EXHIBIT 1

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION
BEFORE THE SECRETARY

In the Matter of	)
Florida Power and Light Company	)
Combined License for	)
Turkey Point Units 6 and 7	)
Docket Nos. 52-040 and 52-041	)

DECLARATION OF MARK PETER ONCAVAGE

Under penalty of perjury, Mark Peter Oncavage declares as follows:

1. My name is Mark Peter Oncavage.

2. I live at 12200 SW 110th Avenue, Miami, Florida 33176-4520. My home lies within 30 miles of the site in Miami-Dade County, Florida ("Turkey Point"), for which Florida Power and Light Company has applied to the U.S. Nuclear Regulatory Commission for a Combined License ("COL") for the construction and operation of two new nuclear power plants.

3. I use the Turkey Point area of south Miami-Dade County near the proposed Turkey Point Unit 6 and 7 expansion at Florida Power and Light for the recreational activities of hiking, walking, canoeing, fishing, and snorkeling.

4. I believe the expansion of the Turkey Point Nuclear Plant endangers my family's health and life with radioactive emissions that are airborne and waterborne and poses great risks to the municipal water supply, the wetlands, the wildlife species, the national parks, and the human environment. I do not believe that neither the applicant nor the NRC represents my best interests.

5. I am a member of Sierra Club and have served in such posts as Conservation Chair, Everglades Chair, Energy Chair, and I have been a member of the Miami Group Executive Committee. Also, I have been a member of the Florida Chapter Executive Committee of the Sierra Club. As such I have invested significant time and resources to the protection of the natural area near and around the proposed Turkey Point expansion.

6. I have been the designated spokesperson for the Miami Group, Sierra Club concerning the Comprehensive Everglades Restoration Plan (CERP) including the Biscayne Bay Coastal Wetlands (BBCW) rehydration project and the C-111 restoration project, both in south Miami-Dade County, before the South Florida Water Management District (SFWMD) and the U.S. Army Corps of Engineers (USACE).

7. I have served as a member of the South Miami-Dade Watershed Study and Plan Advisory Committee, sponsored by Miami-Dade County, the South Florida Regional Planning Council,

EXHIBIT 1

and the South Florida Water Management District. These study areas include the property of the proposed Turkey Point expansion.

8. I have been granted Intervenor status before the Atomic Safety and Licensing Board (ASLB) in the matter of:

> Florida Power And Light Company (Turkey Point Nuclear Generating Unit Nos. 3 and 4, Docket Nos. 50-250, 50-251 (Proposed Amendments to Facility Operating Licenses to Permit Steam Generator Repairs). The ASLB members were Elizabeth S. Bowers, Dr. David B. Hall, and Dr. Oscar Paris, May 2, 1979.

9. I have been granted standing by the Atomic Safety and Licensing Board in the matter of:

> Florida Power & Light Company (Turkey Point Units 3 and 4), Docket Nos. 50-251-LR, 50-251-LR, ASLBP No. 01-786-03-LR. The ASLB members were Thomas S. Moore, Esq., Dr. Charles N. Kelber, and Dr. Richard F. Cole, January 18, 2001.

10. Based on historical experience with nuclear power plants to date, it is my sincere belief that allowing the construction and operation of Turkey Point reactors 6 and 7 will not well serve the people of South Florida, enhance their quality of life or offer adequate and needed protection to their cherished national parks. I strongly request that the Nuclear Regulatory Commission deny Florida Power and Light's request for a Combined License ("COL") for the construction and operation of two new nuclear power plants.

11. Based on historical experience with nuclear power plants to date, I believe that these facilities are inherently dangerous. Therefore, construction of one or more new nuclear reactors so close to my home could pose a grave risk to my health and safety. In particular, I am concerned that if an accident involving atmospheric release of radiological material were to occur, I could be killed or become very ill.

7. I believe that the Turkey Point COL application is inadequate as written and that my interests will not be adequately represented in this action without the opportunity to intervene as a party in the proceeding.

8. Therefore, I have authorized the Everglades Law Center, Inc. to represent my interests as counsel in this proceeding by opposing the issuance of a COL to Florida Power and Light Company.

_____ Date 8/13/10
(Signature)

Notary _____

Notary Public State of Florida
Scott J Berg
My Commission DD987957
Expires 05/17/2014

EXHIBIT 1

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION
BEFORE THE SECRETARY

In the Matter of	)
Florida Power and Light Company	)
Combined License for	)
Turkey Point Units 6 and 7	)
Docket Nos. 52-040 and 52-041	)

DECLARATION OF DANIEL C. KIPNIS

Under penalty of perjury, Daniel C. Kipnis declares as follows:

1. My name is Daniel C. Kipnis.

2. I live at 315 Royal Palm Avenue, Miami Beach, Florida 33140. My home lies within 30 miles of the site in Miami-Dade County, Florida ("Turkey Point"), for which Florida Power and Light Company has applied to the U.S. Nuclear Regulatory Commission for a Combined License ("COL") for the construction and operation of two new nuclear power plants.

3. As a lifelong angler fishing in Biscayne Bay and for many years near and around the Turkey Point power plant site, I strongly feel that construction of the proposed nuclear reactors 6 and 7 will cause irreparable harm to the environment, citizens of south Florida and adversely affect my ability to use and enjoy these areas.

