [just north of Big Cypress National Preserve/WMA and just to west of Rotenberger and Holey Land WMAs]
Highlands	1	37 T&E species: 3 mammals, 9 birds (documentation for one is 40 years old), 4 reptiles, 1 invertebrate, and 20 plants. Area includes unique ecological habitat along Lake Wales Ridge and State Forest and Avon Park Air Force Range. This habitat includes numerous protected species (federal and state).
Manatee	3	14 T&E species: 1 mammal, 6 birds, 1 fish, 5 reptiles, 1 plant
Martin	2	28 T&E species: 4 mammals, 10 birds, 7 reptiles, 1 fish, 6 plants
Okeechobee 1	3	14 T&E species: 3 mammals, 9 birds, 2 reptiles
Okeechobee 2	3	14 T&E species: 3 mammals, 9 birds, 2 reptiles
St. Lucie	2	27 T&E species: 4 mammals, 10 birds, 7 reptiles, 2 fish, 4 plants [+72 state species]
Turkey Point	1	40-44 T&E species: 3 mammals, 12 birds (but 4 last documented in 1960s or earlier; 1 last documented in 1987-1991 and 2 are possible migrants – 1901 and 1958), 7 reptiles, 1 fish, 2 invertebrates, 19 plants (2 last documented over 50 years ago); site located between Biscayne National Park and Everglades National Park FPL maintains natural wildlife area; wetlands set aside as Everglades Mitigation Bank; entire site is crocodile habitat
West County (Palm Beach)	2	30 T&E species: 4 mammals, 10 birds, 7 reptiles, 1 fish, 1 invertebrate, 7 plants [in between Loxahatchee NWR and JW Corbett WMA]

Criterion P5 – Ecology/Federal RTE Species (by County)		
Site	Rating	Comments and Discussion
Note: All six species of sea turtles occurring in the U.S. are protected under the Endangered Species Act of 1973. NOAA Fisheries and the U.S. Fish and Wildlife Service (USFWS) share jurisdiction for sea turtles, with NOAA Fisheries having lead responsibility for the conservation and recovery of sea turtles in the marine environment and USFWS on turtles on nesting beaches. References: US Fish and Wildlife Service, South Florida Field Office [www.fws.gov/southflorida/CountyList – data provided by county; supposed to be current through September or December 2005. US Fish and Wildlife Service, Vero Beach/South Florida [www.fws.gov/verobeach/species_lists/countyfr.html] June 2000.		

Criterion P6 – Wetlands		
Site	Wetland Acres (within 5,000-acre site area)	Rating
Charlotte	2,008	1
De Soto	632	2
Ft. Myers	802	2
Glades	489	3
Hardee	622	2
Hendry 1	843	2
Hendry 2	2,170*	1
Highlands	547*	2
Manatee	461*	3
Martin	210	4
Okeechobee 1	231	4
Okeechobee 2	961	2
St. Lucie	1,074	2
Turkey Point	1,476	2
West County	1,905	1

* Estimated from radius map.

Reference: From NWI Wetlands Mapper. Does not include estuarine and marine deepwater, riverine or freshwater pond acreage.

Criterion P7 – Railroad Access		
Site	Rating	Comments and Discussion
Charlotte	1	Rail is ~ 18.1 miles E (operated by South Central Florida Express, CSX Transportation has trackage rights). Rail is ~ 22.7 miles W (operated by Seminole Gulf RR, CSX Transportation has trackage rights).
DeSoto	3	Rail is ~ 7.1 miles W (operated by CSX Transportation). A rail line between Arcadia, FL and Bowling Green, FL (~ 2.3 miles W of the proposed site) formerly operated by Seaboard System RR has since been abandoned.
Ft. Myers	4	Rail is ~ 2.4 miles SW (operated by Seminole Gulf RR, CSX Transportation has trackage rights). Connection to rail could be complicated by development in Tice, FL and location near the Caloosahatchee River.
Glades	4	Rail is ~ 3.1 miles NE (operated by South Central Florida Express, CSX Transportation has trackage rights).
Hardee	5	Rail is ~ 0.4 miles W (operated by CSX Transportation). A rail line between Arcadia, FL and Bowling Green, FL (~ 6.4 miles E of the proposed site) formerly operated by Seaboard System RR has since been abandoned.
Hendry 1	3	Rail is ~ 8.7 miles NE (operated by South Central Florida Express, CSX Transportation and Florida East Coast Railway have trackage rights).
Hendry 2	2	Rail is ~ 12.8 miles N (operated by South Central Florida Express, CSX Transportation and Florida East Coast Railway have trackage rights).
Highlands	3	Rail is ~ 7.1 miles W (operated by CSX Transportation).
Manatee	4	Rail is ~ 2.2 miles N (operated by CSX Transportation). This rail line formerly ran between Palmetto, FL and Durant, FL but now terminates in Willow, FL (~ 2.6 miles N of proposed site). A spur from this rail line accesses the existing Manatee plant.
Martin	5	Rail is ~ 1.5 miles NE (operated by CSX Transportation). Rail is ~ 2.8 miles W (operated by Florida East Coast Railway). However, lake/reservoir is located between the Martin site and this rail line.
Okeechobee 1	3	Rail is ~ 8.3 miles SW (operated by CSX Transportation). Rail is ~ 13.1 miles SE (operated by Florida East Coast Railway).

Criterion P7 – Railroad Access		
Site	Rating	Comments and Discussion
Okeechobee 2	4	Rail is ~ 2.2 miles NE (operated by CSX Transportation).
St. Lucie	4	Rail is ~ 2.1 miles W (operated by Florida East Coast Railway). However, Intercoastal Waterway is located between the St. Lucie site and this rail line. Due to the coastal location of the St. Lucie site, barge access is accessible in the immediate vicinity for delivery of heavy/large items. However, since rail access is not immediately accessible, a rating of 5 was not assigned.
Turkey Point	4	Rail is ~ 10.3 miles W (operated by CSX Transportation). Homestead, FL marks the southernmost point of Florida served by rail. A rail line to Homestead, FL formerly operated by Florida East Coast Railway has since been abandoned. Due to the coastal location of the Turkey Point site, barge access is immediately accessible for delivery of heavy/large items. A barge channel has been constructed in Biscayne Bay providing direct access to the site. As barge access provides an alternative to rail access, the rating has been increased to 4 (however, since rail access is not immediately accessible, a rating of 5 was not assigned).
West County	2	Rail is ~ 13.6 miles NE (operated by CSX Transportation). Rail is ~ 14.1 miles NW (operated by Florida East Coast Railway).
References: North American Railroad Map, version 2.14, http://www.RailroadMap.com. USGS Topographic Maps (1 x 100,000 metric).		

Criterion P8 – Transmission Access		
Transmission access is evaluated in the preliminary screening in terms of distance to the load center in the greater Miami area, and amount of new right of way (ROW) that needs to be acquired. The highest ranked sites already own the ROW, and the lowest-ranked sites require significant ROW acquisition which will be difficult to obtain. In addition the plant switchyard is assumed the same for all sites.		
Site	Rating	Comments and Discussion
Charlotte	2	~ 100 miles to Miami Load Center. 140 miles of new 500 kV ROW acquisition, 1 autotransformer, 7- 500 kV line terminals.
DeSoto	3	~ 125 miles to Miami Load Center. 135 miles of new 500 kV ROW acquisition, 2 autotransformers, 8- 500 kV line terminals. ROW near Orange River substation will be difficult to obtain.
Ft. Myers	2	~ 100 miles to Miami Load Center. 95 miles of new 500 kV ROW acquisition, 2 autotransformers, 6- 500 kV line terminals. 8-230 kV terminals ROW near Ft Myers substation will be difficult to obtain.
Glades	4	~ 75 miles to Miami Load Center. 146 miles of new 500 kV of which approximately 60 miles of new ROW acquisition, 1 autotransformer, 6- 500 kV line terminals; rebuild 120 miles of 230 kV lines.
Hardee	2	~ 135 miles to Miami Load Center. 165 miles of new 500 kV ROW acquisition, 2 autotransformers, 6- 500 kV line terminals.
Hendry 1	4	~ 60 miles to Miami Load Center. 72 miles of new 500 kV of which approximately 40 miles of new ROW acquisition, 1 autotransformer, 6- 500 kV line terminals; rebuild 120 miles of 230 kV lines.
Hendry 2	4	~ 45 miles to Miami Load Center. 72 miles of new 500 kV of which approximately 40 miles of new ROW acquisition, 1 autotransformer, 6- 500 kV line terminals; rebuild 120 miles of 230 kV lines.
Highlands	2	~ 125 miles to Miami Load Center. 165 miles of new 500 kV ROW acquisition, 2 autotransformers, 6- 500 kV line terminals.
Manatee	1	~ 165 miles to Miami Load Center. 250 miles of new 500 kV ROW acquisition, 2 autotransformers, 8- 500 kV line terminals. ROW will be difficult to obtain.

Criterion P8 – Transmission Access		
Transmission access is evaluated in the preliminary screening in terms of distance to the load center in the greater Miami area, and amount of new right of way (ROW) that needs to be acquired. The highest ranked sites already own the ROW, and the lowest-ranked sites require significant ROW acquisition which will be difficult to obtain. In addition the plant switchyard is assumed the same for all sites.		
Site	Rating	Comments and Discussion
Martin	5	~ 65 miles to Miami Load Center. 35 miles of new 500 kV in existing ROW, 6- 500 kV line terminals.
Okeechobee 1	4	~ 90 miles to Miami Load Center. 75 miles of new 500 kV of which approximately 20 miles of new ROW acquisition, 2 autotransformers, 8- 500 kV line terminals.
Okeechobee 2	4	~ 90 miles to Miami Load Center. 95 miles of new 500 kV of which approximately 40 miles of new ROW acquisition, 2 autotransformers, 8- 500 kV line terminals.
St. Lucie	1	~ 85 miles to Miami Load Center. 80 miles of new 500 kV ROW acquisition, 2 autotransformers, 8- 500 kV line terminals. ROW will be difficult to obtain.
Turkey Point	5	~ 50 miles to Miami Load Center. 64 miles of existing 500 kV, 1 autotransformer, 8-500 kV line terminals.
West County	2	~ 45 miles to Miami Load Center. 50 miles of new 500 kV ROW acquisition, 50 miles of new 230 kV will need to be rebuilt, 1 autotransformer, 6- 500 kV line terminals . ROW to the south will be difficult to obtain.
References: Google Earth, http://earth.google.com.		

Criterion P9 – Land Acquisition		
Site	Rating	Comments and Discussion
Charlotte	3	FPL does not own – farmland/rural [$45 M] [there is less farming here than in other counties (50% farming: cattle watermelons; fish)] [Note: assumed 1,000 acres at $10,000 per acre and 2,000 acres at $17,500 per acre]
DeSoto	5	FPL owns sufficient land
Ft. Myers[2]	3	FPL owns some land but would have to buy more land; $35,000 per acre [near Ft. Myers] – [$52.5 M]
Glades	3	Does not own – mostly farmland/agriculture [$52.5 M] County is second largest sugarcane producer in the state
Hardee	3	Does not own – mostly farmland/agriculture [$52.5 M]; County is leading citrus and cattle producer in state
Hendry 1	3	Does not own – mostly farmland/agriculture [$52.5 M] County is largest producer of sugarcane in the state; crops; cattle and citrus around Lake Okeechobee
Hendry 2	3	Does not own – mostly farmland/agriculture [$52.5 M] County is largest producer of sugarcane in the state; crops; cattle and citrus around Lake Okeechobee
Highlands	3	Does not own – mostly farmland/agriculture [$52.5 M]; County is big in citrus/crop and livestock (milk and beef). Avon park area (near site) is one of heaviest citrus producing areas in state
Manatee	5	FPL owns sufficient land
Martin	5	FPL owns sufficient land
Okeechobee 1	3	Does not own – mostly farmland/agriculture [$52.5 M] [County big in cattle, dairy, citrus]
Okeechobee 2	3	Does not own – mostly farmland/agriculture [$52.5 M] [County big in cattle, dairy, citrus]
St. Lucie	5	FPL owns sufficient land
Turkey Point	5	FPL owns sufficient land

Criterion P9 – Land Acquisition		
Site	Rating[1]	Comments and Discussion
West County[2]	3	FPL owns but would have to buy more land; $35,000 per acre [near West Palm Beach] - $52.5 M

[1] Land requirements of 3,000 acres per site where FPL does not own.

[2] Need to purchase 1,500 acres more at Ft. Myers and West County where FPL holdings are not sufficient for new nuclear plant.

Note: Costs per acre are assumed to be $10,000 in rural areas; $17,500 for farmland; $35,000 for sites near urban/developed areas.

References: FPL real estate; county profile data.

FLORIDA POWER & LIGHT COMPANY
PROJECT BLUEGRASS
NEW NUCLEAR POWER GENERATION

APPENDIX C
TECHNICAL BASIS FOR GENERAL SITE CRITERION RATINGS

Appendix C – Technical Basis for General Site Criterion Ratings

General siting criteria used in the FPL nuclear power plant siting study were derived from those presented in Chapter 3.0 of the *Siting Guide: Site Selection and Evaluation Criteria for an Early Site Permit Application*, EPRI, Palo Alto, CA: 2002 (Siting Guide).

The following information is provided in this appendix for each criterion:

- Objective – what aspect of site suitability is being measured;
- Evaluation approach – technical basis/methodology used to develop site ratings from available data;
- Discussion – data and information available for the eight sites under consideration; and
- Results – ratings results and rationale.

The following candidate nuclear plant (NP) sites were evaluated for the FPL Combined Operating License Application in Florida: DeSoto, Glades, Hardee, Hendry 1, Martin, Okeechobee 2, St. Lucie, and Turkey Point (Miami-Dade County).

Note that the sites were evaluated with respect to the following siting criteria during the initial screening phase: cooling water supply, flooding, population, hazardous land uses, ecology, wetlands, railroad access, transmission access, and land acquisition. The evaluation and results of this phase are presented in the screening criteria report. For several of these criteria (e.g., transmission access), the screening criteria evaluations are used in the general site criteria evaluations reported in this appendix. For these criteria, a brief summary and the final ratings are presented in this appendix for completeness. For other screening criteria (e.g., flooding, population and ecology), additional data were evaluated or additional detail are provided in this appendix, as appropriate, to provide a more comprehensive analysis of the full suite of EPRI siting general site criteria and sub-criteria.

Technical bases for site ratings developed for each of the general site criteria are provided in the following sections. Criterion/section numbering is designed to reflect section numbers in Chapter 3 of the EPRI Siting Guide where the criteria is discussed, e.g., Criterion C.1.1.1 – Geology/ Seismology appears in Section 3.1.1.1 of the Siting Guide.

C.1 HEALTH AND SAFETY CRITERIA

C.1.1 ACCIDENT CAUSE-RELATED

C.1.1.1 Geology/Seismology

Objective – The objective of this criterion is to rank the suitability of the eight candidate sites with respect to the geologic and seismic setting.

Evaluation approach – A numerical system of weights and ratings based upon suitability criteria were assigned to each geologic/seismic category, including vibratory ground motion, capable tectonic sources, surface faulting and deformation, geologic hazards, and soil stability (Sections C.1.1.1.1 through C.1.1.1.8) and used to compute (i.e., rate times weight) an index number for each category. (To enable the comparative evaluation of sites, the weights and rating schemes adopted herein are the same for all eight sites.) The index numbers for each site were summed to compute a GEOL Index (Tables C.1.1-1 through C.1.1-8). The range of GEOL indexes was then used to develop a rating system for candidate sites (Section C.1.1.1.6). The sites were rated on a scale of 1 to 5, based on the GEOL scale, with the most suitable sites receiving an overall rating of 5. Weights and the basis for deriving correlating site ratings from the GEOL scale are discussed with respect to each of the sub-criteria in the sections below. NOTE: Within the GOEL index sub-criteria an inverse rating basis is used, with lower numbers indicating most suitable and 5 the least suitable; for the composite GEOL index, higher numbers indicate more suitable sites.

C.1.1.1.1 Vibratory Ground Motion

Objective – The purpose of this sub-criterion is to rate sites according to the expected magnitude of ground motion that can be expected. As long as expected peak ground accelerations do not exceed that for the certified designs under consideration, there are no exclusionary or avoidance components to this sub-criterion.

Evaluation approach – Peak Ground Acceleration (PGA) is a measure of the maximum force experienced by a small mass located at the surface of the ground during an earthquake and is an index of hazard for some structures. The units for PGA are in percent of gravity (%g); i.e. an acceleration of 0.30g is expressed as 30%g. PGA provided herein, as for other sites, is for a probability of exceedance (PE) of 2% in 50 years (once in 2,500 years). PGA data for eight FPL Florida sites were obtained from the USGS National Seismic Hazards Mapping Project, 2002 (http://eqint.cr.usgs.gov/eq/html/lookup-2002-interp.html).

Discussion/Results – The locations evaluated for each of the eight candidate sites have PGA values as shown in the table below.

Probabilistic ground motion values in %g

Site	PGA (%g) with 2% PE in 50 years
DeSoto	3.58
Glades	3.57
Hardee	3.56
Hendry 1	3.52
Martin	3.33
Okeechobee 2	3.55
St. Lucie	3.00
Turkey Point	2.11

The following table shows the assigned weight and rating scheme for vibratory ground motion.

Weight	Range	Rating	Index Range
	PGA (%g)		
5	0 – 3	1	0 - 50
	3 – 6	2	
	6 – 9	3	
	9 – 12	4	
	12 – 15	5	
	15 – 18	6	
	18 – 21	7	
	21 – 24	8	
	24 – 27	9	
	27 – 30	10	

Based upon the information provided in Tables C.1.1-1 through C.1.1-8, each candidate site receives the following ratings based on the computed index numbers for vibratory ground motion.

Site	Rating	Index No.
DeSoto	2	10
Glades	2	10
Hardee	2	10
Hendry 1	2	10
Martin	2	10
Okeechobee 2	2	10
St. Lucie	1-2	5-10
Turkey Point	1	5

C.1.1.1.2 Capable Tectonic Structure or Source

Objective – No absolute exclusionary criteria have been identified. Capable tectonic structures are addressed as avoidance criteria; therefore, the objective of this sub-criterion is to identify the existence of capable or potentially capable tectonic structures within 200 miles of each site. Candidate sites that are farthest from capable or potentially capable tectonic structures are considered more suitable.

Evaluation Approach – A database compiled by USGS (Quaternary Fault and Fold Database, 2003; http://qfaults.cr.usgs.gov/) and Crone and Wheeler (2000) were utilized to identify capable and potentially capable tectonic sources within 200 miles of each of the eight candidate sites. It was assumed that capable and potential capable tectonic sources, which are Quaternary features that may generate strong ground motion, fall into two categories as defined by Crone and Wheeler (2000, p5):

> Class A features have good geologic evidence of tectonic origin and are potentially seismogenic; and
>
> Class B features have geologic evidence that supports the existence of a seismogenic fault or suggests Quaternary deformation, but the currently available geologic evidence for Quaternary tectonic activity is less compelling than for a Class A feature.

Discussion/Results – There are no Class A or B features within 200 miles of the candidate sites. The following table shows the assigned weight and the rating scheme for capable tectonic sources.

Weight	Range (miles)	Rating	Index Range
Class A	None within 200 mile radius	0	0 – 10
2	Between 100 and 200 miles	2	
	Between 50 and 100 miles	3	
	Between 25 and 50 miles	4	
	Within 25 miles	5	
Class B	None within 200 mile radius	0	0 – 5
1	Between 100 and 200 miles	2	
	Between 50 and 100 miles	3	
	Between 25 and 50 miles	4	
	Within 25 miles	5	

Based on the information provided in Tables C.1.1-1 through C.1.1-8, each candidate site receives the following ratings and computed index numbers.

Class A

Site	Rating	Index No.
DeSoto	0	0
Glades	0	0
Hardee	0	0
Hendry 1	0	0
Martin	0	0
Okeechobee 2	0	0
St. Lucie	0	0
Turkey Point	0	0

Class B

Site	Rating	Index No.
DeSoto	0	0
Glades	0	0
Hardee	0	0
Hendry 1	0	0
Martin	0	0
Okeechobee 2	0	0
St. Lucie	0	0
Turkey Point	0	0

Crone and Wheeler (2000) and the USGS Fault Database (2003) also identify Class C and D features. Class C features are defined by Crone and Wheeler (2000) as features where:

> Geologic evidence is insufficient to demonstrate (1) the existence of a tectonic fault, or (2) Quaternary slip or deformation associated with the feature.

No Class C features are known to occur within 200 miles of any of the eight candidate sites.

Class D features are defined by Crone and Wheeler (2000) as features where:

> Geologic evidence demonstrates that the feature is not a tectonic fault or feature; this category includes features such as demonstrated joints or joint zones, landslides, erosional or fluvial scarps, or landforms resembling fault scarps, but of demonstrable non-tectonic origin.

One Class D feature is known to occur within 200 miles of all eight candidate sites.

Class D Feature

The following Class D feature occurs within 200 miles of the eight candidate sites, and is considered non-capable.

> Grossman's Hammock Rock Reef. The Grossman's Hammock rock reef is located approximately 120 miles south of the DeSoto site; 98 miles south-southeast of the Glades site; 150 miles southeast of the Hardee site, 88 miles south-southeast of the Hendry 1 site; 110 miles south of the Martin site; 120 miles south of the Okeechobee 2 site, 130 miles south of the St. Lucie site, and 25 miles west of the Turkey Point site. Following a tentative inference of Quaternary displacement at Grossman's Hammock, investigation by drilling and ground penetrating radar showed no evidence of Quaternary faulting. (USGS Fault Database, 2003; Crone and Wheeler, 2000).

C.1.1.1.3 Surface Faulting and Deformation

Objective – Develop site ratings for site suitability relative to surface faulting and deformation in the site vicinity.

Evaluation approach – No absolute exclusionary criteria have been identified with regard to surface faulting and deformation. Suitability criteria have been established based on the occurrence of surface faulting and tectonic and non-tectonic structures within a 25-mi and 5-mi radius of the candidate sites, as follows (EPRI 2000, p.3-7):

Within 25 miles
- No such structures altogether (Most Suitable)
- Potential non-capable structures
- Potential capable structures (Least Suitable)

Within 5 miles
- No such structures altogether (Most Suitable)
- Potential non-capable structures
- Potential capable structures
- Fault exceeding 1,000 feet in length (Least Suitable)

The potential for surface faulting or deformation primarily concerns plant design; therefore, features identified within 5 miles of a candidate site receive a higher weight. Following are the assigned weights and ratings for surface faulting and deformation.

Weight	Range	Rating	GEOL Index Range
Between 5 and 25 miles – 1	No structures Potential non-capable structures Potential capable structures	0 1 5	0–5
Within 5 miles – 2	No structures Potential non-capable structures Potential capable structures Fault exceeding 1,000 feet in length Capable fault exceeding 1,000 feet in length	0 2 3 4 5	0–10

Discussion/Results – Over several decades, various faults have been proposed across Florida. Communications with the Florida Geologic Survey confirm that many of these have since been discounted, and conclusive proof is lacking for others. The current Geologic Map of Florida does not show faulting, and various structural maps of the State show deep-seated basins, platforms, and other structures, but no faulting. Therefore, it is not apparent that significant faulting occurs within 25 miles of any of the FPL sites. Based upon this information, the sites receive the following ratings and computed index numbers for surface faulting and deformation.

Within 25 miles

Site	Rating	Index No.
DeSoto	0	0
Glades	0	0
Hardee	0	0
Hendry 1	0	0
Martin	0	0
Okeechobee 2	0	0
St. Lucie	0	0
Turkey Point	0	0

Within 5 miles

Site	Rating	Index No.
DeSoto	0	0
Glades	0	0
Hardee	0	0
Hendry 1	0	0
Martin	0	0
Okeechobee 2	0	0
St. Lucie	0	0
Turkey Point	0	0

C.1.1.1.4 Geologic Hazards

Objective – Based on EPRI guidance (2000, p. 3-7), sites having the following geologic and man-made conditions should be avoided:

- Areas of active (and dormant) volcanic activity,
- Subsidence areas caused by withdrawal of subsurface fluids such as oil or groundwater, including areas which may be affected by future withdrawals,
- Potential unstable slope areas, including areas demonstrating paleolandslide characteristics,
- Areas of potential collapse (e.g. karst areas, salt, or other soluble formations),
- Mined areas, such as near-surface coal mined-out areas, as well as areas where resources are present and may be exploited in the future, and
- Areas subject to seismic and other induced water waves and floods.

Evaluation approach – Sites farthest away from these features would be considered the most suitable sites; sites were rated in accordance with the presence of – and distance from – these features. Following are the assigned weight and rating used for geologic hazards:

Weight	Range	Rating	GEOL Index Range
1	Geologic hazard(s) present	1	0–1

Discussion/Results – The following Geologic Hazard applies to six of the sites (DeSoto, Glades, Hardee, Hendry 1, Martin and Okeechobee 2):

> The Geologic Map of Florida, other maps, and site vicinity reports indicate that each site area is underlain by several tens of feet of sand and shelly material, which in turn overlie at least 350 feet of Hawthorn Group sediments (300 feet of Hawthorn Group sediments for the DeSoto and Hardee sites) consisting primarily of phosphatic sands and clays. Discontinuous lenses of limestone or dolostone may occur. Topographic maps of the general site vicinity exhibit some evidence of sinkhole formation.

The following Geologic Hazard applies to the two coastal sites (St. Lucie and Turkey Point):

> The site is located adjacent to the Atlantic Ocean, and is subject to seismic and other induced water waves and floods. Design specifications for a new nuclear facility at this site must address the possibility of large water waves and floods.

Design specifications for a new nuclear facility must address the possibility of solutioning and sinkhole formation, and of large water waves and floods. The eight candidate sites received the following computed rating and index number for geologic hazards:

Site	Rating	Index No.
DeSoto	1	1
Glades	1	1
Hardee	1	1
Hendry 1	1	1
Martin	1	1
Okeechobee 2	1	1
St. Lucie	1	1
Turkey Point	1	1

C.1.1.1.5 Soil Stability

Objective – Evaluate the sites with respect to the difficulty of expected soil conditions.