4. Of particular concern relating to the harm caused by and adverse affects of construction and operation of these new reactors are:

a. Sea level rise; The Science Committee of The Miami Dade County Climate Change Advisory Task Force (MDCCATF) predicts sea level rise of between three to five feet by 2100. The proposed plants, their access roads and support facilities have a mean natural altitude of between one and two feet. The MDCCATF has stated that Miami Dade County could see a three foot sea level rise by 2070, well within the lifespan of the plants. Additionally, a one foot sea level rise would severely impact the existing cooling canals used to cool the two currently operating reactors.

b. Salt water intrusion; The proposed radial wells that will be used as part of the cooling system for reactors 6 and 7 have not been adequately tested for near shore salt water intrusion. Florida Power and Light's test site was located approximately four miles away in the center of Biscayne Bay. Salinity readings from this site have no bearing on the near shore site of the radial wells. The partners in the Biscayne Bay Initiative have spent considerable time and money enhancing the freshwater sheet flow from west to east, trying to repair and replicate historic healthy freshwater flow to Biscayne Bay. The existing Turkey Point cooling canals have exacerbated a serious salt water intrusion

EXHIBIT 1

probler that now threatens the freshwater well fields that provide water for Monroe County New radial wells pulling an additional 70 million gallons of salt water a day from n ar shore waters would cause additional saltwater intrusion possibly negating all the wo c the Biscayne Bay Initiative has done to date.

c. Loss of customer base; Projected sea level rise inundating up to 62 % of Miami Dade County land will substantially shrink Florida Power and Light's customer base as Miami Dade c unty residents are forced to relocate to other locals at higher altitudes. Many of these "- limate refugees" may choose to leave the state and FPL's service zone comple ely. FPL has based the cost and recovery of plant construction costs on an increas ng customer base as south Florida's population grows. That financial scenario now ap ears to be in doubt.

d. Prox mity to two National Parks; Biscayne National Park and Everglades National Park ar fighting for their existence due to the changes that global climate change is bringin ; to these two national treasures. Both parks are involved in mitigation and adaptat on in dealing with current and future management decisions. New construction and det imental environmental conditions during plant operations will place severe burden on the continued health and viability of both parks for the reasons stated above.

5. Based or historical experience with nuclear power plants to date, it is my sincere belief that allowing the c nstruction and operation of Turkey Point reactors 6 and 7 will not well serve the people of Sout Florida, enhance their quality of life or offer adequate and needed protection to their cherished national parks. I strongly request that the Nuclear Regulatory Commission deny Florida Power nd Light's request for a Combined License ("COL") for the construction and operation of tw o new nuclear power plants.

6. Based on historical experience with nuclear power plants to date, I believe that these facilities are in erently dangerous. Therefore, construction of one or more new nuclear reactors so close to my ome could pose a grave risk to my health and safety. In particular, I am concerned that f an accident involving atmospheric release of radiological material were to occur, I could l e killed or become very ill.

7. I believe hat the Turkey Point COL application is inadequate as written and that my interests will n t be adequately represented in this action without the opportunity of Petitioner to intervene as a p arty in the proceeding on my behalf.

8. Therefor , I have authorized the Everglades Law Center, Inc. to represent my interests in this proceedin by opposing the issuance of a COL to Florida Power and Light Company.

David C. Kepma Date 8/17/2010
(Signature)

Notary Winslow C. Thompson

WINSLOW C. THOMPSON
MY COMMISSION EXPIRES
September 15, 2013
#DD 924125
NOTARY PUBLIC, STATE OF FLORIDA

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION
BEFORE THE SECRETARY

In the Matter of	)
Florida Power and Light Company	)
Combined License for	)
Turkey Point Units 6 and 7	)
Docket Nos. 52-040 and 52-041	)

DECLARATION OF KAREN BEAL

Under penalty of perjury, Karen Beal declares as follows:

1. My name is Karen A. Beal. I am a member of Southern Alliance for Clean Energy.

2. I live at 1 Beal's Hammock Lane, Key Largo FL. My home lies within 35 miles of the site in Miami-Dade County, Florida ("Turkey Point"), for which Florida Power and Light Company has applied to the U.S. Nuclear Regulatory Commission for a Combined License ("COL") for the construction and operation of two new nuclear power plants.

3. As an emergency medical provider, I have trained at the Turkey Point facility and have substantial concerns of the risks it poses. Based on historical experience with nuclear power plants to date, I believe that these facilities are inherently dangerous. Therefore, construction of one or more new nuclear reactors so close to my home could pose a grave risk to my health and safety. Additionally, I'm concerned how the operation of the plant will impact the surrounding environment, in particular water quality in my area.

4. I believe that the Turkey Point COL application is inadequate as written and that my interests will not be adequately represented in this action without the opportunity of Southern Alliance for Clean Energy to intervene as a party in the proceeding on my behalf.

5. Therefore, I have authorized Southern Alliance for Clean Energy to represent my interests in this proceeding by opposing the issuance of a COL to Florida Power and Light Company.

Karen Beal
(Signature)

Date Aug 1-2010

Notary Shawn Dudley Aug. 2, 2010
Shawn Dudley

NOTARY PUBLIC
SHAWN DUDLEY
Notary Public, State of Florida
Commission# DD906203
My comm. expires July 11, 2013

EXHIBIT 1

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION
BEFORE THE SECRETARY

In the Matter of)
Florida Power and Light Company)
Combined License for)
Turkey Point Units 6 and 7)
Docket Nos. 52-040 and 52-041)

DECLARATION OF CARA COOPER

Under penalty of perjury, Cara Cooper declares as follows:

1. My name is Cara Cooper. I am a member of Southern Alliance for Clean Energy.

2. I live at 3030 SW 122nd Avenue, Miami, Florida 33175. My home lies within 25 miles of the site in Miami-Dade County, Florida ("Turkey Point"), for which Florida Power and Light Company has applied to the U.S. Nuclear Regulatory Commission for a Combined License ("COL") for the construction and operation of two new nuclear power plants.

3. Based on historical experience with nuclear power plants to date, I believe that these facilities are inherently dangerous. Therefore, construction of one or more new nuclear reactors so close to my home could pose a grave risk to my health and safety. In particular, I am concerned that if an accident involving atmospheric release of radiological material were to occur, I could be killed or become very ill. I am also very concerned with the effects that new construction will have the availablity of clean drinking water for the residents of South Florida. Furthermore, construction in these ecologically sensitive areas will be detrimental to Everglades restoration which is of the utmost importance in maintaining South Florida's biologically important environmental systems.

4. I believe that the Turkey Point COL application is inadequate as written and that my interests will not be adequately represented in this action without the opportunity of the Southern Alliance for Clean Energy to intervene as a party in the proceeding on my behalf.

5. Therefore, I have authorized Southern Alliance for Clean Energy to represent my interests in this proceeding by opposing the issuance of a COL to Florida Power and Light Company.

Cara Cooper Date 8/10/2010
(Signature)

Notary _____

OLIMPIA PERRUC
Notary Public - State of Florida
My Commission Expires Aug 21, 2010
Commission # DD 580948
Bonded By National Notary Assn.

Print, type or stamp name of Notary Public
Personally known ☐ OR Produced I.D. ☒
Type and number of I.D. produced:
FL Driver License

EXHIBIT 1

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION
BEFORE THE SECRETARY

In the Matter of	)
Florida Power and Light Company	)
Combined License for	)
Turkey Point Units 6 and 7	)
Docket Nos. 52-040 and 52-041	)

DECLARATION OF JOHN HAMMERSTROM

Under penalty of perjury, JOHN HAMMERSTROM declares as follows:

1. My name is JOHN HAMMERSTROM and I am a member of Southern Alliance for Clean Energy.

2. I live at 115 Coastal Drive, Key Largo. My home lies within 41 miles of the site in Miami-Dade County, Florida ("Turkey Point"), for which Florida Power and Light Company has applied to the U.S. Nuclear Regulatory Commission for a Combined License ("COL") for the construction and operation of two new nuclear power plants.

3. It is my belief that the Nuclear Power Industry's claim of being a sustainable energy source are false because they do not include the prodigious cooling-water requirement and it's impact on the environment, nor do they take into proper consideration the costs of and greenhouse gas production associated with mining, refining and shipping of fuel that is required to produce electricity, nor the cost and safety to properly dispose of the waste. I also believe that when considering the life-cycle costs of producing power, that energy efficiency and many other forms of supply side solutions are superior to nuclear power and have not been properly considered as alternatives.

4. I believe that the Turkey Point COL application is inadequate as written and that my interests will not be adequately represented in this action without the opportunity of Petitioner to intervene as a party in the proceeding on my behalf.

5. Therefore, I have authorized Southern Alliance for Clean Energy to represent my interests in this proceeding by opposing the issuance of a COL to Florida Power and Light Company.

_____ Date 29JUL/2010
(Signature)

Notary _____

MONICA HANE
Notary Public - State of Florida
My Comm. Expires Aug 31, 2013
Commission # DD 921582

EXHIBIT 1

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION
BEFORE THE SECRETARY

In the Matter of	)
Florida Power and Light Company	)
Combined License for	)
Turkey Point Units 6 and 7	)
Docket Nos. 52-040 and 52-041	)

DECLARATION OF JOSEPH NARODITSKY

Under penalty of perjury, Joseph Naroditsky declares as follows:

1. My name is Joseph Naroditsky. I am a member of Southern Alliance for Clean Energy.

2. I live at 20240 NE 3rd Ct #3 Miami, FL 33179. My home lies within 38 miles of the site in Miami-Dade County, Florida ("Turkey Point"), for which Florida Power and Light Company has applied to the U.S. Nuclear Regulatory Commission for a Combined License ("COL") for the construction and operation of two new nuclear power plants.

3. Based on historical experience with nuclear power plants to date, I believe that these facilities are inherently dangerous. Therefore, construction of one or more new nuclear reactors so close to my home could pose a grave risk to my health and safety. In particular, I am concerned that if an accident involving atmospheric release of radiological material were to occur, I could be killed or become very ill.

4. I believe that the Turkey Point COL application is inadequate as written and that my interests will not be adequately represented in this action without the opportunity of the Southern Alliance for Clean Energy to intervene as a party in the proceeding on my behalf.

5. Therefore, I have authorized Southern Alliance for Clean Energy to represent my interests in this proceeding by opposing the issuance of a COL to Florida Power and Light Company.

(Signature) Date 8/9/2010

Notary

JESSICA M BARRIOS
COMMISSION # DD810257
EXPIRES July 30, 2012
(407) 398-0153 FloridaNotaryService.com

EXHIBIT 1

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION
BEFORE THE SECRETARY

In the Matter of	)
Florida Power and Light Company	)
Combined License for	)
Turkey Point Units 6 and 7	)
Docket Nos. 52-040 and 52-041	)
	)

DECLARATION OF JESSICA OKATY

Under penalty of perjury, JESSICA OKATY declares as follows:

1. My name is JESSICA OKATY. I am a member of Southern Alliance for Clean Energy.

2. I live at 3030 SW 122ND AVE, MIAMI, FL 33175. My home lies within 29 miles of the site in Miami-Dade County, Florida ("Turkey Point"), for which Florida Power and Light Company has applied to the U.S. Nuclear Regulatory Commission for a Combined License ("COL") for the construction and operation of two new nuclear power plants.

3. Based on historical experience with nuclear power plants to date, I believe that these facilities are inherently dangerous. These are dangerous not only to our health and safety, but to our water supply, our aquifers, and wetlands in general. Therefore, construction of one or more new nuclear reactors so close to my home could pose a grave risk to my health and safety. In particular, I am concerned that if an accident involving atmospheric release of radiological material were to occur, I could be killed or become very ill.

4. I believe that the Turkey Point COL application is inadequate as written and that my interests will not be adequately represented in this action without the opportunity of Petitioner to intervene as a party in the proceeding on my behalf.

5. Therefore, I have authorized Southern Alliance for Clean Energy to represent my interests in this proceeding by opposing the issuance of a COL to Florida Power and Light Company.

(Signature) _____ Date 8-13-10

Notary _____ 8/13/10

VERONICA MOLINA
Comm# DD0608801
Expires 10/25/2010
Florida Notary Assn., Inc

EXHIBIT 1

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION
BEFORE THE SECRETARY

In the Matter of	)
Florida Power and Light Company	)
Combined License for	)
Turkey Point Units 6 and 7	)
Docket Nos. 52-040 and 52-041	)

DECLARATION OF JACQUELINE CRUCET

Under penalty of perjury, Jacqueline Crucet declares as follows:
1. My name is Jacqueline Crucet. I am a member of The National Parks Conservation Association.