Evaluation approach – No absolute exclusionary criteria have been identified with respect to soil stability. Soil stability is addressed as an avoidance criterion. Certain soil properties have unfavorable characteristics in association with vibratory ground motion. These soil properties include poor mineralogy, low density soil (lack of compaction), and high water content (or high water table). Sites with the highest values of PGA in combination with deleterious site soils would receive a relatively lower rating. Sites having rock foundations or more suitable soil conditions are considered to be better sites.

Following are the assigned weights and ratings for soil stability:

Weight	Range	Rating	Index Range
2	Rock site	0	0 – 4
	Deep soil site, no known deleterious soil conditions	1	
	Deep soil site with potential stability issues, or insufficient information available to assign a rating of 1	2	

Discussion/Results – According to the Geologic Map of Florida, and other maps and reports, seven of the eight sites (DeSoto, Glades, Hardee, Hendry 1, Martin, Okeechobee 2, and St. Lucie) are underlain by hundreds of feet of predominately unconsolidated sediments (sands and clays) with some possible limestone or dolostone. Accordingly, each of these seven sites is a deep soil site. Deep soil sites will require specific site investigations to determine if deleterious soil conditions exist.

According to extensive investigations for nuclear and other facilities near the Turkey Point site, the site is underlain by a few feet of sandy material followed by approximately 70 feet of limestone. This limestone is reported to be competent and capable of supporting heavy loads. The limestone is underlain by many hundreds of feet of competent sand, clay, and rock. The Turkey Point site is a rock site.

Based upon this information the eight sites receive the following rating and computed index number for soil stability:

Site	Rating	Index No.
DeSoto	1	2
Glades	1	2
Hardee	1	2
Hendry 1	1	2
Martin	1	2
Okeechobee 2	1	2
St. Lucie	1	2
Turkey Point	0	0

C.1.1.1.6 Overall Rating for Geology/Seismology

The index numbers for this ranking scheme range from 5 to 85. This range of indexes was used to develop a ranking system to compare the suitability of sites as follows:

Index Range	Rating
5 – 21	5
22 – 37	4
38 – 53	3
54 – 69	2
70 – 85	1

The index numbers for each site were summed. The resulting index was compared to the index ranges in the above table to determine the overall rating for each site. Based upon this evaluation, the candidate sites are ranked as follows:

Site	Index Number	Rating
DeSoto	13	**5**
Glades	13	**5**
Hardee	13	**5**
Hendry 1	13	**5**
Martin	13	**5**
Okeechobee 2	13	**5**
St. Lucie	8-13	**5**
Turkey Point	6	**5**

Table C.1.1-1 Ratings for FPL
DeSoto Site

Feature	Source	Weight	Rating	Index No.
Vibratory Ground Motion	PGA 3.58 %g with 2% PE in 50 years (USGS National Seismic Hazards Mapping Project, 2002).	5	2	10
Capable Tectonic Source (Class A)	No Class A features occur within 200 miles of the DeSoto site (USGS Fault and Fold Database, 2003. Crone & Wheeler, 2000).	2	0	0
Capable Tectonic Source (Class B)	No Class B features occur within 200 miles of the DeSoto site (USGS Fault and Fold Database, 2003. Crone & Wheeler, 2000).	1	0	0
Surface Faulting & Deformation within 25 miles	No surface faulting or deformation is known to occur near the site.	1	0	0
Surface Faulting & Deformation within 5 miles	No surface faulting or deformation is known to occur at the site.	2	0	0
Geologic Hazards	The site is located in an area of potential solutioning and sinkhole formation.	1	1	1
Soil Stability	The DeSoto site is presumed to be a deep-soil site.	2	1	2
			Total Index	13

Table C.1.1-2 Ratings for FPL Glades Site

Feature	Source	Weight	Rating	Index No.
Vibratory Ground Motion	PGA 3.57 %g with 2% PE in 50 years (USGS National Seismic Hazards Mapping Project, 2002).	5	2	10
Capable Tectonic Source (Class A)	No Class A features occur within 200 miles of the Glades site (USGS Fault and Fold Database, 2003. Crone & Wheeler, 2000).	2	0	0
Capable Tectonic Source (Class B)	No Class B features occur within 200 miles of the Glades site (USGS Fault and Fold Database, 2003. Crone & Wheeler, 2000).	1	0	0
Surface Faulting & Deformation within 25 miles	No surface faulting or deformation is known to occur near the site.	1	0	0
Surface Faulting & Deformation within 5 miles	No surface faulting or deformation is known to occur near the site.	2	0	0
Geologic Hazards	The site is located in an area of potential solutioning and sinkhole formation.	1	1	1
Soil Stability	The Glades site is presumed to be a deep-soil site.	2	1	2
			Total Index	**13**

Table C.1.1-3 Ratings for FPL Hardee Site

Feature	Source	Weight	Rating	Index No.
Vibratory Ground Motion	PGA 3.56 %g with 2% PE in 50 years (USGS National Seismic Hazards Mapping Project, 2002).	5	2	10
Capable Tectonic Source (Class A)	No Class A features occur within 200 miles of the Hardee site (USGS Fault and Fold Database, 2003. Crone & Wheeler, 2000).	2	0	0
Capable Tectonic Source (Class B)	No Class B features occur within 200 miles of the Hardee site (USGS Fault and Fold Database, 2003. Crone & Wheeler, 2000).	1	0	0
Surface Faulting & Deformation within 25 miles	No surface faulting or deformation is known to occur near the site.	1	0	0
Surface Faulting & Deformation within 5 miles	No surface faulting or deformation is known to occur at the site.	2	0	0
Geologic Hazards	The site is located in an area of potential solutioning and sinkhole formation.	1	1	1
Soil Stability	The Hardee site is presumed to be a deep-soil site.	2	1	2
			Total Index	**13**

Table C.1.1-4 Ratings for FPL Hendry 1 Site

Feature	Source	Weight	Rating	Index No.
Vibratory Ground Motion	PGA 3.52 %g with 2% PE in 50 years (USGS National Seismic Hazards Mapping Project, 2002).	5	2	10
Capable Tectonic Source (Class A)	No Class A features occur within 200 miles of the Hendry 1 site (USGS Fault and Fold Database, 2003. Crone & Wheeler, 2000).	2	0	0
Capable Tectonic Source (Class B)	No Class B features occur within 200 miles of the Hendry 1 site (USGS Fault and Fold Database, 2003. Crone & Wheeler, 2000).	1	0	0
Surface Faulting & Deformation within 25 miles	No surface faulting or deformation is known to occur near the site.	1	0	0
Surface Faulting & Deformation within 5 miles	No surface faulting or deformation is known to occur at the site.	2	0	0
Geologic Hazards	The site is located in an area of potential solutioning and sinkhole formation.	1	1	1
Soil Stability	The Hendry 1 site is presumed to be a deep-soil site.	2	1	2
			Total Index	**13**

Table C.1.1-5 Ratings for FPL Martin Site

Feature	Source	Weight	Rating	Index No.
Vibratory Ground Motion	PGA 3.33 %g with 2% PE in 50 years (USGS National Seismic Hazards Mapping Project, 2002).	5	2	10
Capable Tectonic Source (Class A)	No Class A features occur within 200 miles of the Martin site (USGS Fault and Fold Database, 2003. Crone & Wheeler, 2000).	2	0	0
Capable Tectonic Source (Class B)	No Class B features occur within 200 miles of the Martin site (USGS Fault and Fold Database, 2003. Crone & Wheeler, 2000).	1	0	0
Surface Faulting & Deformation within 25 miles	No surface faulting or deformation is known to occur near the site.	1	0	0
Surface Faulting & Deformation within 5 miles	No surface faulting or deformation is known to occur at the site.	2	0	0
Geologic Hazards	The site is located in an area of potential solutioning and sinkhole formation.	1	1	1
Soil Stability	The Martin site is presumed to be a deep-soil site.	2	1	2
			Total Index	**13**

Table C.1.1-6 Ratings for FPL Okeechobee 2 Site

Feature	Source	Weight	Rating	Index No.
Vibratory Ground Motion	PGA 3.55 %g with 2% PE in 50 years (USGS National Seismic Hazards Mapping Project, 2002).	5	2	10
Capable Tectonic Source (Class A)	No Class A features occur within 200 miles of the Okeechobee 2 site (USGS Fault and Fold Database, 2003. Crone & Wheeler, 2000).	2	0	0
Capable Tectonic Source (Class B)	No Class B features occur within 200 miles of the Okeechobee 2 site (USGS Fault and Fold Database, 2003. Crone & Wheeler, 2000).	1	0	0
Surface Faulting & Deformation within 25 miles	No surface faulting or deformation is known to occur near the site.	1	0	0
Surface Faulting & Deformation within 5 miles	No surface faulting or deformation is known to occur at the site.	2	0	0
Geologic Hazards	The site is located in an area of potential solutioning and sinkhole formation.	1	1	1
Soil Stability	The Okeechobee 2 site is presumed to be a deep-soil site.	2	1	2
			Total Index	**13**

Table C.1.1-7 Ratings for FPL St. Lucie Site

Feature	Source	Weight	Rating	Index No.
Vibratory Ground Motion	PGA 3.00 %g with 2% PE in 50 years (USGS National Seismic Hazards Mapping Project, 2002).	5	1 - 2	5 - 10
Capable Tectonic Source (Class A)	No Class A features occur within 200 miles of the St. Lucie site (USGS Fault and Fold Database, 2003. Crone & Wheeler, 2000).	2	0	0
Capable Tectonic Source (Class B)	No Class B features occur within 200 miles of the St. Lucie site (USGS Fault and Fold Database, 2003. Crone & Wheeler, 2000).	1	0	0
Surface Faulting & Deformation within 25 miles	No surface faulting or deformation are known to occur near the site.	1	0	0
Surface Faulting & Deformation within 5 miles	No surface faulting or deformation are known to occur at the site.	2	0	0
Geologic Hazards	The site is located in an area susceptible to seismic and other induced water waves and floods.	1	1	1
Soil Stability	The St. Lucie site is presumed to be a deep-soil site.	2	1	2
			Total Index	**8-13**

Table C.1.1-8 Ratings for FPL Turkey Point Site

Feature	Source	Weight	Rating	Index No.
Vibratory Ground Motion	PGA 2.11 %g with 2% PE in 50 years (USGS National Seismic Hazards Mapping Project, 2002).	5	1	5
Capable Tectonic Source (Class A)	No Class A features occur within 200 miles of the Turkey Point site (USGS Fault and Fold Database, 2003. Crone & Wheeler, 2000).	2	0	0
Capable Tectonic Source (Class B)	No Class B features occur within 200 miles of the Turkey Point site (USGS Fault and Fold Database, 2003. Crone & Wheeler, 2000).	1	0	0
Surface Faulting & Deformation within 25 miles	No surface faulting or deformation are known to occur near the site.	1	0	0
Surface Faulting & Deformation within 5 miles	No surface faulting or deformation are known to occur at the site.	2	0	0
Geologic Hazards	The site is located in an area susceptible to seismic and other induced water waves and floods.	1	1	1
Soil Stability	The Turkey Point site is presumed to be a rock site.	2	0	0
			Total Index	**6**

References

Crone, A.J. and Wheeler, R.L. 2000. Data for Quaternary faults, liquefaction features, and possible tectonic features in the Central and Eastern United States, east of the Rocky Mountain front. USGS Open File Report 00-260.

Dames & Moore Draft Preliminary Safety Analysis Report, Florida Power & Light Company South Dade Plant, 1976.

EPRI. 2001. Siting Guide: Site Selection and Evaluation Criteria for an Early Site Permit Application. Electric Power Research Institute, August 2001.

Florida Environment Online, Southeastern Geological Society, Hydrogeological Units of Florida.

Florida Geological Survey, Data and Maps, County Geologic Maps.

Florida Geological Survey, Earthquake and Seismic History of Florida, Information Circular 85.

Florida Geological Survey, Geologic Framework of the Lower Floridan Aquifer System, Brevard County, Florida, Bulletin No. 64, 1994.

Florida Geological Survey, Geologic Map of Florida, 2001.

Florida Geological Survey, Florida's Geological History and Geological Resources, Special Publication No. 35, 1994.

Florida Geological Survey, Text to Accompany the Geologic Map of Florida, open-file report 80, 2001.

Florida Power & Light Company Final Safety Analysis Report, Turkey Point Plant Units 3 & 4, 2003.

Frankel, A. et. al. 1996. National Seismic Hazard Maps, Documentation. USGS Open File Report 96-532. June 1996.

NRC. 1997. Identification and Characterization of Seismic Sources and Determination of Safe Shutdown Earthquake Ground Motion Regulatory Guide 1.165.

USGS Earthquakes Hazards Program. National Seismic Hazard Mapping Project. Interpolated Probabilistic Ground Motion for the Conterminous 48 States by Latitude Longitude, 2002 data.

USGS Earthquakes Hazards Program. National Seismic Hazard Mapping Project. Quaternary Fault and Fold Database for the United States, 2005.

USGS, 1985. Sinkhole Type, Development, and Distribution in Florida.

USGS. South Florida Information Access. Lithostratigraphic Units.

USGS. Topographic Maps of Florida, various.

C.1.1.2 Cooling System Requirements

Objective – Cooling system requirements are important siting considerations for new power generating facilities. The objective of this criterion is to rate the candidate sites with respect to specific cooling system requirements, using to the extent possible the same or similar criteria previously utilized to evaluate other potential nuclear power plant sites.

Evaluation approach – The principle requirements of interest are the quantity of cooling water available and the ambient air temperature (EPRI, 2001, Section 3.1.1.2.1). Exclusionary and avoidance conditions apply to the evaluation of candidate sites with respect to these cooling

system requirements. Water requirements presented below have been established in the FPL Site Requirements Document.

Cooling System Type	Cooling System Requirement
Closed-cycle	Make-up flow rate: 80,000gpm / 178cfs

Ambient air temperature characteristics of a potential site affect the design of heat removal systems. The candidate sites are all located within a region of similar ambient air characteristics; this aspect is evaluated in section C.1.1.2.2.

Discussion/Results – Site data and results are presented for each of the sub-criteria in Sections C.1.1.2.1 and C.1.1.2.2, below. Overall ratings for the Cooling System Requirements criterion are provided in Section C.1.1.2.3.

C.1.1.2.1 Cooling Water

The eight sites were evaluated with respect to the cooling water criterion during the initial screening phase (P1 criterion), and all were found to have an adequate flow or some potential to develop reservoir capacity to support the requirements of a closed-cycle cooling water system. The rating approach used in this evaluation, as well as the site data and screening results, were described previously in the screening criteria report (Criterion P1).

For the screening phase, the metrics of flow, flexibility, risk and regulatory challenge were considered in developing the ratings. These metrics were combined to form the cooling water supply ratings reported in the screening criteria report and are incorporated into the evaluation of the general site criteria. Site attributes associated with pipeline routing or pumping are reflected in section C.4.1.

Screening Phase Ratings for Cooling Water Supply

Cooling Water	DeSoto	Glades	Hardee	Hendry 1	Martin	Okee 2	St. Lucie	Turkey Point
Rating	1	3	1	2	3	3	4	4

For the evaluation of the general criteria, additional aspects of developing a cooling water supply were evaluated. These additional aspects were selected to promote further differentiation of the eight sites. The additional aspects of the sites included the identification of a single existing water source that would be capable of providing the required flow and the proximity of the site to sensitive areas from either an environmental or water-supply basis. Sensitive areas, for the purpose of evaluating this general criterion, were selected to consist of water supplies in or near to 303(d), Water Conservation Areas or Outstanding Florida Waters designations. Once again, the sub-ratings were averaged to compile a consolidated rating for each site.

This analysis has resulted in ratings of 4 for the Martin, Okeechobee 2, St. Lucie and Turkey Point sites, primarily because these sites rated well in the screening phase and each site presented a water source capable of meeting the requirements of the project. The Glades and Hendry 1

sites were rated 3 as a result of their proximity to sensitive areas. The DeSoto and Hardee sites were rated 1 due to less favorable ratings in all three sub-criteria.

This evaluation has been performed in the absence of agency contact using publicly available flow data (e.g., USGS Daily Streamflow Data and low flow of record data were used when appropriate data were available). Flow in some of the source water systems is complex and requires further investigation. Water usage in all source waters is governed by individual water management districts in Florida. Approval for proposed water usage by the cognizant water management district will ultimately be required. It will be necessary to meet with the appropriate agencies to obtain preliminary confirmation of available water and to define requirements for obtaining final approval of any proposed water use.

Cooling Water	DeSoto	Glades	Hardee	Hendry 1	Martin	Okee 2	St. Lucie	Turkey Point
Cooling Water Supply	1	3	1	2	3	3	4	4
Supply ID'd?[1]	1	5	1	5	5	5	5	5
OFW-303(d) – WCA[2]	2	2	2	2	3	3	3	3
Composite Rating	1	3	1	3	4	4	4	4

[1] Required flow identified from a single existing source = 5, No single adequate existing supply identified = 1

[2] No sensitive areas nearby = 4, one designated area nearby = 3, one designated area nearby + proximity to a second designated area = 2

C.1.1.2.2 Ambient Temperature Requirements

Temperature data were obtained from local weather stations as compiled by the Southeast Regional Climate Center – historical climate summaries and normals – which is part of the National Oceanic and Atmospheric Administration's National Climate Data Center (NOAA NCDC). Closest daily weather stations with a reasonable period of record (e.g., more than 20 years) were selected for each site. Data indicate that each site meets the ambient temperature exclusionary and avoidance criteria addressed in EPRI 2001 (Section 3.1.1.2.2). Maximum and minimum annual temperature values, as well as the highest and lowest average monthly temperatures values, and the annual average monthly mean values, were compared between sites. Actual meteorological conditions at the eight sites, however, may vary from the data collected and evaluated for the closest reporting (representative) weather stations: Arcadia for DeSoto and Hardee; Moore Haven for Glades; Clewiston for Hendry 1, Canal Point USDA for Martin; Okeechobee for Okeechobee 2; Fort Pierce for St. Lucie; and Miami for Turkey Point. The period of record for all sites includes a minimum of 30 years varying between 1931 and 2005.

Ambient Temperature (degrees F)	Highest temperature of record	Highest monthly average	Lowest temperature of record	Lowest monthly average	Annual Monthly Average Mean	Rating
DeSoto	104 (6/5/85) Arcadia	91.8 (July/ August)	18 (1/13/81)	49.2 (January)	72.5	3
Glades	103 (7/8/32) Moore Haven	91.2 (July)	23 (1/28/40)	51.8 (January)	73.2	3
Hardee	104 (6/5/85) Arcadia	91.8 (July/ August)	18 (1/13/81)	49.2 (January)	72.5	3
Hendry 1	101 (8/7/95) Clewiston	91.4 (July)	26 (1/12/82)	54.3 (January)	74	3
Martin	100 (7/17/81) Canal Point USDA	91.2 (August)	25 (1/12/82)	52.7 (January)	73.3	3
Okeechobee 2	99 (8/7/72) Okeechobee	93 (August)	31 (12/28/72)	47.7 (Feb)	72.7	3
St. Lucie	101 (7/23/89) Ft. Pierce	90.1 (July)	10 (1/23/52)	53.1 (January)	73.3	3
Turkey Point	98 (5/25/05) Miami Beach	87.9 (August)	32 (12/24/89)	62.7 (January)	81.1	3

Source: www.sercc.net/climateinfo/historical/historical.html [for Florida]
NOAA National Climatic Data Center, Ashville, NC: 2005 Local Climatological Data, Annual Summary with Comparative Data for the following Florida locations: Arcadia, Moore Haven, Clewiston, Canal Point/USDA, Okeechobee, Ft. Pierce, and Miami Beach.

Discussion/Results – The candidate sites were compared to one another to assess their relative suitability with respect to selected temperature extremes and frequency values.

With the exception of extreme low temperature values, sites with the lowest dry bulb temperatures are considered to be the most suitable. Based on a comparison of highest and lowest temperature (daily extremes), average high and low temperature records, annual average monthly mean temperatures, and consideration of general climate conditions at the sites, the variation in temperatures between sites was very small. This is not surprising given that they are located in the same geographic area of south Florida. The differences were small enough that identical ratings were assigned to each site. In addition, because the temperatures in Florida are, in general, higher than other parts of the country, and the maximum temperatures exceeded 100 in all cases except Okeechobee and Turkey Point, a conservative rating of 3 was given to all sites.

C.1.1.2.3 Cooling System Summary Rating

The sites were assigned relative ratings for the suitability of the cooling system based on the average of the ratings for cooling water supply and the ambient air temperature characteristics.

Cooling Water	DeSoto	Glades	Hardee	Hendry 1	Martin	Okee 2	St. Lucie	Turkey Point
Cooling Water Supply	1	3	1	3	4	4	4	4
Ambient Temperature	3	3	3	3	3	3	3	3
Composite Rating	**2**	**3**	**2**	**3**	**3.5**	**3.5**	**3.5**	**3.5**

References

U.S. Nuclear Regulatory Commission Office of Nuclear Reactor Regulation. NUREG-1038 Supplement No. 4.

USGS: The National Streamflow Information Program, Florida Active Streamgages, http://water.usgs.gov/nsip/nsipmaps/fl_base.html.

FDEP: The Watershed Management Basin Rotation Project, IMS Website, http://wrmims2.dep.state.fl.us/basinmap/open.htm?BasinList=21&Submit1=Go%21.

Site Requirements Document to Support Combined Construction and Operating License Application, Draft B, July 24, 2006, FPL Nuclear Components and Replacement Group.

C.1.1.3 Flooding

Objective – The objective of this criterion is to evaluate the suitability of the candidate sites with respect to potential flooding. Some potential sites are located within the 100-year floodplain and may not meet the exclusionary and avoidance criteria outlined in EPRI 2001 (Section 3.1.1.3). These criteria exclude potential sites within major wetlands and areas less than one foot above the maximum flood elevation.

Evaluation Approach – The relative suitability of the candidate sites was evaluated with respect to flooding in the Preliminary Screening Evaluation, but was limited to a comparison of existing surface water elevations and anticipated (and approximate) plant elevations. A further comparison was conducted in this detailed evaluation, between site grade elevation and the 100-year flood elevation for the major river or lake on which the plant is located. The 100-year flood elevations were based on Flood Insurance Rate Maps (FIRM) from FEMA for the respective counties in which the sites are located. Primary emphasis was on flood elevations for the main water bodies (rivers and reservoirs) and their major tributaries where flood elevations were identified. Finally, other potential flooding sources (e.g., upstream dam failure concerns) were also considered.

Because of the more accurate floodplain data and consideration of upstream dam failure concerns, the rating scale was modified from that used in the Preliminary Screening Evaluation. The revised scale is as follows:

5 = Site is not located within 100-year floodplain, and no potential upstream flooding concerns exist (e.g., dam failure).
4 = Site is not located within 100-year floodplain, but potential upstream flooding concerns exist.
3 = Site is on border of 100-year floodplain.
2 = Site is located within 100-year floodplain, but no potential upstream flooding concerns exist.
1 = Site is located within 100-year floodplain, and potential upstream flooding concerns exist.

Discussion/Results – Additional pertinent flood-related information for the candidate sites is shown in the following table, followed by the site ratings.

Site	Evaluation
DeSoto	DeSoto elevation = 81 feet. Peace River current elevation (at Arcadia, FL) ~ 10 feet. River flood stage = 17 feet. Difference = 64 feet above flood stage. Site is located in Zone X (outside 500-year flood zone). Swamp areas exist in the vicinity of the proposed site; however ample areas exist for precise site location to avoid swamp areas and areas within the 100-year flood zone. Site is not located in 100-year flood zone. No dams or other flooding concerns are located on the Peace River within 40 miles upstream of the proposed site. The Sand Gully (west of the proposed site) has been known to flood up to 2 miles west of the proposed site.

Site	Evaluation
Glades	Glades elevation = 15 feet. Caloosahatchee Canal (Okeechobee Waterway) and Lake Hicpochee elevation = 11 feet. Difference = 4 feet. Site is in Zone A (located in 100-year flood zone). The proposed site is located ~ 5.0 miles southwest of Lake Okeechobee. Lake Okeechobee is reinforced from flooding by the Herbert Hoover Dike. The failure of this dike has been examined, and resulting flood predictions in the event of dike failure have been prepared. Two failure scenarios could potentially impact the proposed site. Scenario #1: If the lake level is at 26 feet and a break in Reach 2 occurs (southeast of Moore Haven, FL), flood waters could reach the proposed site in 5-18 days, and flood depths of 6 feet are predicted. Scenario #2: If the lake level is at 26 feet and a break in Reach 4 occurs (north of Moore Haven, FL), flood waters could reach the proposed site in 1-3 days, and flood depths of 6 feet are predicted. Additionally, the Moore Haven Lock and Spillway (dam) is located at the entry of the Caloosahatchee Canal into Lake Okeechobee. Should this structure fail, flooding at the proposed site is predicted to be observed within 24 hours and could reach depths of 2 feet.
Hardee	Hardee elevation = 63 feet. Peace River current elevation (at Zolfo Springs, FL) ~ 39 feet. River flood stage = 46 feet. Difference = 17 feet above flood stage. Site is in Zone X (not located in 100-year flood zone). No dams or other flooding concerns are located on the Peace River within 40 miles upstream of the proposed site.
Hendry 1	Hendry 1 elevation = 19 feet. Lake Okeechobee elevation = 14 feet. Difference = 5 feet. Site is located near swamp areas. Site is located in Zone A3 (located in 100-year flood zone). The proposed site is located ~ 10.9 miles south of Lake Okeechobee. Lake Okeechobee is reinforced from flooding by the Herbert Hoover Dike. The failure of this dike has been examined, and resulting flood predictions in the event of dike failure have been prepared. The proposed site is located south of the L-1 canal/levee, and this structure is predicted to protect the proposed site location in the event of a break in either Reach 2 (southeast of Moore Haven, FL) or Reach 4 (north of Moore Haven, FL) with a lake level of 26 feet. No other potential failures resulting in flooding are located in the proposed site area.