2. I live at 1024 NE Fifth Street, Hallandale Beach, Florida 33009. My home lies within 41 miles of the site in Miami-Dade County, Florida ("Turkey Point"), for which Florida Power and Light Company has applied to the U.S. Nuclear Regulatory Commission for a Combined License ("COL") for the construction and operation of two new nuclear power plants.

3. I am a regular visitor to Biscayne National Park. I visit the park at least four times per year. I swim and look for wildlife while accompanying friends who fish. The nuclear plants at Turkey Point are already causing damage to wetlands and near-shore salinity levels at Biscayne National Park. Expanding the plant will only increase damages. This nuclear power plant is located directly adjacent to Biscayne National Park and is already having adverse impacts to the resources in the region. Therefore, construction of one or more new nuclear reactors so close to the park could pose a grave risk to the ecology and natural resources in Biscayne National Park. In particular, I am concerned that: impacts stemming from the use of radial wells to draw water from underneath Biscayne Bay and take water from the park would result in high salinity levels; unavailability of water for restoration purposes would have negative impacts to coastal ecological resources and wildlife; construction would result in direct and secondary impacts on wetlands and potential conflicts between the expanded facility and the higher water levels contemplated by Comprehensive Everglades Restoration Plan (CERP); and the potential pollution from plant operations will greatly threaten the vitality of Biscayne National Park.

4. I believe the Turkey Point COL application is inadequate as written and that my interests will not be adequately represented in this action without the opportunity of Petitioner to intervene as a party in the proceeding on my behalf.

5. Therefore, I have authorized the Everglades Law Center, Inc. to represent my interests in this proceeding by opposing the issuance of a COL to Florida Power and Light Company.

Jacqueline Crucet Date 8/16/2010
(Signature) FL Driver license as identification

Notary Cynthia A McLeod

NOTARY PUBLIC
CYNTHIA A. MCLEOD
Notary Public, State of Florida
Commission# DD765107
My comm. expires April 06, 2012

EXHIBIT 1

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION
BEFORE THE SECRETARY

In the Matter of	)
Florida Power and Light Company	)
Combined License for	)
Turkey Point Units 6 and 7	)
Docket Nos. 52-040 and 52-041	)

DECLARATION OF SARA FAIN

Under penalty of perjury, Sara Fain declares as follows:

1. My name is Sara Fain. I am a member of The National Parks Conservation Association.

2. I live at 821 Medina Ave. My home lies within 23 miles of the site in Miami-Dade County, Florida ("Turkey Point"), for which Florida Power and Light Company has applied to the U.S. Nuclear Regulatory Commission for a Combined License ("COL") for the construction and operation of two new nuclear power plants.

3. I am a regular visitor to Biscayne National Park. I visit the park at least 4 times per year. I boat. I snorkel and dive. I kayak. I watch birds. The nuclear plants at Turkey Point are already causing damage to wetlands and near-shore salinity levels at Biscayne NP. Expanding the plant will only increase the damages. This nuclear power plant is located directly adjacent to Biscayne National Park and is already having adverse impacts to the resources in the region. Therefore, construction of one or more new nuclear reactors so close to the park could pose a grave risk to the ecology and natural resources in Biscayne National Park. In particular, I am concerned that impacts stemming from the use of radial wells that would draw water from underneath Biscayne Bay, consumptive water use demands that may otherwise take water from the park and resulting high salinity levels, unavailability of water for restoration purposes, direct and secondary construction impacts on wetlands, impacts to coastal ecological resources and wildlife, potential conflicts between the expanded facility with higher water levels contemplated by Comprehensive Everglades Restoration Plan (CERP), and potential pollution problems from the plant operations will greatly threaten the vitality of Biscayne National Park.

4. I believe that the Turkey Point COL application is inadequate as written and that my interests will not be adequately represented in this action without the opportunity of Petitioner to intervene as a party in the proceeding on my behalf.

5. Therefore, I have authorized the Everglades Law Center, Inc. to represent my interests in this proceeding by opposing the issuance of a COL to Florida Power and Light Company.

_____ Date 8-16-10

State of NC
Watauga County

EXHIBIT 1

(Signature)

Notary Lynda P. Norris

LYNDA P NORRIS
NOTARY
My Comm. Exp.
March 3, 2013
PUBLIC
WATAUGA COUNTY, N. C.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION
BEFORE THE SECRETARY

In the Matter of	)
Florida Power and Light Company	)
Combined License for	)
Turkey Point Units 6 and 7	)
Docket Nos. 52-040 and 52-041	)
	)

DECLARATION OF DAVID W. HARTMAN

Under penalty of perjury, David W. Hartman declares as follows:

1. My name is David W. Hartman. I am a member of The National Parks Conservation Association.

2. I live at 861 1st Lane Key Largo, FL 33037. My home lies within 30 miles of the site in Miami-Dade County, Florida ("Turkey Point"), for which Florida Power and Light Company has applied to the U.S. Nuclear Regulatory Commission for a Combined License ("COL") for the construction and operation of two new nuclear power plants.

3. I am a regular visitor to Biscayne National Park. I visit the park at least 4 times per year. I boat, SCUBA dive, hike and watch the local birds. The nuclear plants at Turkey Point are already causing damage to wetlands and near-shore salinity levels at Biscayne NP. Expanding the plant will only increase the damages. This nuclear power plant is located directly adjacent to Biscayne National Park and is already having adverse impacts to the resources in the region. Therefore, construction of one or more new nuclear reactors so close to the park could pose a grave risk to the ecology and natural resources in Biscayne National Park. In particular, I am concerned that impacts stemming from the use of radial wells that would draw water from underneath Biscayne Bay, consumptive water use demands that may otherwise take water from the park and resulting high salinity levels, unavailability of water for restoration purposes, direct and secondary construction impacts on wetlands, impacts to coastal ecological resources and wildlife, potential conflicts between the expanded facility with higher water levels contemplated by Comprehensive Everglades Restoration Plan (CERP), and potential pollution problems from the plant operations will greatly threaten the vitality of Biscayne National Park.