Site	Evaluation
Martin	Martin site elevation = 28 feet. Lake Okeechobee elevation = 14 feet. Difference = 14 feet. Site is not located in 100-year flood zone, but is located near swamp lands. Site is in Zone X (area of 500-year flood, area of 100-year flood with average depths of < 1 foot or with drainage area < 1 sq. mi., or area protected by levees from 100-year flood). Lake Okeechobee is located ~ 5.1 miles west of the proposed site. The proposed site is located east of the boundary limit of flooding from Lake Okeechobee caused by breaching of Herbert Hoover Dike (as shown on FIRM). No other potential failures resulting in flooding are located in the proposed site area.
Okeechobee 2	Okeechobee 2 elevation = 28 feet. Kissimmee River ~ 20 feet. Difference = 8 feet. Swamp areas exist in the vicinity of the proposed site. Site is at border of Zone A and Zone C. Site is at border of 100-year flood zone. Lake Okeechobee is located ~ 7.6 miles southeast of the proposed site. Lake Okeechobee is reinforced from flooding by the Herbert Hoover Dike. The failure of this dike has been examined, and resulting flood predictions in the event of dike failure have been prepared. The proposed site is located east of the Kissimmee River, and this feature is predicted to protect the proposed site location in the event of a break in either Reach 6 or Reach 8 (both on the northwest side of Lake Okeechobee) with a lake level of 26 feet. A lock structure is located on the south side of Lake Kissimmee, ~ 41 miles north of the site. The Kissimmee River has been canalized between Lake Kissimmee and Lake Okeechobee for flood control purposes.
St. Lucie	St. Lucie elevation = 0-5 feet. Atlantic Ocean elevation = 0 feet. Difference = 0-5 feet. Site is located in Zone AE with base flood elevations of 7-8 feet. Site is located in 100-year flood zone. With the exception of flooding caused by adverse climatic events, no other potential failures resulting in flooding are located in the proposed site area.
Turkey Point	Turkey Point elevation = 1-2 feet. Site is located in Zone AE with base flood elevations of 12 feet. Site is located in 100-year flood zone. With the exception of flooding caused by adverse climatic events, no other potential failures resulting in flooding are located in the proposed site area.

Flooding	DeSoto	Glades	Hardee	Hendry 1	Martin	Okee 2	St. Lucie	Turkey Point
Rating	5	1	5	2	3	3	1	1

References

FEMA Digital Flood Insurance Rate Maps, http://www.msc.fema.gov.

Google Earth, http://earth.google.com.

Herbert Hoover Dike Major Rehabilitation Study.

NOAA Stream and Flood Data, http://www.weather.gov/ahps/.

Site Drainage and Interim Land Use Study, Brown & Root, Inc., March 1976.

USGS Topographic Maps (1:100,000 and 1:24,000 scale).

U.S. Flood Hazard Areas, http://www.esri.com/hazards/makemap.html.

C.1.1.4 Nearby Hazardous Land Uses

C.1.1.4.1 Existing Facilities
C.1.1.4.2 Projected Facilities

Objective – The objective of this criterion is to include NRC guidance on considerations regarding the nature and proximity of man-related hazards (dams, airports, transportation routes, and military and chemical manufacturing and storage facilities).

Evaluation approach – For the purpose of this evaluation, it was assumed that all eight sites can be developed to meet the exclusionary criteria outlined in 10 CFR 100. The suitability of the candidate sites was, therefore, evaluated based on the relative number and distance of the following off-site man-made hazards that could be identified on USGS topographic maps, supplemented by information found in existing environmental reports for each site. The evaluation was limited to only existing hazards within a 5- to 10-mile radius of each site, to the extent such information was available. This included primarily airports, pipelines, and rail. Note that information relating to projected man-made hazards was not readily available and could not be evaluated during this phase of the siting process.

The relative suitability of the eight sites with respect to nearby hazardous land uses was evaluated in the screening criteria report (Criterion P4), although the rating approach was revised slightly to better reflect a comparison of the eight candidate sites (as compared to the 15 sites evaluated previously). The following revised scale was used:

5 = No major or minor hazardous land uses within 10 miles
4 = No major hazardous land uses within 10 miles, but minor hazardous land uses within 10 miles (single or multiple, e.g., landing strips or small airports)

3 =No major hazardous land use within 10 miles but minor hazardous land use within 5 miles (one rail and/or between 2 and 4 small airports/landing strips)
2 = Major hazardous land use within 10 miles or multiple minor hazardous land use within 5 miles (more than 4)
1 = Major hazardous land use within 5 miles

Discussion – To summarize from the screening evaluation, identified hazards at each of the sites are as follows:

DeSoto
Airports: No major airports; smaller airports at Arcadia (9.6 miles SW) and Sebring (24.8 miles NW); other small airport/landing strips at 2.5, 7.4, 8.2, 8.4, 12.7, 13.5, and 15.4 miles [closest general aviation airports include DeSoto County in Arcadia and Port Charlotte/Punta Gorda].
Freight Rail: Rail: 7.1 miles to W [rail in county includes CSX and Seminole Gulf rail line].
Other Potential Hazards: local deepwater ports – Manatee Port Authority – 49 miles.

Glades
Airports: Clewiston Municipal Airport is 12.4 miles SE of site; other smaller airports at 2 and 3 miles from site (landing strips) [county profile website mentions Airglades airport at unknown distance].
Freight Rail: 3.1 miles to NE [South Central Florida Express]; 11 miles W.
Other Potential Hazards: local deep water port – Port of Ft. Pierce – 64 miles.
Also in Glades County: includes mining industry; Florida Rock, Witherspoon sand mine [location/distance to site is unknown].

Hardee
Airports: no major airports; airport at Arcadia (9 miles) and smaller airstrips located 9.5 and 12.5 miles away [nearest with commercial service – Sarasota-Bradenton; general aviation is Hardee County Municipal Airport].
Freight Rail: located 0.4 miles W [CSX].
Other Potential Hazards: closest local deepwater port – Manatee County Port Authority – 25 miles.
Industry in county includes two large companies in phosphate business but we are not sure of any associated mining activities.

Hendry 1
Airports: general aviation: Clewiston Airport (7.3 miles); smaller airports at 4.5, 9.8, 10.5, 10.9, 16.6 miles [airport in LaBelle].
Freight Rail: 8.7 miles to NE.
Other Potential Hazards: closest deep water port – Ft. Pierce – 84 miles.

Martin
Airports: No major airports; Stuart Airport 25 miles to E; smaller airports at 2.5, 6.4, 6.8, and 11 miles away. General aviation – Witham Field.
Freight Rail: 1.5 miles NE and 2.8 miles W.
Other Potential Hazards: Existing power plant with natural gas pipeline service to site [3,700 MW – 2 steam units, 3 combined cycle units, 6,800 acre cooling pond]; 40 miles from Port of Palm Beach; existing plant bounded on west by Florida East Coast Railway and adjacent SFWMD L-65 Canal, and on the south by the St. Lucie Canal (C-44 or Okeechobee Waterway) and northeast by SR 710 and the adjacent CSX Railroad [from 10 year plan].

Okeechobee 2
Airports: Okeechobee County airport 7.3 miles E; smaller airports located 1.3, 4.3, 8.1 and 10 miles away [Palm beach International – closest with scheduled commercial airline service].
Freight Rail: 2.2 miles NW.
Military Installation: Avon Bombing Range – 27 miles to NW.
Other Potential Hazards: Port of Ft. Pierce and Port of Palm Beach – 35 miles.

St. Lucie
Airports: Major airport 12.4 miles to NW (St. Lucie County International); smaller airport (Witham field in Stuart) 10.4 miles to SW.
Freight Rail: 2.1 miles W.
Pipeline: Did not see on topographic maps, but other reports show nearby line extending down Atlantic coast.
Other Potential Hazards: Site located on navigable waterway; Port of Ft. Pierce is 1 mile away; Existing nuclear power plant.

Turkey Point
Airports: Homestead general aviation airport – 5 miles NW of site; 14+ miles to Kendall-Tamiami Executive Airport (NW of site).
Freight Rail: 10 miles W.
Pipeline: did not see any major pipeline routes marked on topographic maps, but natural gas pipeline service to site.
Military Installation: Homestead AFB—5.2 miles NW of site (unclear what operations occur at base now, but assume fully operational as AFB for purposes of evaluation). US Naval Reservation with heliport and radio facility, located 7 miles SW.
Other Potential Hazards: Site located on navigable waterway; Port of Miami less than 5 miles away; Existing power plants (2 nuclear units, 2 conventional boiler fossil units plus building new combined cycle unit).

Results – Most sites had numerous smaller airports or landing strips and possibly a rail line within 5 or 10 miles and received ratings of 3 or 4 accordingly. Turkey Point received the lowest rating due to its close proximity to a larger airport and US Air Force Base, as well as being on a navigable waterway and located near the Port of Miami. Its co-location with other existing power plant facilities also was considered.

Nearby Hazardous Land Uses	DeSoto	Glades	Hardee	Hendry 1	Martin	Okee 2	St. Lucie	Turkey Point
Rating	4	3	3	4	3	3	3	2

References

Google Earth, http://earth.google.com.

USGS Topographic Maps.

FPL 10 Year Plan.

County profile data.

C.1.1.5 Extreme Weather Conditions

C.1.1.5.1 Winds
C.1.1.5.2 Precipitation

Objective – The objective of this criterion is to rate the suitability of the eight candidate sites with respect to extreme weather conditions. Extreme weather conditions of interest are related to specific PPE criteria regarding tornado design, wind and precipitation (EPRI Siting Guide, Section 3.1.1.5).

Evaluation approach – During the review of available meteorological information on the sites, no information was found that indicated the eight sites could not meet the exclusionary and avoidance criteria specified for the PPE values. Extreme weather readily available for the eight sites included fastest mile speed (available for selected cities – although not necessarily the most representative of site conditions); number of tornadoes and violent tornadoes per 10,000 square miles (state average); and maximum 24-hour precipitation values. The number of hurricanes making landfall in Florida was also considered. Available extreme weather data were obtained from government sources (National Climate Data Center and Southeast Regional Climate Center), including NCDC Climatic Wind Data for US [ncdc.noaa.gov/documentlibrary.pdf/wind1996.pdf.].

Discussion/Results – Rating of the sites was performed based on a comparison of fastest mile (wind) speeds, maximum 24-hour precipitation and severe storm records, although greater emphasis was placed on the most distinguishing site feature – site location in relation to the coast – as an indicator of greater probability of hurricane threat – and the number of hurricanes to hit Florida (broken up into four geographic quadrants) as follows:

Hurricane direct hits on the mainland U.S. coastline and for individual states 1851-2004 by Saffir/Simpson category.

Area	Category Number					All (1-5)	Major (3-5)
	1	2	3	4	5		
U.S. (Texas to Maine)	109	72	71	18	3	273	92
Florida	43	32	27	6	2	110	35
(Northwest)*	27	16	12	0	0	55	12
(Northeast)*	13	8	1	0	0	22	1
(Southwest)*	16	8	7	4	1	36	12
(Southeast)*	13	13	11	3	1	41	15

- Assume Southeast area includes Glades, Hendry, Martin, Okeechobee, St. Lucie and Turkey Point, and DeSoto and Hardee are in southwest Florida, with inland sites being preferred over coastal sites.
- Hurricane that may strike more than one region in Florida would be counted separately for each region (i.e., individual regional totals may exceed state totals)

Source: National Hurricane Center at http://www.nhc.noaa.gov/paststate.shtml

Site	Fastest Mile (1970-2001)	Tornado Frequency: Strong violent/ strong violent per 10,000 sq mi [state annual average, 1953-2004]	Proximity to Coast/ Hurricane Threat	Hurricane direct hits on Florida region (1851-2004)	Maximum 24-hr precip. [in]
DeSoto	92 (Ft. Myers) Or 79 (Orlando for inland counties)	7/1.2	Inland	36 (12 major)	7.38 (Arcadia)
Glades	86 (W. Palm)	7/1.2	Inland	41 (15 major)	8.4 (Moore Haven)
Hardee	67 (Tampa)	7/1.2	Inland	36 (12 major)	7.38 (Arcadia)
Hendry 1	86 (W. Palm) 92 (Ft. Myers)	7/1.2	Inland	41 (15 major)	9.6 (Clewiston)
Martin	86 (W. Palm)	7/1.2	Inland	41 (15 major)	9.68 (USDA Canal)
Okeechobee 2	86 (W. Palm)	7/1.2	Inland	41 (15 major)	8.08 (Okeechobee)
St. Lucie	86 (W. Palm)	7/1.2	Coast	41 (15 major)	10.00 (Ft. Pierce)
Turkey Point	86 (Miami)	7/1.2	Coast	41 (15 major)	10.06 (Miami)

In general, the sites were fairly similar and were assigned equally conservative ratings of 3, with the exception of the two coastal sites: St. Lucie and Turkey Point. Given their proximity to the coast and higher potential for extreme storm events (precipitation, winds, and number of

hurricanes) [also based on annual probability of experiencing hurricane force winds from a hurricane (http://www.floridadisaster.org/bpr/Response/Plans/Nathaz/hurricanes/hurr_freq.htm) compared to the other sites] they were given slightly lower ratings of 2.

Extreme Weather Conditions	DeSoto	Glades	Hardee	Hendry 1	Martin	Okee 2	St. Lucie	Turkey Point
Rating	3	3	3	3	3	3	2	2

C.1.2 ACCIDENT EFFECTS-RELATED

Objective – The overall objective of this criterion is to evaluate sites with respect to design-related accident evaluations and potential effects of accidents.

Evaluation approach – Site ratings for this criterion are developed as a composite of three sub-criteria that address site characteristics relevant to consideration of accidents: Population, Emergency Planning Considerations, and Atmospheric Dispersion.

Discussion/Results – A discussion of each of the sub-criteria appears in the following sections C.1.2.1, C.1.2.2, and C.1.2.3. A discussion of the roll-up of the sub-criterion ratings into a single rating for the Accident-Effects-Related criterion appears in Section C.1.2.4.

C.1.2.1 Population

Objective – The objective of this criterion is to evaluate the relative suitability of the candidate sites with respect to the population density in the vicinity of the sites. For the purposes of this evaluation, it was assumed the existing licensed units at three of the candidate sites meet the population density conditions codified in 10 CFR 100.21. These conditions are:

- The sites have exclusion area authority,
- A low population zone exists beyond the exclusion area, and
- Sufficient distance exists to high-population centers.

Evaluation approach – As outlined in Regulatory Guide 4.7, low-population areas are preferred and low-population zones should have densities less than 500 people per square mile (EPRI 2001) (equivalent to less than 25,000 persons within 4 miles).

All sites meet population density exclusion criteria since population density was a criterion in the regional screening process. Available census data regarding the nearest population centers and area population densities were reviewed for the candidate sites in the screening criteria report (Criterion P3), and confirmed that each met the exclusion criteria. Online data were obtained from the US Census Bureau.

Discussion/Results – Ratings and the population data and distance to population centers that drive the ratings are presented for each site in the following table.

Nearest Population Center (2000 Population)	Population and Population Density (By County)	Notes
DeSoto (DeSoto County)		
Nearest population center: Arcadia, 8.5 miles County Seat: Arcadia Largest City: Arcadia	32,309 (2000); 35,406 (2005); 9.9% growth Population Projections (County): 40,400 (2015) 48,500 (2030) Pop. Density: 50.5 psm (2000)	Population Center within 10 miles: Arcadia (6,604) Population Centers within 20 miles: Zollo Springs (no data), Wauchula (4,368), Sebring (3,667)/Lake Placid (1,668) Nearest MSA – Port Charlotte/Punta Gorda (30 miles) Tampa/Gulf Coast – 65 miles
Glades (Glades County)		
Nearest population center: Moore Haven, 2 miles County Seat: Moore Haven Largest City: Moore Haven	10,576 (2000); 11,252 (2005); 6.4% growth Population Projections (County): 12,200 (2015) 13,700 (2030) Pop. Density: 13.7 psm	Population Center within 10 miles: Moore Haven (1,635) Population Centers within 20 miles: Clewiston (6,460), Belle Glade (14,906), LaBelle (4,210) Nearest MSA - Ft. Myers/Cape Coral (38 miles) Miami/East Coast – 95 miles
Hardee (Hardee County)		
Nearest population center: Zollo Springs, 12 miles County Seat: Wauchula Largest Cities: Wauchula, Bowling Green, Zollo Springs	26,938 (2000); 28,286 (2005); 5.0% growth Population Projections (County): 30,300 (2015) 34,000 (2030) Pop. Density: 42.3 psm	No Population Centers within 10 miles; Population Centers within 15 miles: Zollo Springs (no data), Wauchula (4,368), and Arcadia (6,604) Nearest MSA – Port Charlotte (30 miles) Tampa/Gulf Coast – 48 miles Orlando – 70 miles
Hendry 1 (Hendry County)		
Nearest population center: Clewiston (7.3 miles) County Seat: LaBelle Largest Cities: La Belle, Clewiston	36,210 (2000); 39,561 (2005); 9.3% growth Population Projections (County): 46,500 (2015) 56,000 (2030) Pop. Density: 31.4 psm	Population Centers within 10 miles: Clewiston (6,460) Population Centers within 20 miles: Belle Glade (14,906) Nearest MSA – Ft. Myers/Cape Coral (45 miles) and West Palm Beach (50 miles) Miami/East Coast – 103 miles Tampa/Gulf Coast – 106 miles

Nearest Population Center (2000 Population)	Population and Population Density (By County)	Notes
Martin (Martin County)		
Nearest population center: Indiantown (7 miles) County Seat: Stuart Largest Cities: Stuart, Sewalls Point, Jupiter Island	126,731 (2000); 139,728 (2005); 10.3% growth Population Projections (County): 170,300 (2015); 205,100 (2030) Pop. Density: 228.1 psm	Population Centers within 10 miles: Indiantown (5,588) Population Centers within 20 miles: Port St. Lucie (88,769), Okeechobee (5,376) Nearest MSA – Ft. Pierce/Port St. Lucie (23 miles) and West Palm Beach (40 miles) Miami/East Coast – 96 miles
Okeechobee 2 (Okeechobee County)		
Nearest population center: Okeechobee (8 miles) County Seat: Okeechobee Largest Cities: Okeechobee	35,910 (2000); 39,836 (2005); 10.9% growth Population Projections (County): 41,200 (2015) 45,700 (2030) Pop Density: 46.4 psm	Population Center within 10 miles Okeechobee (5,376) Population Centers within 20 miles: Lake Placid (1,668) Nearest MSA – Ft. Pierce/Port St. Lucie (35 miles) Miami/East Coast – 111 miles Orlando – 93 miles
St. Lucie (St. Lucie County)		
Nearest population center: Port St. Lucie (4.5 miles) County Seat: Ft. Pierce-Port St. Lucie Largest Cities: Port St. Lucie, Ft. Pierce, St. Lucie Village	192,695 (2000); 241,305 (2005); 25.2% growth Population Projections (County): 320,500 (2015); 419,200 (2040) Pop. Density: 336.3 psm	Population Center within 5 miles Port St. Lucie (88,769) Population Centers within 10 miles Stuart (14,633), Ft. Pierce (37,516) Nearest MSA – Ft. Pierce/Port St. Lucie (within 5 miles) Miami/East Coast – 115 miles Orlando – 100 miles
Turkey Point (Miami-Dade County)		
Nearest population center: Leisure City (7.2 miles) County Seat: Miami Largest Cities: Miami, Hialeah, Miami Beach	2,253,362 (2000); 2,376,914 (2005); 5.4% growth Population Projections (County): 2,771,500 (2015); 3,196,800 (2030) Pop. Density 1,157.9 psm)	Population Centers within 10 miles Homestead (31,909), Florida City (7,843) Key Largo (11,806) Population Centers within 20 miles Miami Nearest MSA – Miami (within 20 miles)

Based on the above information, the following site ratings were assigned. In the case of proximity to nearest population center, sites within 5 miles of the nearest population center were given a rating of 2 (less than 2 miles would receive a rating of 1), within 10 miles were given a rating of 3, within 15 miles were given a rating of 4, and within 20 miles were given a rating of 5. Ratings for proximity to densely populated areas also were considered and were based on the distance to the nearest metropolitan statistical area (MSA).

Population	DeSoto	Glades	Hardee	Hendry 1	Martin	Okee 2	St. Lucie	Turkey Point
County population	5	5	5	5	4	5	3	1
Distance to population center	2	1	3	2	2	2	1	2
Proximity to densely populated area	4	4	4	4	3	4	2	1
Composite Rating	**4**	**3**	**4**	**4**	**3**	**4**	**2**	**1**

References

US Census Bureau, 2000 population data.

Florida Atlas and Gazetteer 2003; detailed topographic maps.

C.1.2.2 Emergency Planning

Objective – The objective of this criterion is to evaluate the relative suitability of the eight candidate sites with respect to emergency planning characteristics of the general area around each site. (No exclusionary or avoidance criteria apply to this issue.) In particular, this evaluation relied on information pertaining to general population in surrounding area, road conditions near site, access to major traffic networks, terrain features, and climatic conditions.

Evaluation approach – Sites with the least constrained evacuation planning issues (low population, good access from site to major traffic networks, and no terrain or climate limitations) were considered the most suitable and were assigned a score of 5. Ratings are based on review of county websites (transportation information), USGS topographic maps, and best professional judgment. Ratings relate to extent of development in the general area, the number of roads providing egress from the site area, and proximity to major US highway systems.

Discussion/Results – A summary of information for each site is shown in the table below. In general, the sites with lower populations were found in the more rural areas with less developed traffic networks, so the two factors balanced each other out. In general, given Florida's flat topography, no limiting terrain features were identified. Limiting climate conditions identified for the coastal sites included the potential for hurricanes. Site ratings follow the table.

Site	Evaluation
DeSoto	Proposed site is located ~ 2.5 miles east of U.S. Highway 17 and ~ 7.3 miles north of State Highway 70. Brownville, FL is located ~ 3.2 miles southwest of the proposed site, and Arcadia, FL is located ~ 8.6 miles southwest of the proposed site. Area evacuation is possible in all directions. Florida is prone to impact by hurricanes, and site evacuations coinciding with such climatic conditions would be hampered.
Glades	Proposed site is located ~ 1.0 miles south of U.S. Highway 27 and State Highway 78. Moore Haven, FL is located ~ 4.8 miles east of the proposed site, and Clewiston, FL is located ~ 15.2 miles southeast of the proposed site. Area evacuation is possible in all directions, but immediate area evacuation is limited to the south due to minimal crossings of the Caloosahatchee Canal. Florida is prone to impact by hurricanes, and site evacuations coinciding with such climatic conditions would be hampered.
Hardee	Proposed site is located ~ 5.0 miles south of State Highway 64 and ~ 6.4 miles west of U.S. Highway 17. Zolfo Springs, FL is located ~ 8.7 miles northeast of the proposed site, and Arcadia, FL is located ~ 13.7 miles south of the proposed site. Area evacuation is possible in all directions. Florida is prone to impact by hurricanes, and site evacuations coinciding with such climatic conditions would be hampered.
Hendry 1	Proposed site is located ~ 5.4 miles east of State Highway 833 and ~ 6.4 miles south of U.S. Highway 27. Clewiston, FL is located ~ 9.2 miles northeast of the proposed site. Area evacuation is possible in all directions, although northerly evacuation routes go around Lake Okeechobee and southerly evacuation routes go through swampy areas. Florida is prone to impact by hurricanes, and site evacuations coinciding with such climatic conditions would be hampered.
Martin	Proposed site is located ~ 1.1 miles southwest of State Highway 710 and ~ 5.6 miles east of U.S. Highway 98/441. Indiantown, FL is located ~ 6.3 miles southeast of the proposed site, and Port St. Lucie, FL is located ~ 20.4 miles northeast of the proposed site. Area evacuation is possible in three directions, being limited to the west by Lake Okeechobee. Florida is prone to impact by hurricanes, and site evacuations coinciding with such climatic conditions would be hampered.
Okeechobee 2	Proposed site is located ~ 0.4 miles north of State Highway 70 and ~ 4.3 miles southwest of U.S. Highway 98. Okeechobee, FL is located ~ 6.8 miles east of the proposed site. Area evacuation is possible in all directions, although southerly evacuation routes go around Lake Okeechobee. Florida is prone to impact by hurricanes, and site evacuations coinciding with such climatic conditions would be hampered.

Site	Evaluation
St. Lucie	Proposed site is located on Hutchinson Island adjacent to Highway A1A and ~ 9.8 miles from access to U.S. Highway 1. Port St. Lucie, FL is located ~ 7.2 miles southwest of the proposed site, and Fort Pierce, FL is located ~ 8.7 miles northwest of the proposed site. Area evacuation is possible in two directions, being limited to the east by the Atlantic Ocean and to the west by the Intercoastal Waterway. Florida is prone to impact by hurricanes, and site evacuations coinciding with such climatic conditions would be hampered and more prevalent at the proposed site due to its coastal location. The site is adjacent to the existing St. Lucie nuclear power plant and brings the advantage of already having an Emergency Plan that could easily be adapted to include the new site. However, both sites would require evacuation under emergency conditions.
Turkey Point	Proposed site is located ~ 9.1 miles east of U.S. Highway 1 and the Florida Turnpike. Homestead, FL is located ~ 9.8 miles west of the proposed site. Area evacuation is possible in three directions, being limited to the east by the Atlantic Ocean/Biscayne Bay. Westerly evacuation routes are available, but are limited by the Everglades. Florida is prone to impact by hurricanes, and site evacuations coinciding with such climatic conditions would be hampered and more prevalent at the proposed site due to its coastal location. The site is adjacent to the existing Turkey Point nuclear power plant and brings the advantage of already having an Emergency Plan that could easily be adapted to include the new site. However, both sites would require evacuation under emergency conditions.

Emergency Planning	DeSoto	Glades	Hardee	Hendry 1	Martin	Okee 2	St. Lucie	Turkey Point
Rating	5	4	5	5	3	5	3	4

References

Rand McNally Road Atlas.

USGS Topographic Maps.

C.1.2.3 *Atmospheric Dispersion*

Objective – The objective of this criterion is to evaluate the suitability of the eight candidate sites with respect to short-term atmospheric dispersion characteristics, as a measure of the relative level of concentrations that could occur during accident conditions at the sites.

Evaluation Approach – The efficiency of atmospheric diffusion is primarily dependent on wind speed, wind direction, and the change in air temperature with height which affects atmospheric stability. These factors are used to calculate an atmospheric dispersion function referred to X/Q.

Discussion/Results – The best way to calculate atmospheric dispersion (X/Q) is using on-site meteorological data; however, no such data were readily available for all candidate sites. Sites near the coast would generally experience windier conditions, and were given a rating of 5. Inland locations would generally experience less wind, and were given a rating of 4. Should atmospheric dispersion become a sensitive criterion for site selection, site-specific meteorological data should be obtained to calculate an atmospheric dispersion function (X/Q) for more accurate site comparison.

Site	Evaluation
DeSoto	Site is located ~ 50 miles inland from the Gulf of Mexico.
Glades	Site is located ~ 70 miles inland from the Gulf of Mexico. Site is located ~ 70 miles inland from the Atlantic Ocean.
Hardee	Site is located ~ 40 miles inland from the Gulf of Mexico.
Hendry 1	Site is located ~ 65 miles inland from the Atlantic Ocean. Site is located ~ 75 miles inland from the Gulf of Mexico.
Martin	Site is located ~ 25 miles inland from the Atlantic Ocean. During the daytime with strong solar heating, the atmosphere is unstable and disperses pollutants quickly for short periods of time. The majority condition is neutral and disperses pollutants at moderate rates. During nighttime, the atmosphere becomes stable and minimally disperses pollutants.
Okeechobee 2	Site is located ~ 45 miles inland from the Atlantic Ocean.
St. Lucie	Site is located in the Atlantic Ocean coastal region.
Turkey Point	Site is located in the Atlantic Ocean coastal region.

Atmospheric Dispersion	DeSoto	Glades	Hardee	Hendry 1	Martin	Okee 2	St. Lucie	Turkey Point
Rating	4	4	4	4	4	4	5	5

References

Site Certification Application, Martin Expansion Project. January 2002.

USGS Topographic Maps (1:100,000 and 1:24,000 scale).

C.1.2.4 Accident-Effect Related Summary Rating

Composite ratings for this criterion (Accident Effects) are a composite of those for sub-criteria C.1.2.1, C.1.2.2, and C.1.2.3; the ratings for these sub-criteria, along with the summary rating for this criterion, are provided in the following table.

Sub-criterion	DeSoto	Glades	Hardee	Hendry 1	Martin	Okee 2	St. Lucie	Turkey Point
Population	4	3	4	4	3	4	2	1
Emergency Planning	5	4	5	4	3	5	3	4
Atmospheric Dispersion	4	4	4	4	4	4	5	5
Overall Rating	4	4	4	4	3	4	3	3

C.1.3 OPERATIONAL EFFECTS-RELATED

C.1.3.1 Surface Water – Radionuclide Pathway
C.1.3.1.1 Dilution Capacity
C.1.3.1.2 Baseline Loadings
C.1.3.1.3 Proximity to Consumptive Users

Objective – The purpose of this criterion is to evaluate candidate sites with respect to potential liquid pathway dose consequences. (No site exclusionary or avoidance criteria apply to this issue.) Besides potential source terms, dilution in the receiving surface water body is of primary importance. Three factors considered in evaluating the potential dilution for a receiving water body are dilution capacity, baseline loadings, and proximity to consumptive users.

Evaluation Approach – Site ratings for this criterion are developed as a composite of three sub-criteria that address site characteristics relevant to consideration of operation: Dilution Capacity, Baseline Loadings, and Proximity to Consumptive Users.

- Dilution Capacity – The purpose of this sub-criterion is to rate sites based on the overall capacity of the receiving water body to dilute effluents from a nuclear power plant. Information on the radioactive source term dilution at a new power plant will be site specific. For siting consideration where such information is not available, however, surrogate parameters, representing the dilution capacity of a stream, can be used. The greater the dilution capacity of the receiving water body, the shorter will be the mixing length downstream defined as the zone within which complete mixing of a discharge contaminant occurs. Sites with higher dilution capacity are rated higher.
- Baseline Loadings – The capacity of a stream to impact health and safety of downstream consumers is related to the existing, or baseline loadings of, radionuclides that are present in the system or can be anticipated in the future. The purpose of this sub-criterion is to characterize sites in accordance with existing levels of radioactive contamination in the receiving water body. Sites are given a rating of 5 for no baseline loadings; proportionally lower ratings are assigned as higher existing levels of radionuclide contamination are identified.
- Proximity to Consumptive Users – The purpose of this sub-criterion is to rate sites in accordance with the proximity of plant effluent release point to the location(s) public water supply withdrawal(s). More proximal withdrawals present higher potential for

dose impacts from the surface water ingestion pathway and can require additional design and licensing efforts. Downstream locations of public water supply withdrawals and recreational contact were identified for each site. Sites with greater pathway lengths to users were more suitable and were assigned a score of 5.

Discussion/Results – An evaluation of each site and a summary of the sub-criterion and overall ratings for the surface water-radionuclide pathway criterion are presented in the following tables.

Site	Evaluation
DeSoto	Dilution Capacity: The Peace River is the nearest receiving body of water from the site (~ 4 miles west of the proposed site). Recent river flow rates have been near 2,500 cubic feet per second. Under these conditions, the receiving body of water is likely capable of diluting potential liquid pathway dose. Baseline Loading: No sources of existing radionuclide loadings were identified for the site. Proximity to Consumptive Users: The majority of DeSoto County, including Arcadia, FL, relies on groundwater as the primary source of public water use. The Peace River is not widely used for consumptive uses.
Glades	Dilution Capacity: Lake Okeechobee is the nearest receiving body of water from the site (~ 5 miles east of the proposed site). The receiving body of water is likely capable of diluting effluents from a nuclear power plant. The C-43 canal (Okeechobee Waterway / Caloosahatchee Canal) is another potential receiving body of water from the site. The C-43 canal flows west to the Gulf of Mexico (~ 60 miles). Baseline Loading: No sources of baseline radionuclide loadings were identified for the site. Proximity to Consumptive Users: Lake Okeechobee is classified as a drinking water source. Moore Haven, FL is located ~ 5 miles east of the proposed site.
Hardee	Dilution Capacity: The Peace River is the nearest receiving body of water from the site (~ 3 miles east of the proposed site). Recent river flow rates have been near 2,500 cubic feet per second. Under these conditions, the receiving body of water is likely capable of diluting potential liquid pathway dose. Baseline Loading: No sources of existing radionuclide loadings were identified for the site. Proximity to Consumptive Users: The majority of DeSoto County, including Arcadia, FL, relies on groundwater as the primary source of public water use. The Peace River is not widely used for consumptive uses.
Hendry 1	Dilution Capacity: Lake Okeechobee is the nearest receiving body of water from the site (~ 11 miles north of the proposed site). The receiving body of water is likely capable of diluting effluents from a nuclear power plant. Baseline Loading: No sources of baseline radionuclide loadings were identified for the site. Proximity to Consumptive Users Lake Okeechobee is classified as a drinking water source. Clewiston, FL is located ~ 9 miles northeast of the proposed site.

Site	Evaluation
Martin	Dilution Capacity: Lake Okeechobee is the nearest receiving body of water from the site (~ 5 miles west of the proposed site). The receiving body of water is likely capable of diluting effluents from a nuclear power plant. The C-44 canal (Okeechobee Waterway / St. Lucie Canal) is another potential receiving body of water from the site. The C-44 canal flows east to the Atlantic Ocean (~ 25 miles). Baseline Loading: No sources of baseline radionuclide loadings were identified for the site. Proximity to Consumptive Users: The Okeechobee Utility Authority is permitted to withdraw water from the northern bank of Lake Okeechobee for a public potable water source. This plant is located ~ 18 miles northwest of the site.
Okeechobee 2	Dilution Capacity: The Kissimmee River is the nearest receiving body of water from the site (~ 2 miles southwest of the proposed site). The receiving body of water is likely capable of diluting effluents from a nuclear power plant. Baseline Loading: No sources of baseline radionuclide loadings were identified for the site. Proximity to Consumptive Users: The Okeechobee Utility Authority is permitted to withdraw water from the northern bank of Lake Okeechobee for a public potable water source. This plant is located ~ 9 miles southeast of the site.
St. Lucie	Dilution Capacity: The Atlantic Ocean is the receiving body of water from the site and is sufficiently large to easily dilute effluents from a nuclear power plant. Baseline Loading: While an existing nuclear power plant is located near the proposed site, the receiving body of water is sufficiently large to render any baseline radionuclide loadings negligible. Proximity to Consumptive Users: No downstream locations of public water supply withdrawals were identified for the site.
Turkey Point	Dilution Capacity: The Atlantic Ocean/Biscayne Bay and groundwater (via the cooling canals) are the receiving bodies of water from the site and are sufficiently large to easily dilute effluents from a nuclear power plant. Baseline Loading: While an existing nuclear power plant is located near the proposed site, the receiving body of water is sufficiently large to render any baseline radionuclide loadings negligible. Proximity to Consumptive Users: No downstream locations of public water supply withdrawals were identified for the site.

Site	Dilution Capacity	Baseline Loadings	Proximity to Downstream public water supply	Composite Rating
DeSoto	3	5	5	4
Glades	4	5	3	4
Hardee	3	5	5	4
Hendry 1	4	5	3	4

Site	Dilution Capacity	Baseline Loadings	Proximity to Downstream public water supply	Composite Rating
Martin	4	5	4	4
Okeechobee 2	3	5	3	4
St. Lucie	5	4	5	5
Turkey Point	5	4	5	5

References

Estimated Water Use 2002, Southwest Florida Water Management District.

USGS Topographic Maps.

C.1.3.2 Groundwater Radionuclide Pathway

Objective – The purpose of this section is to evaluate the candidate sites with respect to the relative vulnerability of shallow groundwater resources to potential contamination.

Evaluation Approach – All candidate sites overlie aquifers that have not been designated by EPA's (1986) classification scheme. EPA guidelines were, however, used to assign a designation to candidate site aquifers. In addition, the relative vulnerability of these aquifers to groundwater pollution was evaluated using a standard numerical ranking system called DRASTIC (Aller et al. 1987). Sites considered most suitable are those that are least vulnerable to groundwater contamination within a 2-mile radius of a site.

Discussion/Results – Class I groundwater is addressed as an avoidance criteria (EPRI 2000). This classification includes groundwater resources of unusually high value. They are highly vulnerable to contamination and are irreplaceable sources of drinking water and or ecologically vital. Groundwater underlying the candidate sites are either currently used or are potential sources of drinking water, hence, they would be considered Class II aquifers according to the EPA classification guidelines. The Biscayne Aquifer in South Florida has been designated a Sole Source Aquifer by EPA. One site, Turkey Point, is located above the Biscayne Aquifer. Projects that receive Federal financial assistance and have the potential to contaminate a sole source aquifer are subject to EPA review. The Okeechobee 2 site is located in the recharge zone for the Biscayne Aquifer, and the Martin and Glades sites are located either within or along the border of the recharge zone. These sites, while not located above the Biscayne Aquifer, would have a potential for contamination since they are located within or very near the aquifer's recharge zone.

The DRASTIC evaluation was completed using site-specific data, where available, or data from published sources. The most important variables that control the groundwater pollution potential are:

- D–Depth to water,
- R–Recharge (net),
- A–Aquifer media,
- S–Soil media,
- T–Topography (slope),
- I–Impact of the vadose zone,
- C–Conductivity (hydraulic) of the groundwater flow system.

DRASTIC assigns a weighted numeric value to each characteristic, depending on its relative contribution to risk of groundwater contamination. This results in a numeric ranking for each site, allowing the sites to then be ranked in order of suitability. The higher an area scores on the DRASTIC index, the more susceptible a site is to groundwater contamination. Following is a summary of the DRASTIC evaluations.

DeSoto				
DRASTIC Variable	**Range and Source of Information**	**Weight**	**Rating**	**Number**
Depth to Water	5-15 ft bgs (USGS topographic maps)	5	9	45
Net Recharge	10^{+} in/yr	4	9	36
Aquifer Media	Sands with silt and clay (Florida geologic maps and text)	3	6	18
Soil Media	Sandy Loam (Florida geologic map and text)	2	6	12
Topography	Less than 1% (USGS site topographic maps)	1	10	10
Impact Vadose Zone	Sand (Florida geologic map and text)	5	6	30
Hydraulic Conductivity	300 - 700 gpd/ft^2 (Driscoll, 1986; DRASTIC, 1987)	3	4	12
			INDEX	**163**

Glades				
DRASTIC Variable	**Range and Source of Information**	**Weight**	**Rating**	**Number**
Depth to Water	5-15 ft bgs (USGS topographic maps)	5	9	45
Net Recharge	10^{+} in/yr	4	9	36
Aquifer Media	Sands with silt and clay (Florida geologic maps and text)	3	6	18
Soil Media	Sandy Loam (Florida geologic map and text)	2	6	12
Topography	Less than 1% (USGS site topographic maps)	1	10	10
Impact Vadose Zone	Sand (Florida geologic map and text)	5	6	30
Hydraulic Conductivity	300 - 700 gpd/ft^2 (Driscoll, 1986; DRASTIC, 1987)	3	4	12
			INDEX	**163**

Hardee				
DRASTIC Variable	**Range and Source of Information**	**Weight**	**Rating**	**Number**
Depth to Water	5-15 ft bgs (USGS topographic maps)	5	9	45
Net Recharge	10^{+} in/yr	4	9	36
Aquifer Media	Sands with silt and clay (Florida geologic maps and text)	3	6	18
Soil Media	Sandy Loam (Florida geologic map and text)	2	6	12
Topography	Less than 1% (USGS site topographic maps)	1	10	10
Impact Vadose Zone	Sand with significant silt and clay (Florida geologic map and text)	5	5	25
Hydraulic Conductivity	100 - 300 gpd/ft^2 (Driscoll, 1986; DRASTIC, 1987)	3	2	6
			INDEX	**152**

Hendry 1				
DRASTIC Variable	**Range and Source of Information**	**Weight**	**Rating**	**Number**
Depth to Water	5-15 ft bgs (USGS topographic maps)	5	9	45
Net Recharge	10^{+} in/yr	4	9	36
Aquifer Media	Sands with silt and clay (Florida geologic maps and text)	3	6	18
Soil Media	Sandy Loam (Florida geologic map and text)	2	6	12
Topography	Less than 1% (USGS site topographic maps)	1	10	10
Impact Vadose Zone	Sand (Florida geologic map and text)	5	6	30
Hydraulic Conductivity	300 - 700 gpd/ft^2 (Driscoll, 1986; DRASTIC, 1987)	3	4	12
			INDEX	**163**

Martin				
DRASTIC Variable	**Range and Source of Information**	**Weight**	**Rating**	**Number**
Depth to Water	5-15 ft bgs (USGS topographic maps)	5	9	45
Net Recharge	10^{+} in/yr	4	9	36
Aquifer Media	Sands with silt and clay (Florida geologic maps and text)	3	6	18
Soil Media	Sandy Loam (Florida geologic map and text)	2	6	12
Topography	Less than 1% (USGS site topographic maps)	1	10	10
Impact Vadose Zone	Sand (Florida geologic map and text)	5	6	30
Hydraulic Conductivity	300 - 700 gpd/ft^2 (Driscoll, 1986; DRASTIC, 1987)	3	4	12
			INDEX	**163**

Okeechobee 2				
DRASTIC Variable	**Range and Source of Information**	**Weight**	**Rating**	**Number**
Depth to Water	0-5 ft bgs (USGS topographic maps)	5	10	50
Net Recharge	10^{+} in/yr	4	9	36
Aquifer Media	Sands with silt and clay (Florida geologic maps and text)	3	6	18
Soil Media	Sandy Loam (Florida geologic map and text)	2	6	12
Topography	Less than 1% (USGS site topographic maps)	1	10	10
Impact Vadose Zone	Thin sand (Florida geologic map and text)	5	8	40
Hydraulic Conductivity	300 - 700 gpd/ft^2 (Driscoll, 1986; DRASTIC, 1987)	3	4	12
			INDEX	**178**

St. Lucie				
DRASTIC Variable	**Range and Source of Information**	**Weight**	**Rating**	**Number**
Depth to Water	5-15 ft bgs (USGS topographic maps)	5	9	45
Net Recharge	10^{+} in/yr	4	9	36
Aquifer Media	Sands with silt and clay (Florida geologic maps and text)	3	6	18
Soil Media	Sand (Florida geologic map and text)	2	7	14
Topography	Less than 1% (USGS site topographic maps)	1	10	10
Impact Vadose Zone	Sand (Florida geologic map and text)	5	7	35
Hydraulic Conductivity	300 - 700 gpd/ft^2 (Driscoll, 1986; DRASTIC, 1987)	3	4	12
			INDEX	**170**

Turkey Point				
DRASTIC Variable	**Range and Source of Information**	**Weight**	**Rating**	**Number**
Depth to Water	0-5 ft bgs (USGS topographic maps)	5	10	50
Net Recharge	10^{+} in/yr	4	9	36
Aquifer Media	Bedded limestone (Florida geologic maps and text)	3	7	21
Soil Media	Thin (Florida geologic map and text)	2	10	20
Topography	Less than 1% (USGS site topographic maps)	1	10	10
Impact Vadose Zone	Thin sand and limestone (Florida geologic map and text)	5	7	35
Hydraulic Conductivity	700 - 1000 gpd/ft^2 (Driscoll, 1986; DRASTIC, 1987)	3	6	18
			INDEX	**190**

DRASTIC indexes for all typical hydrogeologic settings range from 65 to 223 (Aller et al. 1987, p. 82). This range of indexes was used to develop a ranking system to compare vulnerability of candidate sites, as follows:

DRASTIC Index Range	Relative Vulnerability	Rating
65–98	Low	5
98–132	Low to Moderate	4
132–166	Moderate	3
166–199	High	2
199–233	Very High	1

Based on these DRASTIC Index Ranges for qualitative vulnerability, candidate sites were ranked as follows:

Candidate Site	DRASTIC Index	Rating
DeSoto	163	3
Glades	163	3
Hardee	152	3
Hendry 1	163	3
Martin	163	3
Okeechobee 2	178	2
St. Lucie	170	2
Turkey Point	190	2

References

Aller, L., Bennett, T., Lehr, J., Petty, R. and G. Hackett. 1987. DRASTIC: A Standardized System for Evaluating Ground Water Pollution Potential Using Hydrogeologic Settings. EPA/600/2-87/035, June 1987.

DRASTIC: A Standardized System for Evaluating Ground Water Pollution Potential Using Hydrogeologic Settings; EPA Manual, 1987.

Driscoll, Fletcher G., Groundwater and Wells, 1986.

EPA, 1986. Guidelines for Groundwater Classification Under the EPA Groundwater Protection Strategy, Office of Groundwater Protection.

EPA, 2005. Source Water Protection. Sole Source Aquifer Program.

Florida Environment Online, Southeastern Geological Society, Hydrogeological Units of Florida.

Florida Geological Survey, Data and Maps, County Geologic Maps.

Florida Geological Survey, Florida's Geological History and Geological Resources, Special Publication No. 35, 1994.

Florida Geological Survey, Geologic Framework of the Lower Floridan Aquifer System, Brevard County, Florida, Bulletin No. 64, 1994.

Florida Geological Survey, Geologic Map of Florida, 2001.

Florida Geological Survey, Text to Accompany the Geologic Map of Florida, open-file report 80, 2001.

USGS, 1985. Sinkhole Type, Development, and Distribution in Florida.

USGS. South Florida Information Access. Lithostratigraphic Units.

USGS. Topographic Maps of Florida, various.

C.1.3.3 Air Radionuclide Pathway

C.1.3.3.1 Topographic Effects
C.1.3.3.2 Atmospheric Dispersion

Objective – The purpose of this criterion is to address the relative suitability of sites with respect to the potential for exposure to the public from routine airborne releases from a nuclear power plant.

Evaluation approach – The criterion is composed of two suitability characteristics:

> Topographic Effects – Site ratings are based on whether there are any significant topographic features that would materially affect dispersion of the plume from plant releases (e.g., channeling of releases from a site located low in a high-banked river valley).
>
> Atmospheric Dispersion – Measured in terms of long term (e.g., annual average X/Q) dispersion characteristics. Sites with lower X/Q values are rated higher than those with less favorable dispersion conditions.

Discussion/Results – None of the sites are believed to have significant potential for negative topographic effects on long-term dispersion; however, final site locations have not been identified for several of the sites. Annual average X/Q values were unavailable for candidate sites. Sites near the coast would generally experience windier conditions, and were given a rating of 5. Inland locations would generally experience less wind, and were given a rating of 4. Should atmospheric dispersion become a sensitive criterion for site selection, site-specific meteorological data should be obtained to calculate an atmospheric dispersion function (X/Q) for more accurate site comparison.

Site	Evaluation	Ranking
DeSoto	Site is located ~ 50 miles inland from the Gulf of Mexico.	4
Glades	Site is located ~ 70 miles inland from the Gulf of Mexico. Site is located ~ 70 miles inland from the Atlantic Ocean.	4
Hardee	Site is located ~ 40 miles inland from the Gulf of Mexico.	4

Site	Evaluation	Ranking
Hendry 1	Site is located ~ 65 miles inland from the Atlantic Ocean. Site is located ~ 75 miles inland from the Gulf of Mexico.	4
Martin	Site is located ~ 25 miles inland from the Atlantic Ocean.	4
Okeechobee 2	Site is located ~ 45 miles inland from the Atlantic Ocean.	4
St. Lucie	Site is located in the Atlantic Ocean coastal region.	5
Turkey Point	Site is located in the Atlantic Ocean coastal region.	5

The proposed site ratings with respect to radionuclide exposure via airborne releases are as follows:

Air Radionuclide Pathway	DeSoto	Glades	Hardee	Hendry 1	Martin	Okee 2	St. Lucie	Turkey Point
Rating	**4**	**4**	**4**	**4**	**4**	**4**	**5**	**5**

References

USGS Topographic Maps.

C.1.3.4 Air-Food Ingestion Pathway

Objective – The objective of this criterion is to rate candidate sites in terms of the relative potential for exposure of humans to radioactive emissions through deposition of radioactive materials on food crops with subsequent consumption of exposed foodstuffs by individuals.

Evaluation approach – A potential exposure pathway for nuclear power plants is the emission of radionuclides into the food chain on local crops and pastures. Radiological doses and dose commitments resulting from a nuclear plant are well-known and documented. While the operational impacts on the public through food pathway exposures are negligible, sites with lower amounts of crop and pasture land uses are considered to be more suitable. No exclusionary or avoidance criteria apply to this issue. Sites with less crop production nearby are rated higher than those with larger agricultural industries.

Discussion/Results – General information regarding crop lands and pastures near the sites is summarized in the table below.

Site	Evaluation	Ranking
Florida (entire state)	Agriculture (farmland) represents 10,414,877 acres out of 34,513,280 acres in Florida (30%). Out of total farmland, 3,715,257 acres are planted in crop (36%).	N/A

Site	Evaluation	Ranking
DeSoto	Agriculture (farmland) represents 388,177 acres out of 407,680 acres in DeSoto County (95%). Out of the total farmland, **115,356** acres are planted in crop (30%). Other farmland is used for cattle (81,628 head), and lower numbers of hogs and pigs (33 head), sheep (38 head) and poultry (251 layers). Aerial imagery indicates that the proposed site is in the general vicinity of agricultural operations, and the actual impact to local crops, pastures, and livestock from radionuclide emission exposure would be greater than the county-wide percentages.	1
Glades	Agriculture (farmland) represents 407,950 acres out of 495,360 acres in Glades County (82%). Out of the total farmland, **73,043** acres are planted in crop (18%). Other farmland is used for cattle (66,423 head), and lower numbers of hogs and pigs (48 head) and poultry (210 layers). Aerial imagery indicates that the proposed site is in the general vicinity of agricultural operations, and the actual impact to local crops, pastures, and livestock from radionuclide emission exposure would be greater than the county-wide percentages.	1
Hardee	Agriculture (farmland) represents 346,191 acres out of 407,680 acres in Hardee County (85%). Out of the total farmland, **115,676** acres are planted in crop (33%). Other farmland is used for cattle (94,749 head), and lower numbers of hogs and pigs (93 head) and poultry (292 layers and 123 broilers). Aerial imagery indicates that the proposed site is in the general vicinity of agricultural operations, and the actual impact to local crops, pastures, and livestock from radionuclide emission exposure would be greater than the county-wide percentages.	1
Hendry 1	Agriculture (farmland) represents 552,352 acres out of 737,920 acres in Hendry County (75%). Out of the total farmland, **296,006** acres are planted in crop (54%). Other farmland is used for cattle (73,207 head), and lower numbers of hogs and pigs (125 head) and poultry (286 layers). Aerial imagery indicates that the proposed site is in the general vicinity of agricultural operations, and the actual impact to local crops, pastures, and livestock from radionuclide emission exposure would be greater than the county-wide percentages.	1

Site	Evaluation	Ranking
Martin	Agriculture (farmland) represents 206,198 acres out of 355,840 acres in Martin County (58%). Out of the total farmland, **97,840** acres are planted in crop (47%). Other farmland is used for cattle (27,279 head), and lower numbers of hogs and pigs (439 head) and poultry (81 broilers). Aerial imagery indicates that the proposed site is in the general vicinity of agricultural operations, and the actual impact to local crops, pastures, and livestock from radionuclide emission exposure would be greater than the county-wide percentages. Additionally, while power plants are currently located near the proposed site, the potential for radionuclide emissions would be a newly introduced area hazard.	2
Okeechobee 2	Agriculture (farmland) represents 392,495 acres out of 495,360 acres in Okeechobee County (79%). Out of the total farmland, **115,292** acres are planted in crop (29%). Other farmland is used for cattle (142,656 head), and lower numbers of hogs and pigs (82 head), sheep (1,737), and poultry (171 layers). Aerial imagery indicates that the proposed site is in the general vicinity of agricultural operations, and the actual impact to local crops, pastures, and livestock from radionuclide emission exposure would be greater than the county-wide percentages.	1
St. Lucie	Agriculture (farmland) represents 221,537 acres out of 366,080 acres in St. Lucie County (61%). Out of the total farmland, **118,847** acres are planted in crop (54%). Other farmland is used for cattle (31,944 head), and lower numbers of hogs and pigs (394 head) and poultry (317 layers). Aerial imagery indicates that the proposed site is not in the general vicinity of agricultural operations, and the actual impact to local crops, pastures, and livestock from radionuclide emission exposure would be significantly lower than the county-wide percentages.	5
Turkey Point	Agriculture (farmland) represents 90,373 acres out of 1,245,440 acres in Miami-Dade County (7%). Out of the total farmland, **66,564** acres are planted in crop (74%). Other farmland is used for cattle (3,880 head), hogs and pigs (144 head), sheep (272 head), and poultry (2,052 layers and 240 broilers). Aerial imagery indicates that the proposed site is in the general vicinity of some agricultural operations (although not as agriculturally dominated as potential greenfield sites). However, existing nuclear power plants are located at the Turkey Point location, and agricultural operations in the general vicinity are already exposed to potential radionuclide emissions. As such, the site has been given a rating of 5 as potential radionuclide emissions are not a new hazard to the area.	5

Air-Food Ingestion Radionuclide Pathway	DeSoto	Glades	Hardee	Hendry 1	Martin	Okee 2	St. Lucie	Turkey Point
Rating	1	1	1	1	2	1	5	5

References

Florida MapStats, http://www.fedstats.gov/qf/states/12000.html.