4. I believe that the Turkey Point COL application is inadequate as written and that my interests will not be adequately represented in this action without the opportunity of Petitioner to intervene as a party in the proceeding on my behalf.

5. Therefore, I have authorized the Everglades Law Center, Inc. to represent my interests in this proceeding by opposing the issuance of a COL to Florida Power and Light Company.

EXHIBIT 1

Date Aug 16, 2010

(Signature)

Notary _____

EXHIBIT 1

EXHIBIT 1

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION
BEFORE THE SECRETARY

In the Matter of	)
Florida Power and Light Company	)
Combined License for	)
Turkey Point Units 6 and 7	)
Docket Nos. 52-040 and 52-041	)

DECLARATION OF [INSERT NAME]

Under penalty of perjury, Paul Martin declares as follows:

1. My name is Paul Martin. I am a member of The National Parks Conservation Association.

2. I live at 1218 Coral Way, Coral Gables, FL 33134 My home lies within thirty five miles of the site in Miami-Dade County, Florida ("Turkey Point"), for which Florida Power and Light Company has applied to the U.S. Nuclear Regulatory Commission for a Combined License ("COL") for the construction and operation of two new nuclear power plants.

3. I am a regular visitor to Biscayne National Park. I visit the park at least 4 times per year. I birdwatch. The nuclear plants at Turkey Point are already causing damage to wetlands and near-shore salinity levels at Biscayne NP. Expanding the plant will only increase the damages. This nuclear power plant is located directly adjacent to Biscayne National Park and is already having adverse impacts to the resources in the region. Therefore, construction of one or more new nuclear reactors so close to the park could pose a grave risk to the ecology and natural resources in Biscayne National Park. In particular, I am concerned that impacts stemming from the use of radial wells that would draw water from underneath Biscayne Bay, consumptive water use demands that may otherwise take water from the park and resulting high salinity levels, unavailability of water for restoration purposes, direct and secondary construction impacts on wetlands, impacts to coastal ecological resources and wildlife, potential conflicts between the expanded facility with higher water levels contemplated by Comprehensive Everglades Restoration Plan (CERP), and potential pollution problems from the plant operations will greatly threaten the vitality of Biscayne National Park.

4. I believe that the Turkey Point COL application is inadequate as written and that my interests will not be adequately represented in this action without the opportunity of Petitioner to intervene as a party in the proceeding on my behalf.

5. Therefore, I have authorized the Everglades Law Center, Inc. to represent my interests in this proceeding by opposing the issuance of a COL to Florida Power and Light Company.

_____ Date 8/17/10
(Signature)

Notary _____

NOTARY PUBLIC STATE OF FLORIDA
INDIRA RAMOS
MY COMMISSION # DD 960747
EXPIRES: February 27, 2014
Bonded Thru Budget Notary Services

EXHIBIT 10

Florida Department of Environmental Protection

Marjory Stoneman Douglas Building
3900 Commonwealth Boulevard
Tallahassee, Florida 32399-3000

TO: Toni Sturtevant, OGC

THROUGH: Mike Halpin, Siting Coordination Office Administrator

FROM: Cindy Mulkey, SCO

DATE: January 13, 2010

SUBJECT: FPL Turkey Point 6 & 7 Second Completeness Determination (Plant)

Pursuant to § 403.5252, Florida Statutes, the Department of Environmental Protection (DEP) after consulting with the affected agencies has determined that the portion of the Florida Power & Light (FPL) Turkey Point Units 6 & 7 Nuclear Plant site certification application (SCA) concerning the plant and associated facilities other than the transmission lines is not complete.

On August 10, 2009, DEP filed its first Completeness Determination finding the FPL Turkey Point 6 & 7 SCA incomplete for the plant portion of the application. FPL submitted responses to agency completeness questions on October 9, 2009. The deadlines for agencies to submit completeness questions/comments regarding FPL's response and for DEP to file a second completeness determination have been extended by stipulation to January 6, 2010 and January 13, 2010 respectively.

As a means of satisfying some of the items herein, the applicant should identify (where appropriate) those items which it believes are properly suited for review and approval via post-certification submittals, and recommend related conditions of certification.

The following items represent requests for additional or clarifying information and comments from the DEP Siting Coordination (SCO), the DEP Southeast District (SED) Office, and the DEP Office of Coastal and Aquatic Managed Areas (CAMA). Note that the numbering system utilized in the first completeness determination by DEP (and FPL's response) is being carried forward in this filing where possible. Questions for which a satisfactory answer has been received and for which there are no further comments have been omitted.

I. DEP SED WATERSHED MANAGEMENT AND PLANNING

C. Radial Collector Wells

FDEP-I-C-4: Concerns still remain regarding unknowns related to the Radial Collector Well System including, but not limited to: possible impacts to the Bay including seabeds, seagrasses and salinity; and reliability of the well system. This remains an issue which will require further review and discussion.

II. DEP SED ENVIRONMENTAL RESOURCE PERMITTING

A. Drainage/Engineering

FDEP-II-A-1: As a proposed post-certification requirement prior to construction, it will be necessary for FPL to demonstrate that all runoff from Units 6 & 7 and associated impervious areas will be directed to and contained within the industrial wastewater facility (Cooling Canal System).

FDEP-II-A-5: As a proposed post-certification requirement prior to construction, it will be necessary for FPL to demonstrate compliance with Section 5.6 of the Basis of Review for the fill source as follows: (a) Entrapped salt water, resulting from inland migration of salt water or penetration of the freshwater/salt water interface, will not adversely impact existing legal water users; (b) Excavation of the water body shall not penetrate a water-bearing formation exhibiting poorer water quality for example., in terms of chloride concentrations (BOR, SFWMD).