Google Earth, http://earth.google.com.

National Agricultures Statistics Service (2002 Census of Agriculture) for Florida, http://151.121.3.33:8080/Census/Create_Census_US_CNTY.jsp.

C.1.3.5 Surface Water – Food Radionuclide Pathway

Objective – The purpose of this criterion is to evaluate the relative suitability of sites in terms of the specific use of irrigation water by downstream locations as a potential pathway for potential exposure.

Evaluation approach – Sites with the fewest number of downstream irrigation uses are more suitable and are rated higher than sites with a large number of downstream irrigation withdrawals. No exclusionary or avoidance criteria apply to this issue (EPRI 2001).

Discussion/Results – General information regarding irrigated lands near the sites is summarized in the table below.

Site	Evaluation	Ranking
Florida (entire state)	Total irrigated land represents 1,815,174 acres out of 10,414,877 acres of farmland in Florida (17%).	N/A
DeSoto	Total irrigated land represents 79,147 acres out of 388,177 acres of farmland in DeSoto County (20%). Withdrawals of water for irrigation from the Peace River downstream of the site are probable.	1
Glades	Total irrigated land represents 49,147 acres out of 407,950 acres of farmland in Glades County (12%). Withdrawals of water for irrigation from area canals downstream of the site are probable.	2
Hardee	Total irrigated land represents 56,882 acres out of 346,191 acres of farmland in Hardee County (16%). Withdrawals of water for irrigation from the Peace River downstream of the site are probable.	1

Site	Evaluation	Ranking
Hendry 1	Total irrigated land represents 206,043 acres out of 552,352 acres of farmland in Hendry County (37%). Withdrawals of water for irrigation from area canals downstream of the site are probable.	1
Martin	Total irrigated land represents 55,805 acres out of 206,198 acres of farmland in Martin County (27%). Withdrawals of water for irrigation from area canals downstream of the site are probable.	1
Okeechobee 2	Total irrigated land represents 22,085 acres out of 392,495 acres of farmland in Okeechobee County (6%). Withdrawals of water for irrigation from the Kissimmee River and area canals downstream of the site are probable.	2
St. Lucie	Total irrigated land represents 102,629 acres out of 221,537 acres of farmland in St. Lucie County (46%). Withdrawals of water for irrigation downstream of the site are not expected as the site is located very near the Atlantic Ocean, and agricultural operations are not located in the vicinity of the site.	5
Turkey Point	Total irrigated land represents 43,615 acres out of 90,373 acres of farmland in Miami-Dade County (48%). Withdrawals of water for irrigation downstream of the site are not expected as the site is located very near the Atlantic Ocean (Biscayne Bay). Additionally, existing nuclear power plants are located at the Turkey Point location, and agricultural operations in the general vicinity are already exposed to potential radionuclide emissions. As such, the site has been given a rating of 5 as potential radionuclide emissions are not a new hazard to the area.	5

Surface Water-Food Radionuclide Pathway	DeSoto	Glades	Hardee	Hendry 1	Martin	Okee 2	St. Lucie	Turkey Point
Rating	**1**	**2**	**1**	**1**	**1**	**2**	**5**	**5**

References

National Agricultures Statistics Service (2002 Census of Agriculture) for Florida, http://151.121.3.33:8080/Census/Create_Census_US_CNTY.jsp.

C.1.3.6 Transportation Safety

Objective – The objective of this criterion is to evaluate the suitability of the eight candidate sites with respect to potential to create fog and ice hazards to local transportation. No exclusionary or avoidance criteria apply to this issue.

Evaluation approach – Potential impacts from plant operations on transportation safety could occur as a result of increased hazards from cooling towers. Both natural draft and mechanical cooling towers can increase area fogging conditions ice formation on local roads and highways. Sites with high frequencies of naturally-occurring fog and ice events will likely be more adversely affected by cooling tower operations.

Discussion/Results – Relative information regarding existing fog and ice conditions was not readily available for candidate sites; however, cooling tower fogging or icing is not expected to be a major issue at any of the sites, given their general weather patterns, nor is it expected to be a major site discriminator. Accordingly, and in the absence of site specific data, all sites are given a conservative rating of 3 with respect to this criterion.

Transportation Safety	DeSoto	Glades	Hardee	Hendry 1	Martin	Okee 2	St. Lucie	Turkey Point
Rating	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**

C.2 ENVIRONMENTAL CRITERIA

C.2.1 CONSTRUCTION-RELATED EFFECTS ON AQUATIC ECOLOGY

C.2.1.1 Disruption of Important Species/Habitats

Objective – The objective of this criterion is to evaluate the candidate sites with respect to potential construction-related impacts on aquatic or marine ecology. Regulatory Guide 4.7 defines important plant and animal species if one or more of the following conditions apply.

1. the species is commercially or recreationally valuable,
2. the species is officially listed as endangered or threatened,
3. the species effects the well being of another species within (1) or (2) above,
4. the species is a critical component of the structure and function of a valuable ecosystem, or
5. the species is a biological indicator of radionuclides in the environment.

Of particular concern are potential impacts to habitat areas used by important species. These areas include those used for:

- breeding and nursery,
- nesting and spawning,
- wintering, and
- feeding.

Evaluation approach – The following siting criteria were used to evaluate the eight candidate sites.

- Exclusionary – Designated critical habitat of endangered species
- Avoidance – Areas where threatened and endangered species are known to occur
- Suitability – Areas where limited potential impact is expected

No information was obtained which would indicate that any of the sites under consideration would exceed the exclusionary or avoidance criteria relative to ecology. Therefore, the evaluation focused on the relative suitability of the site based on the number of areas where limited potential impact is expected. The number of potential impact areas was directly correlated to the number of rare, threatened, and endangered (RTE) aquatic species that may occur in the host county, their habitat (based on existing reports and professional judgment of the amount and quality of habitat available for species), and flexibility (professional judgment of the amount of space within the site circle to avoid known locations of protected species during construction of the facility). Note that the evaluation was limited to the plant site and not existing or potential (future) transmission corridors.

The suitability of the candidate sites with respect to ecology (rare, threatened and endangered aquatic and terrestrial species, and critical habitat) was initially evaluated in the screening criteria report (Criterion P5, which included Federally protected aquatic and terrestrial species combined). Additional site ecological information specific to aquatic resources at each site is included in the full discussion below. In the context of this discussion, vicinity refers to the county in which the candidate site is located.

Discussion – There are no Federally listed protected aquatic species found in Hardee County; and one protected aquatic species, the manatee, in DeSoto, Glades, Hendry and Okeechobee counties.

Martin County also has the manatee and one fish species that could be in the vicinity of the site: the smalltooth sawfish.

St. Lucie County has the manatee, two fish species (smalltooth sawfish and gulf sturgeon) and four sea turtles on the federally protected list.

Miami-Dade County, location of Turkey Point site, has the manatee, one fish species (smalltooth sawfish), four sea turtles (same as St. Lucie County), two invertebrate coral species, and one aquatic plant on the federally protected species list.

The species common and scientific names and listing status are included in the table below. The National Marine Fisheries Service (NMFS) has lead for the fish, invertebrate, and plant species, as well as for the turtle species in the water.

Scientific Name	Common Name	Federal Status
Fish		
Gulf Sturgeon	*Acipenser oxyrhynchus desotoi*	Threatened
Smalltooth sawfish	*Pristis pectinata*	Endangered
Mammals		
West Indian manatee	*Trichechus manatus*	E, CH
Reptiles		
Green Sea Turtle	*Chelonia mydas*	E
Leatherback Sea Turtle	*Dermochelys coriacea*	E
Loggerhead Sea Turtle	*Caretta caretta*	T
Hawksbill Sea Turtle	*Eretmochelys imbricata*	E
Invertebrates		
Elkhorn coral	*Acropora palmate*	PT
Staghorn coral	*Acropora cervicornis*	PT
Plants		
Johnson's seagrass	*Halophila johnsonii*	T, CH

Results – Site ratings are based on the number of Federally protected species found in a given county; Hardee has no protected species and therefore is given the highest rating. Turkey Point and St. Lucie are given the lowest ratings of 3 with 5-10 species, and the remaining sites fall in between. In general, ratings related to habitat are based on professional judgment of the amount and quality of habitat available for species, typically based on poor quality aerial photographs (Google earth). In the case of aquatic species, where habitat is limited to existing surface water bodies in a given site area or county, habitat ratings are assumed to be the same as those identified for species abundance. In general, ratings related to flexibility are based on professional judgment of the amount of space within the site area to avoid known locations of

protected species (while trying to maximize access to cooling water supply) during construction of the facility – also typically based on poor quality aerial photographs. All sites were given favorable ratings with slightly lower siting flexibility ratings given to Turkey Point and St. Lucie based on their higher level of development currently existing on site. Martin and Okeechobee 2 sites fall in the middle given existing development at Martin and presumed preference to locate sites near existing surface water resources (e.g., lake/canal for Martin and Kissimmee River for Okeechobee 2).

Site	DeSoto	Glades	Hardee	Hendry 1	Martin	Okee 2	St. Lucie	Turkey Point
T&E Species (aquatic)	4	4	5	4	4	4	3	3
Habitat	4	4	5	4	4	4	3	3
Flexibility	5	5	5	5	4	4	2	2
Overall rating	**4**	**4**	**5**	**4**	**4**	**4**	**3**	**3**

References

US Fish and Wildlife Service, Vero Beach/South Florida
[http://www.fws.gov/verobeach/Programs/Permits/Section7.html] – for DeSoto, Glades, Hardee, Hendry, Martin, Miami-Dade, Okeechobee, and St. Lucie Counties. Updated September 2006].

C.2.1.2 Bottom Sediment Disruption Effects

C.2.1.2.1 Contamination
C.2.1.2.2 Grain Size

Objective – The objective of the criterion is to evaluate the potential short-term impacts to aquatic/marine resources resulting from construction related dredging activities at the candidate sites.

Evaluation approach – The evaluation sought available data on the amount of contaminated sediments near the candidate sites and the grain size of sediments in the area. In general, sites with the lowest concentration of heavy metals and toxic organic compounds and the highest sediment grain size are considered to be the most suitable.

Little information exists regarding the site-specific level of sediment contamination that exists in water bodies near the candidate sites. The majority of the available information was obtained from the EPA's National Sediment Quality Survey (2001 and 2004). Information in the EPA report addresses sediment contamination levels as Tier I (adverse impacts to aquatic life are probable) and Tier II (adverse impacts to aquatic life are possible but infrequent). Using best professional judgment, the following evaluation considered the results of the EPA's Tier I/Tier II study results to determine the relative contamination potential for the candidate sites.

No information regarding sediment grain size was obtained for this evaluation. Because sediment grain size is highly variable, even within a small area of coastline or river reach, the

following evaluation of potential bottom sediment disruption effects was limited to available information regarding sediment contamination levels in principle water bodies at the eight sites.

Discussion/Results – An updated EPA study (EPA 2004) evaluated 2,874 sampling stations in the Southeast, and identified 12 water bodies as having the most significant sediment contamination in EPA Region 4. No water bodies on which the FPL candidate sites are located were identified in the EPA study.

Because dredging is not one of the parameters considered for this particular evaluation, and information on grain size was not readily available for most of the sites, the estimated potential for contaminated sediments to affect the cost and schedule of any construction-related dredging operations was based on the limited information available and professional judgment. Based on the EPA study and information provided by the Water Management Districts in Florida, and because the presence of contaminated sediments in the immediate vicinity of the candidate sites including any onsite streams cannot be confirmed, the following conservative ratings are given to the candidate sites. The coastal sites are given a slightly higher rating because their receiving body of water is so expansive (Atlantic Ocean).

Bottom Sediment Disruption Effects	DeSoto	Glades	Hardee	Hendry 1	Martin	Okee 2	St. Lucie	Turkey Point
Rating	3	3	3	3	3	3	4	4

References

The Incidence and Severity of Sediment Contamination in Surface Waters of the United States. National Sediment Quality Survey. Office of Science and Technology. EPA 823-R-04-007. November.

C.2.2 CONSTRUCTION-RELATED EFFECTS ON TERRESTRIAL ECOLOGY

C.2.2.1 Disruption of Important Species/Habitats and Wetlands

C.2.2.1.1 Important Species/Habitats
C.2.2.1.2 Groundcover/Habitat
C.2.2.1.3 Wetlands

Objective – The objective of this criterion is to evaluate the candidate sites with respect to potential construction related impacts on important species and terrestrial ecology. Regulatory Guide 4.7 defines important plant and animal species if one or more of the following conditions apply.

1. The species is commercially or recreationally valuable,
2. The species is officially listed as endangered or threatened,
3. The species affects the well-being of another species within (1) or (2) above.

4. The species is a critical component of the structure and function of a valuable ecosystem, or
5. The species is a biological indicator of radionuclides in the environment.

Of particular concern are potential impacts to habitat areas used by important species. These areas include those used for:

- breeding and nursery,
- nesting and spawning,
- wintering, and
- feeding.

Evaluation approach – The following siting criteria were used to evaluate the eight candidate sites.

- Exclusionary – Designated critical habitat of endangered species
- Avoidance – Areas where threatened and endangered species are known to occur
- Suitability – Areas where limited potential impact is expected

No information was obtained which would indicate that any of the sites under consideration would exceed the exclusionary or avoidance criteria relative to ecology. Therefore, the evaluation focused on the relative suitability of the site based on the number of areas where limited potential impact is expected. The number of potential impact areas was directly correlated to the number of rare, threatened, and endangered terrestrial species that may occur in the host county, their habitat (based on existing reports and professional judgment of the amount and quality of habitat available for species), and flexibility (professional judgment of the amount of space within the site circle to avoid known locations of protected species during construction of the facility). Note that the evaluation was limited to the plant site and not existing or potential (future) transmission corridors.

Another sub-criteria evaluated was the total acreage of wetland within the 6,000 acres, not including the lake or reservoir that would be the primary source of cooling water. This was also broken out into three components: total wetlands (acres), total acreage of higher-quality wetlands, and flexibility, or the ability to avoid wetlands during construction.

The relative suitability of the candidate sites with respect to ecology (rare, threatened, and endangered aquatic and terrestrial species; and critical habitat) and wetlands was evaluated in the screening criteria report (Criterion P5, aquatic and terrestrial species combined; P6). Additional site ecological information specific to terrestrial resources at each site is included in the full discussion below.

Discussion/Results

DeSoto

Twelve Federally listed terrestrial species: 2 mammals, 8 birds (one experimental and second historic data unknown), and 2 reptiles, and critical habitat have the potential to occur in DeSoto

County (see table below). One of the birds is an experimental population (whooping crane) and the historic data for the ivory-billed woodpecker is unknown.

Scientific Name	Common Name	Federal Status
Puma (=Felis) concolor	Puma (=Mountain lion)	Threatened (S/A)
Puma (=Felis) concolor coryi	Florida panther	Endangered
Haliaeetus leucocephalus	Bald Eagle	Threatened
Rostrhamus sociabilis plumbeus	Everglade Snail Kite	Endangered/CH
Aphelocoma coeruluscens	Florida Scrub-jay	Threatened
Mycteria Americana	Wood Stork	Endangered
Ammodramus savannarum floridanus	Florida grasshopper sparrow	Endangered
Polyborus plancus audubonii	Audubon's crested caracara	Threatened
Campephilus principalis	Ivory-billed woodpecker	E (historic data unknown)
Grus Americana	Whooping crane	Experimental population
Dymarchon corais couperi	Eastern Indigo Snake	Threatened
Alligator mississippiensis	American alligator	Threatened (S/A)

Glades

Fifteen Federally listed terrestrial species: 2 mammals, 9 birds, 2 reptiles, 2 plants, and critical habitat have the potential to occur in Glades County (see Table below). One of the birds is an experimental population (whooping crane) and the ivory-billed woodpecker was last documented in 1904.

Scientific Name	Common Name	Federal Status
Puma (=Felis) concolor	Puma (=Mountain lion)	Threatened (S/A)
Puma (=Felis) concolor coryi	Florida panther	Endangered
Haliaeetus leucocephalus	Bald Eagle	Threatened
Rostrhamus sociabilis plumbeus	Everglade Snail Kite	Endangered/CH
Aphelocoma coeruluscens	Florida Scrub-jay	Threatened
Mycteria Americana	Wood Stork	Endangered
Ammodramus savannarum floridanus	Florida grasshopper sparrow	Endangered
Polyborus plancus audubonii	Audubon's crested caracara	Threatened
Picoides borealis	Red-cockaded Woodpecker	Endangered
Campephilus principalis	Ivory-billed woodpecker	E (last documented in 1904)
Grus Americana	Whooping crane	Experimental population
Dymarchon corais couperi	Eastern Indigo Snake	Threatened
Alligator mississippiensis	American alligator	Threatened (S/A)
Warea carteri	Carter's mustard	Endangered
Cucurbita okeechobeensis ssp. *Okeechobeensis*	Okeechobee gourd	Endangered

Hardee

Twelve Federally listed terrestrial species: 2 mammals, 6 birds, 2 reptiles and 2 plants have the potential to occur in Hardee County (see Table below). One of the birds is an experimental population (whooping crane) and the historic data for the ivory-billed woodpecker is unknown.

Scientific Name	Common Name	Federal Status
Puma (=Felis) concolor	Puma (=Mountain lion)	Threatened (S/A)
Puma (=Felis) concolor coryi	Florida panther	Endangered
Haliaeetus leucocephalus	Bald Eagle	Threatened
Aphelocoma coeruluscens	Florida Scrub-jay	Threatened
Mycteria Americana	Wood Stork	Endangered
Polyborus plancus audubonii	Audubon's crested caracara	Threatened
Campephilus principalis	Ivory-billed woodpecker	E (historic data unknown)
Grus Americana	Whooping crane	Experimental population
Dymarchon corais couperi	Eastern Indigo Snake	Threatened
Alligator mississippiensis	American alligator	Threatened (S/A)
Bonamia grandiflora	Florida bonamia	Threatened
Chrysopsis floridana	Florida golden aster	Endangered

Hendry 1

Thirteen Federally listed terrestrial species: 2 mammals, 9 birds, 2 reptiles and critical habitat have the potential to occur in Hendry County (see Table below). One of the birds is an experimental population (whooping crane) and the ivory-billed woodpecker was last documented in 1904.

Scientific Name	Common Name	Federal Status
Puma (=Felis) concolor	Puma (=Mountain lion)	Threatened (S/A)
Puma (=Felis) concolor coryi	Florida panther	Endangered
Haliaeetus leucocephalus	Bald Eagle	Threatened
Rostrhamus sociabilis plumbeus	Everglade Snail Kite	Endangered/CH
Aphelocoma coeruluscens	Florida Scrub-jay	Threatened
Mycteria Americana	Wood Stork	Endangered
Ammodramus savannarum floridanus	Florida grasshopper sparrow	Endangered
Polyborus plancus audubonii	Audubon's crested caracara	Threatened
Picoides borealis	Red-cockaded Woodpecker	Endangered
Campephilus principalis	Ivory-billed woodpecker	E (last documented in 1904?)
Grus Americana	Whooping crane	Experimental population

Scientific Name	Common Name	Federal Status
Dymarchon corais couperi	Eastern Indigo Snake	Threatened
Alligator mississippiensis	American alligator	Threatened (S/A)

Martin

Twenty-one Federally listed terrestrial species: 3 mammals, 10 birds, 3 reptiles, 5 plants, and critical habitat have the potential to occur in Martin County (see Table below). Documentation for several of the species is very dated (1970s or earlier) or historic data are unknown (piping plover critical habitat), one is an experimental population (whooping crane), one is a migrant (Kirkland's warbler, 1978), and one plant species is only found at the Hobe NWR.

Scientific Name	Common Name	Federal Status
Puma (=Felis) concolor	Puma (=Mountain lion)	Threatened (S/A)
Puma (=Felis) concolor coryi	Florida panther	Endangered
Peromyscus polionotus neveiventrus	Southeastern beach mouse	T (inferred)
Haliaeetus leucocephalus	Bald Eagle	Threatened
Rostrhamus sociabilis plumbeus	Everglade Snail Kite	Endangered/CH
Aphelocoma coeruluscens	Florida Scrub-jay	Threatened
Mycteria Americana	Wood Stork	Endangered
Polyborus plancus audubonii	Audubon's crested caracara	Threatened
Picoides borealis	Red-cockaded Woodpecker	Endangered, last documented 1970-1978
Dendroica kirtlandii	Kirkland's warbler	E Migrant 1978
Charadrius melodus	Piping plover	T, CH, historic date unknown
Campephilus principalis	Ivory-billed woodpecker	E (last documented in 1985?)
Grus Americana	Whooping crane	Experimental population, inferred
Dymarchon corais couperi	Eastern Indigo Snake	Threatened
Alligator mississippiensis	American alligator	Threatened (S/A)
Crocodylus acutus	American crocodile	E, historic data unknown
Jacquemontia reclinata	Beach jacquemontia	E, last documented in 1921
Asimina tetramera	Four-petal pawpaw	E
Cladonia perforate	Florida perforate cladonia	E
Dicerandra immaculata	Lakela's mint	E, Hobe Sound NWR only
Polygala smallii	Tiny polygala	Endangered

Okeechobee 2

Thirteen Federally listed terrestrial species: 2 mammals, 9 birds, 2 reptiles and critical habitat have the potential to occur in Okeechobee County (see Table below). One bird species is part of experimental population and documentation for two other bird species is very dated (prior to 1970 and in 1924).

Scientific Name	Common Name	Federal Status
Puma (=Felis) concolor	Puma (=Mountain lion)	Threatened (S/A)
Puma (=Felis) concolor coryi	Florida panther	Endangered
Haliaeetus leucocephalus	Bald Eagle	Threatened
Ammodramus savannarum floridanus	Florida grasshopper sparrow	Endangered
Rostrhamus sociabilis plumbeus	Everglade Snail Kite	Endangered/CH
Aphelocoma coeruluscens	Florida Scrub-jay	Threatened
Mycteria Americana	Wood Stork	Endangered
Polyborus plancus audubonii	Audubon's crested caracara	Threatened
Picoides borealis	Red-cockaded Woodpecker	Endangered, last documented prior to 1970
Campephilus principalis	Ivory-billed woodpecker	E (last documented in 1924)
Grus Americana	Whooping crane	Experimental population, inferred
Dymarchon corais couperi	Eastern Indigo Snake	Threatened
Alligator mississippiensis	American alligator	Threatened (S/A)

St. Lucie

Nineteen Federally listed terrestrial species: 3 mammals, 9 birds, 3 reptiles, 3 plants, and critical habitat have the potential to occur in St. Lucie County (see Table below). Documentation for several of the bird species is very dated (1970s or earlier) or historic data are unknown; one is an experimental population (whooping crane), and two are migrant (also dated documentation).

Scientific Name	Common Name	Federal Status
Puma (=Felis) concolor	Puma (=Mountain lion)	Threatened (S/A)
Puma (=Felis) concolor coryi	Florida panther	Endangered
Peromyscus polionotus neveiventrus	Southeastern beach mouse	T (inferred)
Haliaeetus leucocephalus	Bald Eagle	Threatened
Rostrhamus sociabilis plumbeus	Everglade Snail Kite	Endangered/CH
Aphelocoma coeruluscens	Florida Scrub-jay	Threatened
Mycteria Americana	Wood Stork	Endangered
Polyborus plancus audubonii	Audubon's crested caracara	Threatened

Scientific Name	Common Name	Federal Status
Picoides borealis	Red-cockaded Woodpecker	Endangered, last documented 1970-1978
Dendroica kirtlandii	Kirkland's warbler	E Migrant 1978
Charadrius melodus	Piping plover	T, CH, migrant 1918
Campephilus principalis	Ivory-billed woodpecker	E (historic date unknown)
Grus Americana	Whooping crane	Experimental population, inferred
Dymarchon corais couperi	Eastern Indigo Snake	Threatened
Alligator mississippiensis	American alligator	Threatened (S/A)
Crocodylus acutus	American crocodile	E, historic data unknown
Cereus eriophorus var. *fragrans*	Fragrant prickly-apple	Endangered
Dicerandra immaculate	Lakela's mint	Endangered
Polygala smallii	Tiny polygala	Endangered

Turkey Point

Twenty-five Federally listed terrestrial species, including 2 mammal, 12 birds, 3 reptiles, 8 plants (plus 10 candidate plant species), and critical habitat have the potential to occur in Miami Dade County (see Table below). The bird species include two migrant species and several with dated documentation or with unknown historic data.

Scientific Name	Common Name	Federal Status
Puma (=Felis) concolor	Puma (=Mountain lion)	Threatened (S/A)
Puma (=Felis) concolor coryi	Florida panther	Endangered
Haliaeetus leucocephalus	Bald Eagle	Threatened
Rostrhamus sociabilis plumbeus	Everglade Snail Kite	Endangered/CH
Aphelocoma coeruluscens	Florida Scrub-jay	Threatened, last documented 1960s
Mycteria Americana	Wood Stork	Endangered
Polyborus plancus audubonii	Audubon's crested caracara	Threatened, last documented 1987-1991
Picoides borealis	Red-cockaded Woodpecker	Endangered, last documented prior to 1960
Ammodramus savannarum floridanus	Florida grasshopper sparrow	Endangered, last documented 1968
Dendroica kirtlandii	Kirkland's warbler	E Migrant 1958
Charadrius melodus	Piping plover	T, CH, historic date unknown
Campephilus principalis	Ivory-billed woodpecker	E (last documented in 1889)
Vermivora bachmanii	Bachman's warbler	E, migrant 1901?

Scientific Name	Common Name	Federal Status
Ammodramus maritimusmirabilis	Cape sable seaside sparrow	E.CH
Dymarchon corais couperi	Eastern Indigo Snake	Threatened
Alligator mississippiensis	American alligator	Threatened (S/A)
Crocodylus acutus	American crocodile	E, historic data unknown
Jacquemontia reclinata	Beach jacquemontia	E
Warea carteri	Carter's mustard	E
Amorpha crenulata	Crenulate lead-plant	E
Chaemaesyce deltoidea deltoidea	Deltoid spurge	E
Chamaesyce garberi	Gaber's spurge	T
Cucurbita okeechobeensis ssp. *Okeechobeensis*	Okeechobee gourd	E
Galactia smallii	Small's milkpea	E
Polygala smallii	Tiny polygala	E
Chamaecrista lineate keyensis	Big Pine partridge pea	C
Argythamnia blodgetetii	Blodgett's silverbush	C
Linum carteri carteri	Carter's small-flowered flax	C
Brickellia mosieri	Florida brickell-bush	C
Indigofera mucronata keyensis	Florida indigo	C
Digitaria pauciflora	Florida pineland crabgrass	C
Dalea carthagenensis floridana	Florida prairie clover	C
Consolea corallicola	Florida semaphore cactus	C
Chamaesyce deltoidea pinetorum	Pineland sandmat	C
Linum arenicola	Sand flax	C

Site ratings based on Important Terrestrial Species/Habitat

Site	DeSoto	Glades	Hardee	Hendry 1	Martin	Okee 2	St. Lucie	Turkey Point
T&E Species	3	3	3	3	2	3	2	1
Habitat	4	4	5	4	4	4	3	2
Flexibility	4	4	4	4	3	4	2	2
Overall Rating	**4**	**4**	**4**	4	**3**	**4**	**2**	**2**

Ratings for T&E species based on total number of species found in the host county. Habitat and flexibility ratings are based on professional judgment and other factors as discussed in Section C.2.1.1. Presence of critical habitat and number of protected species is also a consideration in habitat ratings.

Wetlands

The flexibility associated with the final location of the plant area and the presence of higher quality wetlands such as forested wetlands were considered in addition to the overall acreage of mapped wetlands indicated by NWI.

Site	DeSoto	Glades	Hardee	Hendry 1	Martin	Okee 2	St. Lucie	Turkey Point
% of wetland polygons mapped over 5,000 acre area	632 13%	489 10%	622 12%	843 17%	210 4%	961 19%	1074 21%	1476 30%
Number of acres of high quality wetlands* within site area	0	0	552	300	0	143	0	27

* = Number of acres forested/scrub-shrub wetland polygons mapped.

Taking into account the above wetlands identified, the sites were given the following composite ratings:

Site ratings based on Wetlands

Site	DeSoto	Glades	Hardee	Hendry 1	Martin	Okee 2	St. Lucie	Turkey Point
Total Acres[1]	3	4	3	3	4	3	3	3
Acres of High Quality Wetlands[2]	5	5	2	2	5	4	5	5
Flexibility (based on all % wetland polygons mapped over 5,000 acres)[3]	4	5	4	4	4[4]	4	3[4]	2[4]
Overall Rating	**4**	**5**	**3**	**3**	**4**	**4**	**4**	**3**

[1] scale reflects characteristics of nominal 5,000 acre circular area with ultimate site requirement of 2,000 acre proposed site area → 5=<100 acres, 4=<500 acres, 3=<1,500 acres, 2=<3,000 acres, 1=>3,000 acres

[2] 5= <50 acres, 4= <250, 3=<500, 2=<1,000, 1= >1,000 (forested/scrub-shrub)

[3] 5=<10%, 4=<25% 3=<50%, 2=<90%, 1=>90%

[4] Martin, St. Lucie, and Turkey Point sites were reduced by 1 rating point due to constraints associated with on-site ponds and/or deep water marine areas.

Composite Site Ratings

Site	DeSoto	Glades	Hardee	Hendry 1	Martin	Okee 2	St. Lucie	Turkey Point
Species	4	4	4	4	3	4	2	2
Wetlands	4	5	3	3	4	4	4	3
Avg. Score	4	4.5	3.5	3.5	3.5	4	3	2.5

References

NWI website: http://wetlandsfws.er.usgs.gov/.

US Fish and Wildlife Service, Vero Beach/South Florida [http://www.fws.gov/verobeach/Programs/Permits/Section7.html] – for DeSoto, Glades, Hardee, Hendry, Martin, Miami-Dade, Okeechobee, and St. Lucie Counties. Updated September 2006].

C.2.2.2 Dewatering Effects on Adjacent Wetlands

C.2.2.2.1 Depth to Water Table

C.2.2.2.2 Proximal Wetlands

Objective – The objective of this criterion is to evaluate the sites with respect to potential impacts from construction-related dewatering activities on area wetlands.

Evaluation approach – The evaluation included a review of information related to the depth of the water table and the distance to nearby wetlands. A determination of the extent of wetland acreage within the study area was limited. National Wetland Inventory maps were used for some sites as the basis for determining wetland acreage. Those maps can include numerous areas that do not represent jurisdictional wetlands under Section 404 of the Clean Water Act, which contributed to the difficulty in making an estimate of wetland acreage. Moreover, those maps were based primarily on interpretation of aerial photography, and the amount of field validation that was performed varies according to region of the country and local terrain. Overall site elevation is being used as an indicator of depth to groundwater.

Discussion/Results – Wetlands have been evaluated previously (Section C.2.2.1 of this appendix); depth to groundwater for each site is being evaluated by proxy using site elevation as an indicator. Potential hydraulic connections among wetlands via groundwater are not known.

In light of the previous ratings and groundwater information, the site ratings are as follows:

Site	DeSoto	Glades	Hardee	Hendry 1	Martin	Okee 2	St. Lucie	Turkey Point
Total Wetland Acreage[1]	3	4	3	3	4	3	3	3
Acreage of HQ Wetlands[2]	5	5	2	2	5	4	5	5
Depth to Groundwater[3]	4	1	4	1	2	2	1	1
Overall Rating	**4**	**3**	**3**	**2**	**4**	**3**	**3**	**3**

[1] scale reflects characteristics of nominal 5,000 acre circular area with ultimate site requirement of 2,000 acre proposed site area → 5=<100 acres, 4=<500 acres, 3=<1,500 acres, 2=<3,000 acres, 1=>3,000 acres

[2] 5= <50 acres, 4= <250, 3=<500, 2=<1,000, 1= >1,000 (forested/scrub-shrub)

[3] (avg. site elev. as surrogate) 5=80'+, 4=60'+, 3=40'+, 2=20'+, 1= <20'

C.2.3 OPERATIONAL-RELATED EFFECTS ON AQUATIC ECOLOGY

C.2.3.1 Thermal Discharge Effects

C.2.3.1.1 Migratory Species Effects
C.2.3.1.2 Disruption of Important Species/Habitats
C.2.3.1.3 Water Quality

Objective – No exclusionary or avoidance criteria apply to condenser cooling water system thermal discharges on receiving water bodies (EPRI 2001, Section 3.2.3.1). The objective of this criterion is to address the relative suitability of the eight candidate sites with respect to potential thermal impacts. Two specific thermal impact issues were considered:

- disruption of important species and habitats, and
- impact on water quality of the receiving water body.

Information on migratory species (also identified in EPRI criteria) was not collected at each site and therefore is not evaluated as part of this criterion.

Evaluation approach – In December 2001, the EPA published a final regulation, which affects the location, design, construction, and capacity of intake structures for new power plants (EPA 2001). The EPA rule will strongly encourage the use of closed-cycle designs to reduce adverse cooling water system impacts, and it is assumed that new nuclear reactors at the eight candidate sites would include closed-cycle cooling water systems.

Discussion/Results – No additional site-specific data are available for the sites except for the existing plants at St. Lucie and Turkey Point. Ratings are therefore based on limited flow and water-quality data for the cooling water sources and on site ratings for disruption of aquatic species/habitat. In addition, ratings were based on the use of the source water body as the receiving water for this evaluation.

In summary, the set of ratings consisted of a composite of three sub-ratings: the disruption of important species (based on number of Federally protected aquatic species), as brought forward from Section C.2.1.1 of this appendix; existing water quality of the receiving water, based primarily on cooling water supply information, as it relates to flow and volume, where the size of the receiving water body (heat sink) was the primary factor in assigning ratings (highest rating given to the largest heat sink); and the proximity to potential sensitive areas from either an environmental or water supply basis. The presence of an existing nuclear plant in the immediate site area (St. Lucie and Turkey Point) also was taken into account, although these locations are not expected to be a problem for locating a second plant. The resulting ratings are provided below.

Thermal Discharge Effects	DeSoto	Glades	Hardee	Hendry 1	Martin	Okee 2	St. Lucie	Turkey Point
Flow[1]	1	3	1	2	3	3	5	5
Presence of important aquatic species[2]	4	4	5	4	4	4	3	3
OFW-303(d) – WCA[3]	2	2	2	2	3	3	3	3
Overall rating	**2**	**3**	**3**	**3**	**3**	**3**	**4**	**4**

[1] For the flow sub-rating only
[2] zero = 5, <2 = 4, <10 = 3, <20 = 2, 20+ = 1 (fish + reptile from screening)
[3] NA = 4, one designation = 3, one designation + proximity to another =2

C.2.3.2 Entrainment/Impingement Effects

C.2.3.2.1 Entrainable Organisms
C.2.3.2.2 Impingable Organisms

Objective – No exclusionary or avoidance criteria apply to entrainment and impingement impacts from the operation of condenser cooling water systems (EPRI 2001, Section 3.2.3.1). The objective of this criterion is to address the relative suitability of the candidate sites with respect to potential entrainment and impingement impacts.

When cooling water is pumped from water bodies, several environmental impacts can occur. Entrainment refers to the removal of small, drifting organisms with the cooling water. Small fish, fish eggs, phytoplankton, zooplankton, and other aquatic/marine organisms experience high mortality rates as they pass through cooling water pumps and heat exchangers. Impingement refers to larger organisms that are screened out of the cooling water at the intake structure. Impinged organisms can include large fish, crustaceans, turtles, and other aquatic/marine organisms that can not avoid high intake velocities near the intake structure and are trapped on the intake screens.

Evaluation approach – Concerns about entrainment and impingement losses are resource dependent and vary on a site-to-site basis. Typically, power plants with once-through cooling water systems have higher entrainment and impingement impacts than power plants with closed-cycle cooling water systems. The EPA issued a final rule in December 2001 affecting the design of intake structures for new power plants (EPA 2001). These rules encourage the use of closed-cycle systems, which is the type of system assumed to be used by FPL at these sites. Developers of new power plants who choose certainty and faster permitting over greater design flexibility will be encouraged to limit intake water capacities and velocities and incorporate specific intake screen designs to reduce entrainment and impingement losses.

Discussion/Results – The eight candidate sites were evaluated with respect to relative potential for entrainment and impingement impacts for the closed-cycle cooling water system. Proposed facilities at each site will include cooling towers that will reduce the amount of cooling water withdrawal required for plant operation. In addition, proper design of the water intake structure would minimize the potential adverse impacts. In NUREG 1437, NRC concludes that, with cooling towers and appropriate intake design, potential adverse impacts due to entrainment or impingement of aquatic organism are minor and do not significantly disrupt existing populations. Assuming a two-unit closed-cycle plant at the site, and 100 percent of the local plankton passing through the plant, it appears that there would be no discernible effect on the plankton population in existing rivers and reservoirs at each site. This is due to the very small volume of water used by the plant relative to the total volume in the river or reservoir at the site. Because of the low flow velocities of a closed cycle plant at the site, impingement of adult fish would be expected to be minimal. Use of a deep water intake would have a minimal effect on entrainment of larval fish.

Another component of this criterion was the presence of important aquatic species.

Given the above information, all sites received consistent ratings in terms of intake design (conservative rating of 3), with slightly higher preference given to those sites with fewer protected aquatic species present.

Entrainment/ Impingement Potential Impact (Closed cycle cooling system design)	DeSoto	Glades	Hardee	Hendry F.	Martin	Okee-2	St. Lucie	Turkey Point
Presence of important aquatic species	5	5	5	5	4	5	3	3
Regulatory/engineering design (conservative)	3	3	3	3	3	3	3	3
Rating	4	4	4	4	3	4	3	3

C.2.3.3 Dredging/Disposal Effects

C.2.3.3.1 Upstream Contamination Sources
C.2.3.3.2 Sedimentation Rates

Objective – The purpose of the section is to evaluate the sites for potential environmental impacts related to maintenance dredging at the intake structure. No specific exclusionary or avoidance criteria apply to this issue. The following evaluation, therefore, is a summary of available information related to the relative suitability of the sites.

Evaluation approach – Sites with high levels of contaminated sediment deposition at the intake structure will experience higher maintenance costs for the removal and disposal of the dredged material. Two factors were considered in performing the evaluation:

- The level of upstream contamination, and
- The rate of sedimentation at the site.

All sites are assumed to have relatively low fine-sediment-deposition rates (which are preferred), so the ratings were based on potential for contamination.

As addressed in Section C.2.1.2 (Contaminated Sediments), no site-specific information about the level of sediment contamination at the sites was identified. Results in Section C.2.1.2 were based on EPA data, which addressed general trends in levels of contamination in the water bodies at the candidate sites, and general water-quality information for the major water bodies on which the candidate sites are located. The evaluation was further expanded to consider existing background radioactive contamination at the sites. The greenfield sites were considered to be optimum because there is no known source of existing background radioactive contamination present. Turkey Point was also rated high under the assumption that the effluent is contained in the canals which presumably would not be disturbed as part of development of the new plant (hence there would not be contaminated sediments to disturb). St. Lucie also received a favorable, but slightly lower rating, because its effluent is discharged directly into the environment and there are other water-quality issues given the high levels of development along the coast in the site vicinity.

Discussion/Results – Based on available information, the sites were rated according to the expected levels of contamination. The results are summarized in the table below.

Dredging/Disposal Effects	DeSoto	Glades	Hardee	Hendry 1	Martin	Okee 2	St. Lucie	Turkey Point
Rating	5	5	5	5	5	5	4	5

C.2.4 OPERATIONAL-RELATED EFFECTS ON TERRESTRIAL ECOLOGY

C.2.4.1 Drift Effects on Surrounding Areas

C.2.4.1.1 Important Species/Habitat Areas
C.2.4.1.2 Source Water Suitability

Objective – The objective of this criterion is to evaluate the relative suitability of the candidate sites with respect to potential concerns with cooling tower drift effects. This evaluation considered the potential effects on surrounding areas and the suitability of the cooling water source (EPRI 2001). This issue does not apply to sites for which once-through cooling water systems are selected.

Cooling Tower Drift

In every cooling tower, there is a loss of water to the environment in the form of pure water, which results from the evaporative cooling process. This evaporated water leaves the tower in a pure vapor state, and thus presents no threat to the environment. Drift, however, is the undesirable loss of liquid water to the environment, via small unevaporated droplets that become entrained in the exhaust air stream of a cooling tower. These water droplets carry with them minerals, debris and microorganisms and water treatment chemicals from the circulating water, thus potentially impacting the environment. High drift losses are typically caused by fouled, inefficient or damaged drift eliminators, excessive exit velocities or imbalances in water chemistry.

Minimizing drift losses in a cooling tower reduces the risk of impacting the environment. The principle environmental concern with cooling tower drift impacts are related to the emission and downwind deposition of cooling water salts (EPA 1987). Salt deposition can adversely affect sensitive plant and animal communities through changes in water and soil chemistry.

Evaluation approach – Sites considered with the most sensitive environments were assigned lower rating values. Sites with highest concentrations of dissolved solids and other potential contaminants in cooling tower makeup were also assigned lower rating values.

Discussion/Results – Information regarding important terrestrial and aquatic plant and animal communities, habitats, and wetlands in the vicinity of the candidate sites were previously addressed in Section C.2.1.1 (Disruption of Important Species/Habitats) and Section C.2.2.1 (Disruption of Important Species/Habitats and Wetlands). Cooling water makeup water quality is also taken into account. The coastal sites were given lower ratings due to their proximity to the ocean and greater likelihood of their cooling water being brackish and containing more salt.

Given all the above information, the following ratings were assigned:

Drift Effects on Surrounding Area	DeSoto	Glades	Hardee	Hendry 1	Martin	Okee 2	St. Lucie	Turkey Point
Important Species Habitat Areas – aquatic	4	4	5	4	4	4	3	3
Important Species Habitat Areas – terrestrial	3	3	3	3	2	3	2	1
Source water[1]	3	4	3	4	5	5	1	3
Rating	**3**	**4**	**4**	**4**	**4**	**4**	**2**	**2**

[1] Fresh = 5, Primarily fresh + possible brackish = 4, Primarily brackish+ possible fresh = 3, Brackish = 2, Ocean = 1

C.3 SOCIOECONOMICS CRITERIA

C.3.1 SOCIOECONOMICS - CONSTRUCTION RELATED EFFECTS

Objective – The objective of this criterion is to evaluate the relative suitability of the site with respect to the number of construction workers who will move into the plant site vicinity with their families; and the capacity of the communities surrounding the plant site to absorb this new temporary (in-migrant) population.

Evaluation approach – The number of in-migrant workers is dependent on labor availability within commuting distance of the plant site. If an adequate supply of workers is available within reasonable commuting distance, few (if any) workers will choose to relocate to the site vicinity. The capacity of communities to absorb an increase in population depends on the availability of sufficient resources, such as adequate housing and community services to support the influx.

Steps 1 and 2 (Exclusionary and Avoidance criteria) are not applicable to this criterion. The plant construction workforce is likely to be available at any of the sites under consideration. The issue in siting, therefore, is the potential socioeconomic impact associated with any temporary influx of construction workers who live too far away to commute daily from their residence. With respect to suitability of the sites under consideration by FPL, socioeconomic impacts of nuclear power plant construction are directly related to two factors:

- number of construction workers who will move into the plant site vicinity with their families; and
- capacity of the communities surrounding the plant site to absorb this new temporary (in-migrant) population.

The number of in-migrant workers is dependent on labor availability within commuting distance of the plant site. If an adequate supply of workers is available within reasonable commuting distance, few (if any) workers would choose to relocate to the site vicinity. The capacity of communities to absorb an increase in population depends on the availability of sufficient resources, such as adequate housing and community services (e.g., schools, hospitals, police, transportation systems, and fire protection) to support the influx without straining existing services. Impacts to a small community located along the commuter route(s) (e.g., food, lodging, gas, and congestion) can also be significant and should be considered. The information that should be considered in rating sites from the perspective of construction impacts includes labor requirements, location of labor pool, number of immigrants, and the economic structure of affected communities.

Before the data could be compared between sites and the sites rated, certain assumptions were made regarding the construction labor requirements and construction schedule, labor pool, and affected area. Many of these assumptions were made without the benefit of site-specific information and may warrant future revision when site-specific data become available (i.e., full NEPA documentation for original plant construction and operation can be reviewed, and/or site-specific plant personnel can be interviewed regarding actual impacts from original plant construction). For purposes of this report, assumptions are based on professional judgment, the AP1000 Siting Guide, and information contained in the U.S. Nuclear Regulatory Commission's

Generic Environmental Impact Statement for License Renewal for Nuclear Plants (NUREG 1437) (May 1996).

Assumptions

According to the AP1000 Siting Guide, the plant workforce (construction) includes a monthly maximum construction workforce requirement of 1,000 persons per unit. Construction of a nuclear power plant is very labor-intensive, and for the AP1000 skilled and unskilled construction workers would likely be needed over a 4- to 5-year period. The following assumptions were used in this analysis.

- Ratings are based on the assumption that two units would be constructed at a given site.
- Construction would require a peak construction work force of 2,000 workers (1,000 per unit); this estimate is not necessarily the "worst-case," but assumed to be a realistic estimate for purposes of site comparison.
- Analysis assumes that no other major construction project would occur in the site vicinity concurrently with the plant construction and operation. Thus, sites were rated without consideration of potential cumulative impacts of other potential demands for labor.

Available population and economic data were obtained from the US Census Bureau for each site. The data were collected by county to determine availability of an adequate labor force within commuting distance (based on an assumed location of the labor pool). Data relating to population and labor force (primarily construction industry) were compared with the construction labor requirement to determine availability of labor.

The study of economic structure examines employment because of its pre-eminent role in determining economic well-being of an area. Specifically, impacts are determined by comparing the number of direct and indirect jobs created by plant's construction with total employment of the local study area at the time of construction. Sites were rated according to economic impacts based on the following criteria: economic effects were considered small if peak construction related employment accounted for less than 5 percent of total study area employment; moderate if it accounted for 5 to 10 percent of total study area employment; and large if it accounted for more than 10 percent of total study area employment.

Note that the study area for evaluating socioeconomic impacts from construction included the host county, adjacent counties and any other nearby counties with a major population center within a reasonable commuting distance from the site.

Discussion – The available population and work force data are presented in the following tables. Projected growth rates from 2000-2010 is assumed to be the same as growth rates found between 1990 and 2000, based on U.S. Census data.

DeSoto Site Population and Work Force

County	Total Pop (2000)	Total Pop (2010)*	Total Employed Workforce (2000)	Total Construction Workforce (2000)
DeSoto	32,209	43,482 (35%)	12,742	976
Sarasota	325,957	382,348 (17.3%)	133,419	12,246
Manatee	264,002	329,210 (24.7%)	111,793	13,098
Charlotte	141,627	180,716 (27.6%)	50,690	5,374
Glades	10,576	14,732 (39.3%)	3,677	368
Hardee	26,938	37,228 (38.2%)	9,901	794
Highlands	87,366	111,566 (27.7%)	30,051	2,139
Total		**1,099,282**	**352,273**	**34,995**

* Based on growth rate for 1990-2000 (%)
Source: U.S. Census Bureau, http://quickfacts.census.gov/qfd/ for Florida

Glades Site Population and Work Force

County	Total Pop (2000)	Total Pop (2010)*	Total Employed Workforce (2000)	Total Construction Workforce (2000)
Glades	10,576	14,732 (39.3%)	3,677	368
Lee	440,888	580,208 (31.6%)	186,417	23,087
Highlands	87,366	111,566 (27.7%)	30,051	2,139
Hendry	36,210	50,875 (40.5%)	14,579	1,164
Total		**757.381**	**231,253**	**26,758**

* Based on growth rate for 1990-2000 (%)
Source: U.S. Census Bureau, http://quickfacts.census.gov/qfd/ for Florida

Hardee Site Population and Work Force

County	Total Pop (2000)	Total Pop (2010)*	Total Employed Workforce (2000)	Total Construction Workforce (2000)
Hardee	26,938	37,228 (38.2%)	9,901	794
Polk	483,924	577,321 (19.4%)	206,460	17,335
Manatee	264,002	329,210 (24.7%)	111,793	13,098
Sarasota	325,957	382,348 (17.3%)	133,419	12,246
DeSoto	32,209	43,482 (35%)	12,742	976
Highlands	87,366	111,566 (27.7%)	30,051	2,139
Total		**1,481,155**	**504,366**	**46,588**

* Based on growth rate for 1990-2000 (%)
Source: U.S. Census Bureau, http://quickfacts.census.gov/qfd/ for Florida

Hendry 1 Site Population and Work Force

County	Total Pop (2000)	Total Pop (2010)*	Total Employed Workforce (2000)	Total Construction Workforce (2000)
Hendry	36,210	50,875 (40.5%)	14,579	1,164
Glades	10,576	14,732 (39.3%)	3,677	368
Palm Beach	1,131,184	1,481,851 (31%)	484,760	40,152
Total		**1,547,458**	**503,016**	**41,684**

* Based on growth rate for 1990-2000 (%)
Source: U.S. Census Bureau, http://quickfacts.census.gov/qfd/ for Florida

Martin Site Population and Work Force

County	Total Pop (2000)	Total Pop (2010)*	Total Employed Workforce (2000)	Total Construction Workforce (2000)
Martin	126,731	159,174 (25.6%)	51,054	5,357
St. Lucie	192,695	247,228 (28.3%)	77,842	8,476
Palm Beach	1,131,184	1,481,851 (31%)	484,760	40,152
Okeechobee	35,910	43,523 (21.2%)	14,169	1,352
Total		**1,931,776**	**627,465**	**55,337**

* Based on growth rate for 1990-2000 (%)
Source: U.S. Census Bureau, http://quickfacts.census.gov/qfd/ for Florida

Okeechobee 2 Site Population and Work Force

County	Total Pop (2000)	Total Pop (2010)*	Total Employed Workforce (2000)	Total Construction Workforce (2000)
Okeechobee	35,910	43,523 (21.2%)	14,169	1,352
St. Lucie	192,695	247,228 (28.3%)	77,842	8,476
Highlands	87,366	111,566 (27.7%)	30,051	2,139
Martin	126,731	159,174 (25.6%)	51,054	5,357
Glades	10,576	14,732 (39.3%)	3,677	368
Indian River	112,947	141,410 (25.2%)	45,494	3,878
Osceola	172,493	276,161 (60.1%)	79,859	7,030
Total		**993,794**	**302,146**	**28,600**

* Based on growth rate for 1990-2000 (%)
Source: U.S. Census Bureau, http://quickfacts.census.gov/qfd/ for Florida

St. Lucie Site Population and Work Force

County	Total Pop (2000)	Total Pop (2010)*	Total Employed Workforce (2000)	Total Construction Workforce (2000)
St. Lucie	192,695	247,228 (28.3%)	77,842	8,476
Indian River	112,947	141,410 (25.2%)	45,494	3,878
Martin	126,731	159,174 (25.6%)	51,054	5,357
Palm Beach	1,131,184	1,481,851 (31%)	484,760	40,152
Okeechobee	35,910	43,523 (21.2%)	14,169	1,352
Total		**2,073,186**	**673,319**	**59,215**

* Based on growth rate for 1990-2000 (%)
Source: U.S. Census Bureau, http://quickfacts.census.gov/qfd/ for Florida

Turkey Point Site Population and Work Force

County	Total Pop (2000)	Total Pop (2010)*	Total Employed Workforce (2000)	Total Construction Workforce (2000)
Miami-Dade	2,253,362	2,620,660 (16.3%)	921,208	63,135
Broward	1,623,081	2,098,644 (29.3%)	758,939	56,496
Total		**4,102,241**	**1,405,968**	**119,631**

* Based on growth rate for 1990-2000 (%)
Source: U.S. Census Bureau, http://quickfacts.census.gov/qfd/ for Florida

Results – Although the results show higher population and workforce numbers available at Martin, St. Lucie and Turkey Point, the overall population levels for all eight sites in 2010 when construction is anticipated to start, are sufficiently large that the impact on study area employment from construction of two new units would be low at each site. This is based on conservative workforce levels using 2000 Census Bureau data (without expected increases in 2010); although such increases might be used to support other large (non-nuclear) construction projects at that time). All sites show a percentage increase less than 5% when compared to total study area construction workforce, and a percentage increase less than 1% for total employed work force.