FDEP-II-A-7: As a proposed post-certification requirement prior to construction, FPL will be asked to submit paving, grading and drainage plans for all of the proposed elements of the project including the plant facilities, roadways, transmission lines, reclaimed water facility and excavation sites. This will also include stormwater calculations for all of the different project areas including a complete acreage breakdown of total area, building area, preserve/pervious area, parking/roadway area and other impervious coverage as well as sufficient site grading details which support the grading assumptions in Tables 24 & 25 of Appendix 10.8.

FDEP-II-A-8: As a proposed post-certification requirement prior to construction, FPL will be asked to provide stormwater management calculations and construction quality plans that show all the best management practice being used as part of the drainage design for the proposed construction (oil water separators, swales etc.). This will include stormwater management and details of how the runoff from the potentially oil contaminated areas will be routed to the oil/water separators prior to discharge into the industrial waste water site or the cooling water reservoir (Appendix 10.8). FPL will need to be able to identify and explain how stormwater runoff is handled from areas such as chemical storage, waste storage, backwash basin sludge processing and to demonstrate that runoff from these areas will not adversely impact ground water or surface water. A similar table to Table A-2, Attachment A of Appendix 10.8 should be prepared and submitted for Unit 6&7.

FDEP-II-A-10: Identification of potential culvert locations and the design of these culverts are necessary to evaluate potential hydrology impacts as well as direct and secondary wetland impacts associated with project development. As a proposed post-certification requirement prior to construction, it will be necessary for FPL to identify potential culvert locations and the design of these culverts in order for DEP to evaluate

potential hydrology impacts as well as direct and secondary wetland impacts associated with project development.

FDEP-II-A-12: As a proposed post-certification requirement prior to excavation, FPL will be required to perform an appropriate environmental site investigation for the fill area. In the event any potential waste disposal areas and/or contaminated soils are identified during the site investigation or encountered during construction activities, FPL will be required to notify and will coordinate closely with FDEP and DERM for a specific plan for handling of any such material. There may be additional specific requirements conditioned for this part of the project.

FDEP-II-A-20: As a proposed post-certification requirement, FPL will be asked to identify the entity willing to assume management and operation responsibilities for the water management feature created once the fill has been removed from the fill source, including a post mining operational plan. The operational plan will need to include all details regarding sizing and operation of the pump to withdraw water from the C-103 Canal as well as protocols for when water withdrawals would be authorized based on hydrologic conditions. Documentation will also be required to address any potential groundwater and hydrologic impacts in the upstream reach of the C-103 Canal as a result of the proposed diversion of water from the C-103 into the FPL-owned fill source area.

FDEP-II-A-36: As a proposed post-certification requirement prior to construction, FPL will be asked to provide all the required drainage calculations, paving, grading and drainage plans for all portions of the roadway improvements and for the new proposed roadways and bridges that demonstrate that the existing and proposed roads will not have an impact on the existing drainage patterns in the area.

FDEP-II-A-54a: FPL states that the project can be designed to divert water from the C-103 canal into the FPL-owned fill source area. As a proposed post-certification requirement prior to construction, FPL will be asked to provide the operational plan and protocol and demonstrate that water will be available to support this proposal without adversely impacting any upstream or downstream areas. Coordination with the SFWMD regarding this proposal and water availability is expected.

FDEP-II-A-54c: The proposal to prevent saltwater intrusion requires the ability to pump water from the C-103. As a proposed post-certification requirement prior to construction, FPL will be asked to provide reassurance from the SFWMD regarding the perpetual availability of surplus water during all times of the year (with emphasis on the dry season).

III. DEP SED WASTEWATER SECTION

Comments

- FPL should consider re-routing the various existing industrial waste streams (not including once-thru cooling water as the volume is too great) to the new proposed deep injection wells, thereby minimizing contaminants in such waste streams from impacting Ground Water.
- The proposal to use radial collector wells as a cooling water source backup to reclaimed water could be detrimental to CERP objectives of restoring more fresh water flow to Biscayne Bay. The Ground Water modeling appears to be incomplete or inappropriate based on comments by SFWMD personnel and DEP hydrogeologists, therefore further study is needed for acceptance of the radial well technology.

IV. DEP SED GROUND WATER AND UIC COMMENTS

FDEP-IV-2: No FPL Response. No discharges to the CCS shall be made due to the construction for Units 6 and 7 without an approved monitoring plan for ground waters and surface waters as well as the ecology of adjacent Biscayne Bay.

FDEP-IV-3: No FPL Response. It was stated in the Department's comment that the rock mine would have the potential to bifurcate the CCS plume. Therefore, no dewatering activities shall occur at the mine without an approved Departmental review. As a proposed post-certification requirement prior to construction, FPL will be asked to provide all a proposed dewatering plan which shall include, at a minimum, reasonable assurances that the CCS plume will not be bifurcated as well as a ground water monitoring plan.

V. DEP SED WASTE CLEANUP/HAZARDOUS WASTE

No Additional questions/comments.

VI. DEP OFFICE OF COASTAL AND AQUATIC MANAGED AREAS (CAMA)

Part of the proposed project is located within the boundaries of Biscayne Bay Aquatic Preserve, as described in Chapter 258.397 Florida Statute (F.S.) and Chapter 18-18 Florida Administrative Code (F.A.C.) and is located in Miami-Dade County.

The Biscayne Bay Aquatic Preserve (BBAP) was established to preserve Biscayne Bay in an essentially natural condition so that its biological and aesthetic values may endure for the enjoyment of future generations. Preservation and promotion of seagrass habitat is specifically named in the 'Intent' of the Biscayne Bay Aquatic Preserve Rule, Paragraph 18-18.001(f), F.A.C. Furthermore, it was the intent of the Legislature upon designating and establishing Biscayne Bay an aquatic preserve, including Card Sound, "…that Biscayne Bay be preserved in an essentially natural condition so that its

biological and aesthetic values may endure for the enjoyment of future generations" Chapter 258.397, F.S.