Because of the large population within the host county (Miami Dade) for Turkey Point, and the close proximity and easy access to the heavily populated Atlantic coastal development for the St. Lucie and Martin sites (in addition to these sites already including large power plant facilities), it was assumed that the majority of construction workers workforce would commute from within the area to these sites. There would be no in-migrant workforce population (and families), with no demands on housing or communities services. Therefore, these three sites were given a rating of 5.

Given the rural nature, the lower general population estimates – particularly in their respective host counties – and the lower (existing) construction workforce to draw from at the remaining five sites, an additional analysis was conducted for these five sites to consider the impacts of workers in-migrating to the areas. We have identified the following assumptions to help address potential impacts on local community services and housing:

- 50% of workers will in-migrate (1,000 workers)
- 50% of these workers bring their families (2.5 additional persons per family) (1,250 family members)
- Influx of direct workers also brings in influx of indirect workers (0.4 ratio of direct to indirect workers – in absence of site-specific information) pertaining to the Regional Industrial Multiplier System direct/indirect ratios calculated for each plant (as found in NUREG/CR-2749) (400 indirect workers)
- 50% of these indirect workers bring their families (2.5 additional persons per family) (500 family members)

Thus an influx of 1,000 workers is predicted to results in a total population influx of 3,150 persons.

When this population influx is compared to the total population projections in 2010 for the five areas (multiple county), the increase is less than 1%. Therefore, the impact on housing and community services would be expected to be negligible. However, when considering the population of the host county alone, Glades County has a significantly lower population compared to the other sites.

When the workforce influx is compared to the total workforce for the five sites, the increase ranges from 2% to 4%; when the workforce influx is compared to the total construction workforce for the five sites, the increase is less than 1% in every instance (see summary table below). In general, the remaining five sites are within reasonable commuting distance from at least one large city or metropolitan area, as summarized in the table below.

Site	Major population centers within commuting distance of site	Percent increase in total workforce	Percent increase in total construction workforce
DeSoto	Port Charlotte (within 25 miles)	0.3	2.8
Glades	Ft. Myers (40 miles)	0.4	3.7
Hardee	Port Charlotte (within 25 miles)	0.2	2.1
Hendry 1	Ft. Myers and West Palm (each at approximately 50 miles)	0.2	2.4
Okeechobee 2	Ft. Pierce and Port St. Lucie area (40 miles)	0.3	3.4

Each study area appears to have sufficient population centers within commuting distance and/or has experienced tremendous growth since 1990 such that its public services sector would be able to absorb the population in-migration associated with plant construction with minimal impact. However, Glades comes in slightly lower in comparison to the other five sites, two of which (Hendry 1 and Okeechobee 2) are within 50 miles of more than one large MSA.

Finally, this evaluation also incorporates more recent findings from a study conducted by Dominion Energy Inc., Bechtel Power Corporation, TLG, Inc., and MPR Associates for the US Department of Energy (2004) titled: *Study of Construction Technologies and Schedules, O&M Staffing and Cost, Decommissioning Costs and Funding Requirements for Advanced Reactor Designs*. This report includes a more accurate and up-to-date assessment of labor availability that takes into account a U.S. labor pool that is aging and diminishing in number and skill level (with retirement of the baby boom generation that constructed the first set of nuclear power plants). It recognizes that attracting craft with the high skill levels and regulatory employment criteria for new nuclear plant construction is expected to be difficult given that the group of craft currently doing nuclear work is significantly smaller than the total construction craft population, and is in higher demand because of the higher skill levels and greater capability to meet strict employment standards (e.g., scrutiny of NRC background check). However, in an effort to reduce or minimize the labor supply concerns associated with new nuclear plant construction projects, a new strategy has been identified that would shift portions of the work force to areas of the country where skills and craft are available in sufficient quantity (national workforce). This would most effectively be done through modularizing portions of the plants to be built, and providing aggressive training of craftsmen before and during the construction phase of the project. Modularization is anticipated to become an important aspect of new nuclear construction. Such a workforce would presumably be in-migrant for the duration of the construction period and have the potential to adversely affect housing and community services at those sites located in rural, low populated areas/host counties.

Based on the results above, this latest information and using best professional judgment, a comparison of socioeconomic conditions between the five remaining sites reveals similar

conditions at each of them with perhaps a slight disadvantage to the Glades site given its lower population and workforce numbers, particularly within the host county. Because of the general rural nature of all five sites and the slightly lower results for Glades, the following conservative ratings are assigned. Martin, St. Lucie, and Turkey Point sites rate the highest as noted previously.

Socioeconomic Construction	DeSoto	Glades	Hardee	Hendry 1	Martin	Okee 2	St. Lucie	Turkey Point
Rating	**3**	**2**	**3**	**3**	**5**	**3**	**5**	**5**

C.3.2 SOCIOECONOMICS – OPERATION

Socioeconomic impacts of operation relate primarily to the benefits afforded to local communities as a result of the plant's presence (e.g., tax plans, local emergency planning support, educational program support). These benefits tend to be a function of negotiations between the plant owner and local government; they are not indicative of inherent site conditions that affect relative suitability between sites. In addition, three of the eight sites have previously demonstrated that their local economies can support existing plant operations, and an additional unit will not adversely affect an area that has already shown its ability to support existing units. This criterion is not applicable to a comparison of the eight candidate sites, and in accordance with guidance in the Siting Guide, suitability scores were not developed.

C.3.3 ENVIRONMENTAL JUSTICE

Objective – The objective of this criterion is to ensure that the effects of proposed actions do not result in disproportionate adverse impacts to minority and low-income communities. In comparing sites, this principle is evaluated on the basis of whether any disproportionate impacts to these communities are significantly different when comparing one site to another.

Evaluation approach – The first step in this evaluation is to collect and compare population data for minorities and low-income populations across sites.

However, two additional questions comprising this evaluation also are relevant:

1. Does the proposed action result in significant adverse impacts?
2. Are impacts to minority or low-income populations significantly different between sites?

If the answer to the first question is "no" for all sites (i.e., no significant health and safety impacts are identified), then there would be no environmental justice concerns, regardless of the percentage of minority or low-income populations found within the surrounding communities of a site(s). If the answer to the first question is "yes" (i.e., significant health and safety impacts are expected), environmental justice concerns are relevant to site selection only if the answer to the second question is also "yes" (i.e., disproportionate adverse impacts on minority or low-income

populations are identified at one or more sites, thereby resulting in significant differences between sites).

Note that the study area for evaluating environmental justice concerns included the host county and immediately surrounding counties.

Discussion – With regard to the sites under consideration, related environmental justice information is summarized for each candidate site below. Data for white population is for one race alone.

DeSoto Site Minority and Low Income Population/Percentages

County	Population (2000)	White	Minority	Low Income (% / pop)
DeSoto	32,209	23,619	8,590	18.3 / 5,894
Sarasota	325,957	301,985	23,972	8.4 / 27,380
Manatee	264,002	227,981	36,021	10.8 / 28,512
Charlotte	141,627	131,125	10,502	9.3 / 13,171
Glades	10,576	8,142	2,434	13.1 / 1,385
Hardee	26,938	19,035	7,903	20.6 / 5,549
Highlands	87,366	72,926	14,440	13.9 / 12,185
Total	**888,675**	**784,813**	**103,862**	**94076**

Source: U.S. Census Bureau, http://quickfacts.census.gov/qfd/ for Florida

Glades Site Minority and Low Income Population/Percentages

County	Population (2000)	White	Minority	Low Income (% / pop)
Glades	10,576	8,142	2,434	13.1 / 1,385
Lee	440,888	386,598	54,290	10.2 / 44,970
Highlands	87,366	72,926	14,440	13.9 / 12,185
Hendry	36,210	23,926	12,284	18 / 6,518
Total	575,037	491,592	83,448	65,058

Source: U.S. Census Bureau, http://quickfacts.census.gov/qfd/ for Florida

Hardee Site Minority and Low Income Population/Percentages

County	Population (2000)	White	Minority	Low Income (% / pop)
Hardee	26,938	19,035	7,903	20.6 / 5,549
Polk	483,924	385,099	98,825	14 / 67,749
Manatee	264,002	227,981	36,021	10.8 / 28,512
Sarasota	325,957	301,985	23,972	8.4 / 27,380
DeSoto	32,209	23,619	8,590	18.3 / 5,894
Highlands	87,366	72,926	14,440	13.9 / 12,185
Total	**1,220,396**	**1,030,645**	**189,751**	**147,269**

Includes some whites of Hispanic or Latino origin.
Source: U.S. Census Bureau, http://quickfacts.census.gov/qfd/ for Florida

Hendry 1 Site Minority and Low Income Population/Percentages

County	Population (2000)	White	Minority	Low Income (% / pop)
Hendry	36,210	23,926	12,284	18 / 6,518
Glades	10,576	8,142	2,434	13.1 / 1,385
Palm Beach	1,131,184	894,207	236,977	10.9 / 123,299
Total	**1,177,970**	**926,275**	**251,695**	**131,202**

Source: U.S. Census Bureau, http://quickfacts.census.gov/qfd/ for Florida

Martin Site Minority and Low Income Population/Percentages

County	Population (2000)	White	Minority	Low Income (population)
Martin	126,731	113,912	12,819	9.2 / 11,659
St. Lucie	192,695	152,504	40,191	12.9 / 24,857
Palm Beach	1,131,184	894,207	236,977	10.9 / 123,299
Okeechobee	35,910	28,468	7,442	15 / 5,386
Total	**1,486,520**	**1,189,091**	**297,429**	**165,201**

Source: U.S. Census Bureau, http://quickfacts.census.gov/qfd/ for Florida

Okeechobee 2 Site Minority and Low Income Population/Percentages

County	Population (2000)	White	Minority	Low Income (% / pop)
Okeechobee	35,910	28,468	7,442	15 / 5,386
St. Lucie	192,695	152,504	40,191	12.9 / 24,857
Highlands	87,366	72,926	14,440	13.9 / 12,185
Martin	126,731	113,912	12,819	9.2 / 11,659
Glades	10,576	8,142	2,434	13.1 / 1,385
Indian River	112,947	98,754	14,193	10 / 11,295
Osceola	172,493	133,169	39,324	13.1 / 22,596
Total	**738,718**	**607,875**	**130,843**	**90,361**

Source: U.S. Census Bureau, http://quickfacts.census.gov/qfd/ for Florida

St. Lucie Site Minority and Low Income Population/Percentages

County	Population (2000)	White	Minority	Low Income (% / pop)
St. Lucie	192,695	152,504	40,191	12.9 / 24,857
Indian River	112,947	98,754	14,193	10 / 11,295
Martin	126,731	113,912	12,819	9.2 / 11,659
Palm Beach	1,131,184	894,207	236,977	10.9 / 123,299
Okeechobee	35,910	28,468	7,442	15 / 5,386
Total	**1,599,467**	**1,287,845**	**311,622**	**176,496**

Source: U.S. Census Bureau, http://quickfacts.census.gov/qfd/ for Florida

Turkey Point Site Minority and Low Income Population/Percentages

County	Population (2000)	White	Minority	Low Income (% / pop)
Miami-Dade	2,253,362	1,570,558	682,804	18.9 / 425,885
Broward	1,623,081	1,145,287	477,794	12.5 / 202,885
Total	**3,876,443**	**2,715,845**	**1,160,598**	**628,770**

Source: U.S. Census Bureau, http://quickfacts.census.gov/qfd/ for Florida

Results – Environmental justice data for the eight sites are summarized below.

Site	Population (2000)	White (%)	Minority (%)	Low Income (%)
DeSoto	888,675	88	23	10.6
Glades	575,037	85.5	14.5	11.3
Hardee	1,220,396	84.5	15.5	12.1
Hendry 1	1,177,970	78.6	21.4	11.1
Martin	1,486,520	80	20	11.1
Okeechobee 2	738,718	82.3	17.7	12.2
St. Lucie	1,599,467	80.5	19.5	11
Turkey Point	3,876,443	70	30	16.2

*State average for Florida is 78% white (22% minority) and 13% below poverty line (low income).

All sites had minority populations greater than 10%; minority populations of 20% or higher are found at four sites (DeSoto, Hendry 1, Martin and Turkey Point), with 19.5% found at St. Lucie; although note that the state average minority population for Florida is 22%.

Low-income populations higher than the state average is found only at Turkey Point; however, when evaluating income below poverty line for the individual counties, host counties DeSoto, Hardee, Hendry and Miami-Dade have 18% or higher populations living below the poverty line.

Low-income populations in other counties in the South that currently host existing nuclear power plants have directly benefited from economic impacts of the existing plant. Similar beneficial economic impacts are expected to occur for additional units at existing Turkey Point site, as well as at the other sites with large minority populations as well.

Based on professional judgment in factoring in the above percentages alone, the initial site ratings are as follows:

Environmental Justice	DeSoto	Glades	Hardee	Hendry 1	Martin	Okee 2	St. Lucie	Turkey Point
Provisional Rating	**3**	**4**	**4**	**3**	**3**	**4**	**4**	**2**

However, given that no significant impacts to any human populations are expected to occur at any of the sites under consideration, there cannot be significant disproportionate impacts to minority or low-income populations; and based on actual employment experience, positive economic benefits have been shown to be available to all members of the population, without regard to income or ethnicity.

While disproportionate adverse impacts could be expected to occur to minority or low-income populations at both sites, if significant health and safety impacts were expected from a new nuclear reactor, no significant health and safety impacts are expected to human populations from reactor operations. Therefore, if no significant health and safety impacts are identified from reactor construction and operation, then there would be no environmental justice concerns, regardless of the percentage of minority or low-income populations found within the surrounding communities. Therefore, no significant differences in environmental justice impacts are expected between the candidate sites and all should receive a final comparative rating of 5.

Based on this analysis, there is no basis for differentiation between sites from an environmental justice perspective, despite differences in the percentages of minority and low-income populations found within the surrounding communities of each site. All sites are found to be equally and highly suitable. Therefore, the site ratings are as follows:

Environmental Justice	DeSoto	Glades	Hardee	Hendry 1	Martin	Okee 2	St. Lucie	Turkey Point
Rating	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**

C.3.4 LAND USE

C.3.4.1 Construction- and Operation-Related Effects

Objective – The objective of this criterion is to evaluate the suitability of the eight candidate sites with respect to potential conflicts in existing land uses at each site. No exclusionary or avoidance criteria apply to this issue.

Evaluation Approach – The evaluation is based on the compatibility of a new nuclear station with existing land uses, including existing and future land uses and zoning ordinances, as well as any significant historic resources. Historic resources include those currently listed on the National Register of Historic Places (NRHP), or known (active) archaeological sites or Native American lands.

Discussion/Results – Special land use features, including proximity to National Register of Historic Places (NRHP) sites and dedicated lands/special ecological areas are summarized for each site in the table below. No major issues were identified at any of the sites; however, the potential difficulty in changing existing land use or zoning plans is unclear for the rural, heavy agricultural sites, so they were given a conservative rating of 3. There is also a similar concern at the existing St. Lucie site given the surrounding protected uses, site location on an island between the Atlantic and Indian River Lagoon, and resulting space limitations for construction of two new units. Turkey Point is rated most favorable given the suitable acreage and existing and consistent industrial (i.e. other FPL power plants) surrounding the site.

Site	Special Land Use Features in Vicinity of Site
DeSoto	Greeenfield site: Undeveloped on 13,500 acre property in unincorporated DeSoto County. Adjacent to portions of the Peace River. Land on site is currently dedicated to agricultural use (sod farming, cattle grazing and truck crops). Developed portions of the adjacent properties are primarily agricultural (sod farms, citrus groves, and cattle grazing). Undeveloped portions include mixed scrub with some hardwoods and a few isolated wetlands. Agricultural land use would not appear to be consistent for nuclear power plant. Potential difficulty in changing existing land use or zoning is unclear. Historic Sites (NRHP): None in vicinity – two sites located in Arcadia.
Glades	Remote and rural agrarian; mostly agricultural; County is the second largest producer of sugarcane in the state. Agricultural land use would not appear to be consistent for nuclear power plant. Potential difficulty in changing existing land use or zoning is unclear. Two management areas within 5 miles (north) of site: Nicodemus Slough and Fisheating Green Wildlife Management area. Located near shore of Lake Okeechobee; Brighton Indian Reservation located several miles to the north. NRHP Sites: Moore Haven (Downtown Historic District and Residential Historic District).
Hardee	Remote and rural; mostly farmland/agricultural – County is leading citrus and cattle producer in state. Agricultural land use would not appear to be consistent for nuclear power plant. Potential difficulty in changing existing land use or zoning is unclear. NRPH Sites: None in site vicinity; all located in Wauchula and Bowling Green.
Hendry 1	Remote and rural; mostly agricultural/farmland. Largest producer of sugarcane in state; crops; cattle and citrus around Lake Okeechobee. Located near shores of Lake Okeechobee. Agricultural land use would not appear to be consistent for nuclear power plant. Potential difficulty in changing existing land use or zoning is unclear. NRHP Sites: None in vicinity; all located in La Belle and Clewiston.
Martin	Industrial site with existing power plant (3,700 MW), including 6,800-acre cooling reservoir; existing power plant located on 3,000 acres. To east is area of mixed pine flat wood with scattering of small wetlands. North is 1,200 acre cooling pond set aside as mitigation. Peninsula of wetland forest on west side of reservoir that is named the Barley Barber Swamp. The Barley Barber Swamp encompasses 400 acres and is preserved as a natural area. There is also a 10 kW photovoltaic energy facility at south end of site. Located on Lake Okeechobee and near J.W. Corbett Wildlife Management Area and Loxahatchee National Wildlife Refuge. NRHP Sites: None in vicinity.

Site	Special Land Use Features in Vicinity of Site
Okeechobee 2	Remote and rural; lightly populated; agrarian. County has high levels of cattle, dairy, and citrus farms. Agricultural land use would not appear to be consistent for nuclear power plant. Potential difficulty in changing existing land use or zoning is unclear. NRHP Sites: None in vicinity; located in Okeechobee (2 sites).
St. Lucie	Existing power plant (nuclear) site. Located on Hutchinson Island. Two county parks (Blind Creek Pass and Walton Rocks Parka) lie within site boundary. Indian River Lagoon located west of facility; stretch of lagoon adjacent to site is designated as the Jensen Beach to Jupiter Inlet Aquatic Preserve. Fort Pierce Inlet State Recreation Area 9 miles north of site. Savannas State Preserve freshwater wetland is located 2 miles west. Other prominent features within 50 miles of site include Lake Okeechobee, Blue Cypress Lake, Jonathan Dickinson State Park, Dupuis Reserve State Forest, JW Corbett Wildlife Management Area, portion of Brighton Seminole Indian Reservation, and Hobe Sound, Pelican Island, and Loxahatchee National Wildlife Refuges. Sand pine community containing several rare and endangered plants and animals. Hobe Sound NWR located south of the site on Jupiter Island. Includes one of the most productive sea turtle nesting areas in the US (listed leatherback, green and loggerhead sea turtles lay their eggs there). NRHP sites in Ft. Pierce (MANY including in Stuart, Jupiter island, Jensen Beach and Hobe Sound); also a shipwreck: URCA DE LIMA (shipwreck) (added 2001 - Site - #01000529). Also known as URCA DE LUCA State Underwater Archeological Preserve 200 yds offshore Jack Island Park, N of Ft. Pierce Inlet, Ft. Pierce.
Turkey Point	Existing industrial site on shore of part of Biscayne Bay with ecologically sensitive areas nearby including two National Parks: Biscayne National Park (3.2 miles from park headquarters); Everglades National Park (15 miles west of the site). Small portions of Miccosukee Indian Reservation and Big Cypress National Preserve are within 50 miles. Bill Baggs Cape Florida State Recreation Area and Key Large Hammocks State Botanical Site also found near the site. Ecologically sensitive estuarine environment along the coast. NRHP Sites: Numerous, including many in Homestead and Biscayne National Park but presumably would not be affected by the plant since land is owned by FPL and existing power plants/nuclear units located there now.

Land Use	DeSoto	Glades	Hardee	Hendry 1	Martin	Okee 2	St. Lucie	Turkey Point
Rating	3	3	3	3	3	3	3	4

References

Glades Environmental Site Assessment.

St. Lucie and Turkey Point Relicensing Environmental Reports and Supplemental NRC EISs (License Renewal Generic EIS, NUREG 1427, Supplements 5 (Turkey Point Units 3 & 4, January 2002) and 11 (St. Lucie Units 1 and 2, May 2003).

Florida Wildlife Viewing Guide, 1998.

C.4 ENGINEERING AND COST-RELATED CRITERIA

C.4.1 HEALTH AND SAFETY RELATED CRITERIA

C.4.1.1 Water Supply

Objective – The purpose of this criterion is to evaluate relative differences in the design and construction cost of developing water supply facilities.

Evaluation approach – Sites with local conditions that would require additional engineering costs to develop water supply capability (e.g., reservoirs to address water supply limitations or reliability issues such as low flow constraints) are rated lower than sites with no such requirements. Because topography in the vicinity of the candidate sites does not provide natural drainages that can easily be developed for reservoirs, actual construction of reservoirs would likely be very expensive, if feasible at all. Sites are characterized below in terms of the relative difficulty and expense of dealing with low-flow conditions at the sites, regardless of whether a reservoir or some other means of addressing drought conditions is adopted.

Discussion/Results – Because water flows vary among the sites, particularly during periods of low flow, reservoir requirements also will differ. Site ratings are based on professional judgment – taking into account major river body flows (average annual and low flow/drought conditions) (see section C.1.1.2), as well as the size and extent of on-site tributaries. Sites with no anticipated low-flow constraints received a 5; other ratings relate to the likelihood that a reservoir or other means to address low-flow conditions would be required.

Site	Evaluation	Ranking
DeSoto	The water supply for the proposed site is a combination of groundwater, the Peace River, and reclaimed water. Costs to engineer the combined water supply are anticipated to be relatively high.	1
Glades	Potential water supplies for the proposed site include groundwater, the C-43 Canal, and Lake Okeechobee. Due to the flexibility and proximity of water supplies (~ 5 miles to Lake Okeechobee), construction costs to deliver the water supply are anticipated to be moderately low.	4
Hardee	The water supply for the proposed site is a combination of groundwater, the Peace River, and reclaimed water. Costs to engineer the combined water supply are anticipated to be relatively high.	1
Hendry 1	Potential water supplies for the proposed site include groundwater and Lake Okeechobee. Due to the flexibility and proximity of water supplies (~ 11 miles to Lake Okeechobee), construction costs to deliver the water supply are anticipated to be moderate.	3

Site	Evaluation	Ranking
Martin	Potential water supplies for the proposed site include the C-44 Canal and Lake Okeechobee. Due to the flexibility and proximity of water supplies (~ 5 miles to Lake Okeechobee), construction costs to deliver the water supply are anticipated to be moderately low.	4
Okeechobee 2	Potential water supplies for the proposed site include groundwater, the Kissimmee River, and Lake Okeechobee. Due to the flexibility and proximity of water supplies (~ 2 miles to the Kissimmee River and ~ 8 miles to Lake Okeechobee), construction costs to deliver the water supply are anticipated to be moderately low.	4
St. Lucie	Potential water supplies for the proposed site include Ocean Intake and reclaimed water. Due to the proximity of water supplies (site is coastal), construction costs to deliver the water supply are anticipated to be relatively low.	5
Turkey Point	Potential water supplies for the proposed site include Ocean Intake and reclaimed water. Due to the proximity of water supplies (site is coastal), construction costs to deliver the water supply are anticipated to be relatively low.	5

Water Supply	DeSoto	Glades	Hardee	Hendry 1	Martin	Okee 2	St. Lucie	Turkey Point
Rating	**1**	**4**	**1**	**3**	**4**	**4**	**5**	**5**

References

USGS Topographic Maps.

C.4.1.2 Pumping Distance

Objective – The purpose of this criterion is to evaluate relative differences in the operational costs associated with pumping makeup water from the source water body to the plant.