The project is located in the waters of the BBAP, which is a Class III Outstanding Florida Waters, pursuant to Rule 62-302.700(9)(h)5 & 6. This rule states, "It shall be the Department [of Environmental Protection] policy to afford the highest protection to Outstanding Florida Waters and Outstanding National Resource Waters." It defines this as "no degradation of water quality."

BBAP staff has identified several areas of the FPL Site Certification Application that lack sufficient data and/or pertinent information to substantiate claims that there will be little or no adverse impacts to the BBAP, thereby prohibiting any further evaluation of the proposed activities until such information can be obtained. In reviewing the Site Certification Application for completeness, staff cited authority in Chapter 18-18 F.A.C. and 258.397 F.S. that established the Biscayne Bay Aquatic Preserve, Chapter 18-21 F.A.C. that rules Sovereignty Submerged Lands Management as well as the Outstanding Florida Water designation pursuant to rule 62-302.700(9)(h) 5 and 6. Staff also employed Environmental Control 403.509(3)(e) and (f) F.S. which states that "…In determining whether an application should be approved in whole, approved with modifications or conditions, or denied, the board, or secretary when applicable, shall consider whether, and the extent to which, the location, construction, and operation of the electrical power plant will…(e) Effect a reasonable balance between the need for the facility as established pursuant to s. 403.519 and the impacts upon air and water quality, fish and wildlife, water resources, and other natural resources of the state resulting from the construction and operation of the facility" as well as "…(f) Minimize, through the use of reasonable and available methods, the adverse effects on human health, the environment, and the ecology of the land and its wildlife and the ecology of state waters and their aquatic life."

Each of the questions or requests that follow is categorized under Groundwater Issues, Surface Water and Benthic Resources, and Mitigation and can be qualified by the authority cited above.

Groundwater Issues

1. Physical water quality data recorded during the pump test at PW-1 from the Aqua Trolls data loggers was not provided from the observation wells, MW-1-1S, MW-1-SS, MW-1-DZ, MW-2, MW-3, MW-4, MW-5, and the surface water observation sites, IWF and Barge Slip. Please provide the actual field measurements (i.e., depth to water readings, temperature, conductivity, flowrates, etc.) in order to allow CAMA to evaluate the conclusion that only 3 percent of the extracted water from the radial collector wells will be from the groundwater zone.

2. Based on the modeled 3 percent to be extracted from the Biscayne Aquifer, 3.7 million gallons per day could be withdrawn from the Biscayne Aquifer at full scale operation. Please provide the data for CAMA to evaluate that was used to determine that the 3% extraction from the aquifer will not affect the benthic communities of Biscayne Bay.

3. Table 5.4 in the APT Report (HDR) indicates a positive upward seepage of groundwater to the bay, which is an important source of freshwater for benthic communities. Table 5.4 further indicates a reverse in seepage with the operation of the radial collector wells (RCWs); a net negative downward seepage is reported based on the difference in observed seepage rates prior to and during the APT. Please provide all the raw data from the Biscayne Bay seepage meters for review in order to allow CAMA to evaluate possible groundwater and surface water fluxes. Please use this and other data as necessary to verify the claim that the seepage results are inconclusive.

4. The Groundwater Modeling Report prepared by Bechtel stated on page 7-1 states that the groundwater flow pattern at the site prior to the APT shows groundwater flow to the west toward the IWF. However, the SFWMD-B-63b spreadsheet has a positive groundwater input (drainage inflow). Based on this, drainage inflow toward the IWF should be reflected as a negative value in the Flood Inflow per day without radial collector wells and the Ebb outflow per day without radial collector wells' formulas. Please explain this discrepancy.

5. The SFWMD-B-63b spreadsheet does not appear to produce the exact values displayed in the "Scenario 1 & 2" table, which were used to obtain the linear regression equations that predict the 1 square mile and 4 square mile impact. Please explain this discrepancy.

6. The ocean salinity concentration of 35 ppt does not reflect the actual seasonal variability in salinity concentrations that occur in the Biscayne Bay. Monthly averages obtained from actual salinity data measurements from a nearby source would better estimate any salinity impacts. Does FP&L have any other salinity data collected nearby they provide for our evaluation?

Surface Water and Benthic Resources

7. Please provide the data used to support the conclusion that the benthic resources that currently exist along the bay bottom over the footprint of the radial wells and adjacent areas will not be significantly affected.

Mitigation

8. Please provide a detailed description of how the impacts to wetlands, surface water, groundwater and/or other habitats, flora and fauna that may be adversely impacted by the proposed construction and/or operation of the plant within the Biscayne Bay Aquatic Preserve boundaries will be mitigated.

Conditions of Certification that should be considered in future review of this application may include but are not limited to:

1. An adequate baseline survey of seagrass cover and benthic fauna in the vicinity of the proposed construction and operation of the radial collector wells and the vicinity of the on-site plant where reuse water would be used, to be conducted within a certain amount of time before the onset of construction-related activities. FP&L will work with DEP staff to design monitoring studies to accomplish these surveys. The monitoring should occur sufficiently prior to and after the beginning of activities at the sites, dates to be determined by FP&L and DEP staff. More information related to the lateral extent of the radial collector wells needs to be provided during this phase also.
2. All dewatering/construction activities happening on the upland may impact the waters of the cooling canal system in that the byproduct will be placed in the system. Given that the cooling canal system has a tidally-connected influence on the groundwater, it can be assumed based on existing knowledge that groundwater moves through the aquifer and into the surface waters of the bay. Best management practices and/or other ways to ensure that artifacts of the dewatering and construction process should be followed to protect the surface waters of the Biscayne Bay Aquatic Preserve.
3. FP&L will provide funds to hire an independent contractor, selected by FDEP, to study the karst features at and adjacent to the radial well collector sites and construction site to determine the feasibility of karst fractures occurring related to their activities. The report will also include recommendations to avoid any fractures during operation and construction as well as proposed mitigation measures in the event of a fracture that impacts benthic communities in the area.
4. FP&L will monitor the velocity of water intake from their collector wells utilizing permanently installed equipment to verify that they are not exceeding the proposed velocities submitted in the application. In addition FP&L will put in place monitoring to verify that no entrainment of vertebrate or invertebrate species is occurring due to their radial collector wells. If entrainment is occurring a remediation plan and mitigation measures will be adopted to eliminate, minimize, or mitigate for this entrainment will be adopted and followed.