Evaluation approach – Sites located large distances from their makeup water supply source are rated lower than those located adjacent to the source. In general, the cost differential is expected to be a linear function of distance from the water source.

Discussion/Results – Precise intake and discharge locations have not yet been determined for candidate sites as final plant locations and reservoir requirements/locations have yet to be determined. It is assumed that cooling facilities will be located as close to the water supply as possible; sites are given a rating between 2 and 5 based on the estimated distance between the site location and the water supply.

Site	Evaluation	Ranking
DeSoto	The water supply for the proposed site is a combination of groundwater, the Peace River, and reclaimed water. The Peace River is located ~ 4 miles west of the proposed site. Pumping costs required to deliver the combined water supply are anticipated to be relatively high.	2
Glades	Potential water supplies for the proposed site include groundwater, the C-43 Canal, and Lake Okeechobee. Lake Okeechobee is located ~ 5 miles east of the proposed site. Pumping costs required to deliver the water supply are anticipated to be moderately low.	4
Hardee	The water supply for the proposed site is a combination of groundwater, the Peace River, and reclaimed water. The Peace River is located ~ 3 miles east of the proposed site. Pumping costs required to deliver the combined water supply are anticipated to be relatively high.	2
Hendry 1	Potential water supplies for the proposed site include groundwater and Lake Okeechobee. Lake Okeechobee is located ~ 11 miles north of the proposed site. Pumping costs required to deliver the water supply are anticipated to be moderate.	3
Martin	Potential water supplies for the proposed site include the C-44 Canal and Lake Okeechobee. Lake Okeechobee is located ~ 5 miles west of the proposed site. Pumping costs required to deliver the water supply are anticipated to be moderately low.	4
Okeechobee 2	Potential water supplies for the proposed site include groundwater, the Kissimmee River, and Lake Okeechobee. The Kissimmee River is located ~ 2 miles southwest of the proposed site, and Lake Okeechobee is located ~ 8 miles southeast of the proposed site. Pumping costs required to deliver the water supply are anticipated to be moderately low.	4
St. Lucie	Potential water supplies for the proposed site include Ocean Intake and reclaimed water. Due to the proximity of water supplies (site is coastal), pumping costs required to deliver the water supply are anticipated to be relatively low.	5
Turkey Point	Potential water supplies for the proposed site include Ocean Intake and reclaimed water. Due to the proximity of water supplies (site is coastal), pumping costs required to deliver the water supply are anticipated to be relatively low.	5

Pumping Distance	DeSoto	Glades	Hardee	Hendry 1	Martin	Okee 2	St. Lucie	Turkey Point
Rating	2	4	2	3	4	4	5	5

References

USGS Topographic Maps (1:100,000 and 1:24,000 scale).

C.4.1.3 Flooding

Objective – The purpose of this criterion is to rate sites with respect to differential costs associated with construction of flood protection structures necessary to address probable maximum floods at the sites under consideration.

Evaluation approach – Sites with the largest differences between site-grade elevation and likely flood elevations are rated highest; sites with plant grade at or near flood level are rated lowest.

Discussion/Results – Although final plant layout locations have not been set for candidate sites, an initial comparison of potential site locations with floodplain information indicate that some proposed plant facilities may require protection from flooding.

Site	Evaluation	Ranking
DeSoto	The proposed site is not located in the 100-year flood zone. While swamp areas exist in the vicinity of the proposed site, ample areas exist for precise site location to avoid swamp areas and areas within the 100-year flood zone. No other neighboring flooding concerns exist. If required, construction of flood protection structures would be minimal.	5
Glades	The proposed site is located within the 100-year flood zone (located in the vicinity of the Caloosahatchee Canal and Lake Okeechobee). Failure of the Herbert Hoover Dike on Lake Okeechobee would present flooding concerns to the proposed site and could result in flood depths of 6 feet. Therefore, construction of flood protection structures or fill to elevate the proposed site is likely to be necessary.	3
Hardee	The proposed site is not located in the 100-year flood zone. No other neighboring flooding concerns exist. If required, construction of flood protection structures would be minimal.	5
Hendry 1	The proposed site is located in the 100-year flood zone and is near swamp areas. Existing secondary levees protect the proposed site from flooding due to failure of the Herbert Hoover Dike on Lake Okeechobee. No other neighboring flooding concerns exist. Construction of flood protection structures or fill to elevate the proposed site is likely to be necessary, but would be minimal.	4

Site	Evaluation	Ranking
Martin	The proposed site is not located in the 100-year flood zone. While swamp areas exist in the vicinity of the proposed site, ample areas exist for precise site location to avoid swamp areas and areas within the 100-year flood zone. Existing secondary levees protect the proposed site from flooding due to failure of the Herbert Hoover Dike on Lake Okeechobee. No other neighboring flooding concerns exist. If required, construction of flood protection structures would be minimal.	5
Okeechobee 2	The proposed site is located on the border of the 100-year flood zone. While swamp areas exist in the vicinity of the proposed site, ample areas exist for precise site location to avoid swamp areas. The location of the Kissimmee River protects the proposed site from flooding due to failure of the Herbert Hoover Dike on Lake Okeechobee. No other neighboring flooding concerns exist. Construction of flood protection structures or fill to elevate the proposed site is likely to be necessary, but would be minimal.	4
St. Lucie	The proposed site is located in the 100-year flood zone with base flood elevations of 7-8 feet. Adverse climatic events (e.g., area hurricanes) would likely result in flooding of the proposed site. Construction of flood protection structures or fill to elevate the proposed site will be required and would likely be more robust than other proposed sites.	2
Turkey Point	The proposed site is located in the 100-year flood zone with base flood elevations of 12 feet. Adverse climatic events (e.g., area hurricanes) would likely result in flooding of the proposed site. Construction of flood protection structures or fill to elevate the proposed site will be required and would likely be more robust than other proposed sites.	2

Flooding	DeSoto	Glades	Hardee	Hendry 1	Martin	Okee 2	St. Lucie	Turkey Point
Rating	5	3	5	4	5	4	2	2

References

FEMA Digital Flood Insurance Rate Maps, http://www.fema.gov/fhm/.

USGS Topographic Maps.

C.4.1.4 Vibratory Ground Motion – *Deleted from evaluation*

The objective of this criterion is to provide a relative measure of cost associated with designing to different seismic requirements at different sites. Because all of the sites under consideration are expected to meet the site parameters for seismic design of the standardized designs under

consideration, this criterion is not applicable to the FPL Florida service territory site selection process.

C.4.1.5 Civil Works

Objective – The objective of this criterion (formerly titled "soil stability") is to rate sites according to differences in the cost of civil works (e.g., non-flood related berms, stabilizing of graded slopes and banks) necessary to prepare the site for nuclear plant development.

Evaluation approach – Sites are rated highest to lowest according to the estimated level of cost of civil works required at each site.

Discussion/Results – The existing candidate sites (St. Lucie and Turkey Point) are located at operating plants that has been previously developed and has been shown to be capable of supporting conventional foundation designs. Accordingly, the existing sites are assigned a median rating of 3.

Given the general lack of site specific geotechnical information on the six remaining sites, consideration was allotted to the overall elevation above sea level as a potential indicator of dewatering needs and overall site relief as an indicator of potential grading and excavation. Due to the average elevation of the sites, all sites except DeSoto and Hardee will require excavation below MSL to accommodate reactor construction because of their lower elevations. Therefore these sites receive lower ratings in consideration of the potential dewatering and stability concerns. Due to the site topography, all sites except St. Lucie and Turkey Point exhibit over 10' site relief. Therefore, these sites receive lower ratings in consideration of the potentially higher level of earthwork at these sites as compared to the relatively flat coastal sites.

Civil Works	DeSoto	Glades	Hardee	Hendry 1	Martin	Okee 2	St. Lucie	Turkey Point
Avg. elev.[1]	4	1	4	1	2	2	1	1
Relief[2]	2	3	1	3	3	2	5	5
Rating	3	2	2	2	2.5	2	3	3

[1] 80'+ = 5, 60'+ = 4, 40'+ =3, 20'+=2, 0'+ = 1
[2] 0'=5, <5'=4, <10'=3, <20'=2, 20'+=1

C.4.2 TRANSPORTATION OR TRANSMISSION-RELATED CRITERIA

C.4.2.1 Railroad Access

Objective – The purpose of this criterion is to rate sites according to the relative costs associated with providing rail access.

Evaluation approach – Sites are rated from highest to lowest in accordance with the length of additional or new rail spur construction required to provide rail access, scaled from those discussed in the screening criteria report, Criterion P7. Sites having rail access within 2 miles or less receive a rating of 5; sites with rail access between 2 and 5 miles away receive a rating of 4, and sites with rail access greater than 5 miles away receive a rating of 3.

Some sites are located near abandoned rail lines. The site-specific condition of abandoned rail lines is unknown and could range from removed/revegetated to present and operable with minimal upgrade. Therefore, distances used in this analysis are to the nearest rail line in service and assume abandoned rail lines have been removed/revegetated. Should rail access become a sensitive criterion for site selection, site-specific conditions of abandoned rail lines should be more fully evaluated.

Discussion/Results – Distances to rail service at each of the sites were measured in the Preliminary Screening Evaluation (based on USGS topographic maps and summarized in Appendix B). Assuming that (1) passenger lines may be used for a one-time delivery of plant equipment to the site, (2) abandoned lines have been removed/revegetated, and (3) costs are based on a straight linear scale of costs for construction of rail spurs to the sites from these lines, ratings for the sites are assigned in the table below.

Site	Evaluation	Ranking
DeSoto	Rail is ~ 7.1 miles W (operated by CSX Transportation). A rail line between Arcadia, FL and Bowling Green, FL (~ 2.3 miles west of the proposed site) formerly operated by Seaboard System RR has since been abandoned.	3
Glades	Rail is ~ 3.1 miles NE (operated by South Central Florida Express, CSX Transportation has trackage rights).	4
Hardee	Rail is ~ 0.4 miles W (operated by CSX Transportation). A rail line between Arcadia, FL and Bowling Green, FL (~ 6.4 miles east of the proposed site) formerly operated by Seaboard System RR has since been abandoned.	5
Hendry 1	Rail is ~ 8.7 miles NE (operated by South Central Florida Express, CSX Transportation and Florida East Coast Railway have trackage rights).	3

Site	Evaluation	Ranking
Martin	Rail is ~ 1.5 miles NE (operated by CSX Transportation). Rail is ~ 2.8 miles W (operated by Florida East Coast Railway). However, lake/reservoir is located between the Martin site and this rail line. A rail spur has been constructed from the Florida East Coast Railway line to access the existing Martin power plant.	5
Okeechobee 2	Rail is ~ 2.2 miles NE (operated by CSX Transportation).	4
St. Lucie	Rail is ~ 2.1 miles W (operated by Florida East Coast Railway). However, the Intercoastal Waterway is located between the St. Lucie site and this rail line. Due to the coastal location of the St. Lucie site, barge access is accessible in the immediate vicinity for delivery of heavy/large items. However, since rail access is not immediately accessible, a rating of 5 was not assigned.	4
Turkey Point	Rail is ~ 10.3 miles W (operated by CSX Transportation). Homestead, FL marks the southernmost point of Florida served by rail. A rail line to Homestead, FL formerly operated by Florida East Coast Railway has since been abandoned. Due to the coastal location of the Turkey Point site, barge access is immediately accessible for delivery of heavy/large items. A barge channel has been constructed in Biscayne Bay providing direct access to the site. As barge access provides an alternative to rail access, the rating has been increased to 4 (however, since rail access is not immediately accessible, a rating of 5 was not assigned).	4

Railroad Access	DeSoto	Glades	Hardee	Hendry 1	Martin	Okee 2	St. Lucie	Turkey Point
Rating	**3**	**4**	**5**	**3**	**5**	**4**	**4**	**4**

References

North American Railroad Map, version 2.14, http://www.RailroadMap.com.

USGS Topographic Maps (1:100,000 and 1:24,000 scale).

C.4.2.2 Highway Access

Objective – The purpose of this criterion is to rate sites according to the relative costs associated with providing highway access.

Evaluation approach -- Sites are rated from highest to lowest in accordance with the length of additional or new highway construction required to provide car and truck access.

Discussion/Results – The following table evaluates the existing roads serving the site areas. All sites are located near existing roads, and construction of site access is predicted to be minimal. Therefore, each site has been assigned a rating of 5, with the exception of Hendry 1 which would likely require more construction than other sites.

Site	Evaluation	Ranking
DeSoto	Proposed site is located ~ 2.5 miles east of U.S. Highway 17 and ~ 7.3 miles north of State Highway 70. These roads provide main access to the area. U.S Highway 27 is also located ~ 23 miles east of the proposed site at Lake Placid, FL. Construction of local access would be required but should be minimal.	5
Glades	Proposed site is located ~ 1.0 miles south of U.S. Highway 27 and State Highway 78. These roads provide main access to the area. Construction of local access would be required but should be minimal.	5
Hardee	Proposed site is located ~ 5.0 miles south of State Highway 64 and ~ 6.4 miles west of U.S. Highway 17. These roads provide main access to the area. Additionally, Interstate 75 is located ~ 40 miles west of the proposed site. Construction of local access would be required but should be minimal.	5
Hendry 1	Proposed site is located ~ 5.4 miles east of State Highway 833 and ~ 6.4 miles south of U.S. Highway 27. These roads provide main access to the area. Construction of local access would be required but should be minimal, although greater than other sites.	4
Martin	Proposed site is located ~ 1.1 miles southwest of State Highway 710 and ~ 5.6 miles east of U.S. Highway 98/441. Area access exists due to co-location with the existing Martin power plant. Construction of local access would be required but should be minimal.	5
Okeechobee 2	Proposed site is located ~ 0.4 miles north of State Highway 70 and ~ 4.3 miles southwest of U.S. Highway 98. These roads provide main access to the area. Construction of local access would be required but should be minimal.	5
St. Lucie	Proposed site is located on Hutchinson Island adjacent to Highway A1A and ~ 9.8 miles from access to U.S. Highway 1 and Interstate 95. Area access exists due to co-location with the existing St. Lucie nuclear power plant. Construction of local access would be required but should be minimal.	5
Turkey Point	Proposed site is located ~ 9.1 miles east of U.S. Highway 1 and the Florida Turnpike. Privately owned access exists to the existing Turkey Point nuclear power plant. Additional local access construction would be required but should be minimal.	5

Highway Access	DeSoto	Glades	Hardee	Hendry 1	Martin	Okee 2	St. Lucie	Turkey Point
Rating	5	5	5	4	5	5	5	5

References

Rand McNally Road Atlas.

USGS Topographic Maps (1:100,000 and 1:24,000 scale).

C.4.2.3 Barge Access

Objective – The purpose of this criterion is to rate sites according to the relative costs associated with providing barge access.

Evaluation approach – Sites are rated from highest to lowest in accordance with estimated cost of facilities construction required to provide barge access.

Discussion/Results – The following table evaluates the area geography permitting barge access to the candidate sites.

Site	Evaluation	Ranking
DeSoto	The proposed site is located ~ 55 miles southeast of the Tampa Cargo Seaport. Intermodal transport of heavy/large items would be required.	1
Glades	The proposed site is located ~ 5 miles west of Lake Okeechobee, which is accessible by barge (Okeechobee Waterway) from either the Atlantic Ocean (Stuart, FL via 2 locks) or the Gulf of Mexico (Ft. Myers, FL via 3 locks). The barge channel is 8 feet deep with an 80 foot bottom width.	3
Hardee	The proposed site is located ~ 45 miles southeast of the Tampa Cargo Seaport. Intermodal transport of heavy/large items would be required. As rail access is available immediately adjacent to the proposed site and provides an alternative to barge transport, the rating has been increased to 4 (however, since barge access is not immediately accessible, a rating of 5 was not assigned).	4
Hendry 1	The proposed site is located ~ 11 miles south of Lake Okeechobee, which is accessible by barge (Okeechobee Waterway) from either the Atlantic Ocean (Stuart, FL via 2 locks) or the Gulf of Mexico (Ft. Myers, FL via 3 locks). The barge channel is 8 feet deep with an 80 foot bottom width.	3

Site	Evaluation	Ranking
Martin	The proposed site is located ~ 5 miles east of Lake Okeechobee, which is accessible by barge (Okeechobee Waterway) from either the Atlantic Ocean (Stuart, FL via 2 locks) or the Gulf of Mexico (Ft. Myers, FL via 3 locks). The barge channel is 8 feet deep with an 80 foot bottom width. As rail access is available immediately adjacent to the proposed site and provides an alternative to barge transport, the rating has been increased to 4 (however, since barge access is not immediately accessible, a rating of 5 was not assigned).	4
Okeechobee 2	The proposed site is located ~ 8 miles north of Lake Okeechobee, which is accessible by barge (Okeechobee Waterway) from either the Atlantic Ocean (Stuart, FL via 2 locks) or the Gulf of Mexico (Ft. Myers, FL via 3 locks). The barge channel is 8 feet deep with an 80 foot bottom width.	3
St. Lucie	The proposed site is located on the coast of the Atlantic Ocean. The Fort Pierce Cargo Seaport is located ~ 8.8 miles northwest of the proposed site.	4
Turkey Point	The proposed site is located on the coast of the Atlantic Ocean/Biscayne Bay. A barge canal has been constructed from the northeast and provides direct barge access to the proposed site.	5

Barge Access	DeSoto	Glades	Hardee	Hendry 1	Martin	Okee 2	St. Lucie	Turkey Point
Rating	**1**	**3**	**4**	**3**	**4**	**3**	**4**	**5**

References

Florida Intracoastal and Inland Waterway Study, Final Report, May 2003.

USGS Topographic Maps (1:100,000 and 1:24,000 scale).

C.4.2.4 Transmission Cost and Market Price Differentials

Objective – The purpose of this criterion is to rate sites according to the relative costs associated with construction of power transmission systems and issues related to market price differentials.

Evaluation approach – Sites are rated from highest to lowest in accordance with estimated transmission system construction costs and consideration of other identified issues related to power transmission. Because all eight sites are located within the FPL Florida service area, no electricity market price differentials are expected between the sites, and this sub-criterion was not evaluated.

Discussion/Results – Transmission access is evaluated in terms of distance to the load center in the greater Miami area, and amount of new right of way (ROW) that needs to be acquired. The highest ranked sites already have the ROW, and the lowest-ranked sites require significant ROW acquisition, which will be difficult to obtain. In addition the plant switchyard is assumed the same for all sites.

Site	Evaluation	Ranking
DeSoto	~ 125 miles to Miami Load Center. 135 miles of new 500 kV ROW acquisition, 2 autotransformers, 8 – 500 kV line terminals. ROW near Orange River substation will be difficult to obtain.	3
Glades	~ 75 miles to Miami Load Center. 146 miles of new 500 kV ROW, of which approximately 60 miles of new ROW acquisition, 1 autotransformer, 6 – 500 kV line terminals; rebuild 120 miles of 230 kV lines.	4
Hardee	~ 135 miles to Miami Load Center. 165 miles of new 500 kV ROW acquisition, 2 autotransformers, 6 – 500 kV line terminals.	2
Hendry 1	~ 60 miles to Miami Load Center. 72 miles of new 500 kV ROW, of which approximately 40 miles of new ROW acquisition, 1 autotransformer, 6 – 500 kV line terminals; rebuild 120 miles of 230 kV lines.	4
Martin	~ 65 miles to Miami Load Center. 35 miles of new 500 kV in existing ROW, 6 – 500 kV line terminals.	5
Okeechobee 2	~ 90 miles to Miami Load Center. 95 miles of new 500 kV ROW, of which approximately 40 miles of new ROW acquisition, 2 autotransformers, 8 – 500 kV line terminals.	4
St. Lucie	~ 85 miles to Miami Load Center. 80 miles of new 500 kV ROW acquisition, 2 autotransformers, 8 – 500 kV line terminals. ROW will be difficult to obtain.	1
Turkey Point	~ 50 miles to Miami Load Center. 64 miles of existing 500 kV ROW, 1 autotransformer, 8 – 500 kV line terminals.	5

Transmission	DeSoto	Glades	Hardee	Hendry 1	Martin	Okee 2	St. Lucie	Turkey Point
Rating	3	4	2	4	5	4	1	5

C.4.3 CRITERIA RELATED TO LAND USE AND SITE PREPARATION

C.4.3.1 Topography

Objective – The purpose of this criterion is to rate sites according to the relative costs associated with site grading and earth-moving necessary to prepare the site for construction of a nuclear power plant.

Evaluation approach – Ratings are based on the amount of topographic relief currently found at the site, with the most severe relief resulting in the highest estimated grading costs and therefore the poorest rating. Sites are rated from highest to lowest in accordance with estimated grading costs.

Discussion/Results –Given the general flat topography found in central Florida, ratings were favorable across all sites.

Site	Evaluation	Ranking
DeSoto	The proposed site is located in a relatively flat area, with minor relief (+/- ~ 4 feet). At ~ 2 miles west of the proposed site, the area begins to slope downward to the Peace River. Costs associated with site grading are expected to be relatively low.	5
Glades	Topographic relief across the area is relatively flat (+/- 1 foot) with a system of ditches and water retention areas for irrigation and drainage purposes. Areas north and west of the proposed site begin to slope upward. Costs associated with site grading are expected to be relatively low.	5
Hardee	The proposed site is located in an area with moderate relief (+/- ~ 15 feet). East of the proposed site, the area begins to slope downward to the Peace River. Costs associated with site grading are expected to be moderate.	4
Hendry 1	The proposed site is located in a relatively flat area, with minor relief (+/- 1 foot). Costs associated with site grading are expected to be relatively low.	5
Martin	The proposed site is located in a relatively flat area, with minor relief (+/- 4 feet). The area generally slopes from east to west (toward Lake Okeechobee). Costs associated with site grading are expected to be relatively low.	5
Okeechobee 2	Topographic relief across the area is relatively flat (+/- 2 feet) with a system of ditches and water retention areas for irrigation and drainage purposes. The area generally slopes down to the southwest (toward the Kissimmee River). Costs associated with site grading are expected to be relatively low.	5
St. Lucie	The proposed site is located in a relatively flat area, with minor relief (+/- 1 foot). Costs associated with site grading are expected to be relatively low.	5

Site	Evaluation	Ranking
Turkey Point	The proposed site is located in a relatively flat area, with minor relief (+/- 1 foot). Costs associated with site grading are expected to be relatively low.	5

Topography	DeSoto	Glades	Hardee	Hendry 1	Martin	Okee 2	St. Lucie	Turkey Point
Rating	5	5	4	5	5	5	5	5

References

Draft Phase I Environmental Site Assessment, A. Duda & Sons Inc. URS Corporation. July 2006.

Phase I Environmental Site Assessment, Pelaez & Sons Inc. Ranch. URS Corporation. May 2006.

Site Drainage and Interim Land Use Study. Brown & Root, Inc. March 1976.

USGS Topographic Maps (1:100,000 and 1:24,000 scale).

C.4.3.2 Land Rights

Objective – The purpose of this criterion is to rate sites according to the relative costs associated with purchasing land required to construct and operate a nuclear station on the site.

Evaluation approach –Sites are rated from highest to lowest in accordance with estimated land costs based on information provided by FPL real estate and County profile data.

Discussion/Results – This criterion was evaluated previously in the screening criteria report (Criterion P9), although for a larger land size area. Results are provided below.

Site	Comments and Discussion	Rating
DeSoto	FPL owns sufficient land Undeveloped site in 13,500-acre property	5
Glades	Does not own – Farmland; [$35 M] [actually now appears FPL has bought for a coal fired power plant site, but not assumed for purposes of siting evaluation]	3
Hardee	Does not own – Farmland; [$35 M]	3
Hendry 1	Does not own – Farmland; [$35 M]	3
Martin	FPL owns sufficient land – 11,300 acres Existing industrial site	5

Site	Comments and Discussion	Rating
Okeechobee 2	Does not own – Farmland [$35 M]	3
St. Lucie	FPL owns sufficient land	5
Turkey Point	FPL owns sufficient land	5

Note: Land requirements of 2,000 acres per site where FPL does not own. Costs per acre are assumed to be $10,000 in rural areas; $17,500 for farmland; $35,000 for sites near urban/developed areas.

Land Rights	DeSoto	Glades	Hardee	Hendry 1	Martin	Okee 2	St. Lucie	Turkey Point
Rating	**5**	**3**	**3**	**3**	**5**	**3**	**5**	**5**

C.4.3.3 Labor Rates

Objective – The purpose of this criterion is to rate sites according to the relative costs associated with local labor costs that would be incurred during plant construction.

Evaluation approach – Sites are rated from highest to lowest in accordance with estimated local labor costs, with the lower cost resulting in higher ratings.

Discussion/Results – Economic data are typically available by county, but were found to be provided in a variety of forms (e.g., by hour, by week, by year; by job type) that were not necessarily consistent between counties. For purposes of consistency, this evaluation relied on Economic data based on County Data for Florida (eFlorida profile data for 2004), average annual wage for construction worker, 2004 data, as follows:

DeSoto: Average annual construction wage – $24,276
Glades: No data [assumed to be low wage given rural nature and emphasis on agriculture]
Hardee: $33,221
Hendry 1: $24,306
Martin: $33,667
Okeechobee 2: $26,147
St. Lucie: $31,894
Turkey Point: $40,149

Comparisons of the above construction labor wages reveals that the highest rates are in Miami Dade County (Turkey Point), the lowest rates in DeSoto, Hendry and presumably Glades counties, with the remaining sites falling somewhere in between. The slight differences are noted in the rankings. Finally, it should be noted that a significant portion of the construction workforce is expected to come from a national workforce of journeymen, whose rates will be set based on supply and demand within the overall nuclear industry, rather than by local workforce rates or skill sets. While the ratings below are based solely on current and local wage differentials, this additional factor could mitigate differences in labor costs between the sites.

Labor Rates	DeSoto	Glades	Hardee	Hendry 1	Martin	Okee 2	St. Lucie	Turkey Point
Rating	5	5	3	5	3	4	3	2