5. FP&L will work with CAMA and DEP/ERP to monitor and ensure that no further impacts to the Biscayne Bay Aquatic Preserve will occur from the operation and/or construction of the new units.

VII DEP SITING COORDINATION OFFICE

FDEP-VII-2: The Department notes that FPL has conservatively estimated the "maximum" wetland impacts for the plant and associated facilities. Provide an estimate of the anticipated "actual" wetland impacts, following anticipated utility efforts to minimize impacts. FPL indicated in its first response to this question that the estimated actual and maximum wetland impacts were provided in Section 1 of Appendix 10.4 to Volume III of the SCA. Functional Loss is not the value requested. Please provide the best estimate of the number of acres of wetlands that will actually be impacted after FPL has applied all available avoidance criteria.

FDEP-VII-3: Provide comparative topographic maps showing the current sea level and predicted sea level in the year 2060 in the area of the Turkey Point Plant based on the most recent data available. Provide a summary of the background data (with citations) used to support the predicted sea level.

FDEP VII-5: If DEP determines that the radial collector wells are not approvable, what does FPL plan to use as an alternate backup cooling water source?

OTHER AGENCIES/LOCAL GOVERNMENTS

The following agencies have identified the need for additional information, and their requests are attached by the Department:

1. South Florida Regional Planning Council;
2. South Florida Water Management District;
3. Miami Dade County; and
4. City of Miami.

The above agency comments/questions are attached "*as received*" by the Department without editing. It should be noted that several questions proposed are those for which answers will not likely be available until the post-certification phase of the certification process. Additionally, some questions may be reflective of procedural requirements for which there exist no identifiable state or local standards. The City of Miami appears to have combined questions related to the transmission line and plant portions of the application. (It appears that questions A-F, H, and J-K are plant related.)

As such, the Department requests that for this completeness filing the applicant respond to only those questions related to the plant and associated facilities other than the transmission lines. Furthermore, as indicated above, the applicant should identify those items which are more suitably handled through post-certification submittals, and

propose related conditions of certification. Lastly, the applicant should identify those questions for which there exists no applicable standard.

Although the Florida Fish and Wildlife Conservation Commission (FWC) considers the application complete, their letter is attached and identifies items that may be incorporated within a future "Preliminary Statement of Issues".

Although a separate federal proceeding coordinated by the Nuclear Regulatory Commission will directly incorporate federal reviews, completeness comments regarding the Site Certification Application were submitted by the U.S. Department of the Interior, National Park Service, Biscayne National Park. Those questions/comments were forwarded to the applicant upon receipt.

Requests for completeness items related to federal permit applications are processed directly by the federally delegated or approved program and are not intended to be included herein.

EXHIBIT 2

Florida Department of Environmental Protection

Marjory Stoneman Douglas Building
3900 Commonwealth Boulevard
Tallahassee, Florida 32399-3000

TO: Toni Sturtevant, OGC

THROUGH: Mike Halpin, Siting Coordination Office Administrator

FROM: Cindy Mulkey, SCO

DATE: June 4, 2010

SUBJECT: FPL Turkey Point 6 & 7 SCA Third Completeness Determination (Plant)

Pursuant to § 403.5252, Florida Statutes, the Department of Environmental Protection (DEP), after consulting with the affected agencies, has determined that the portion of the Florida Power & Light (FPL) Turkey Point Units 6 & 7 Nuclear Plant site certification application (SCA) concerning the plant and associated facilities other than the transmission lines is not complete.

The following agencies have found the plant portion of the FPL Turkey Point 6 & 7 SCA to be complete:

1. Department of Community Affairs
2. Department of Transportation
3. Fish and Wildlife Conservation Commission
4. City of Doral
5. City of Homestead

The following agencies have identified the need for additional information:

1. South Florida Regional Planning Council
2. South Florida Water Management District
3. Miami Dade County
4. City of Miami
5. Department of Environmental Protection

Agencies' comments/questions (other than DEP's) are attached "*as received*" by the Department. The Department notes that some of the agencies' recommended completeness issues/questions appear to go beyond the scope of the plant-side completeness review. The Department further notes that the City of Miami has requested information specifically related to the transmission

line portion of the SCA. For this reason the Department does not recommend the inclusion of the City of Miami's item G in this determination.

The following items represent requests for additional or clarifying information and comments from the DEP Southeast District (SED) Office, and the DEP Office of Coastal and Aquatic Managed Areas (CAMA). Questions for which a satisfactory answer has been received and for which there are no further comments have been omitted.

I. DEP SED WATERSHED MANAGEMENT AND PLANNING

2FDEP-I-C-4: Radial Collector Wells

FPL notes that they are still working with the SFWMD and the Department to evaluate the potential impact of the construction dewatering and radial collector well operation and the results will be provided with the second set of responses (Part B Submittal) by July 15, 2010. Until the Part B Submittal is received and reviewed, concerns still remain regarding unknowns including but not limited to possible impacts to the Bay including the seabed, seagrasses and salinity. The reliability of the well to produce the water at a volume and quality needed for the facility will remain speculative until it is in production. This is a significant unknown and thus a risk for the facility, public and the environment.

New Question: FPL –Owned Fill Source

In an amendment to the Site Certification Application submitted in May 2010, FPL has suspended pursuit of local approvals for the FPL-owned fill source site. With that being said, how will FPL obtain the required amount of fill for the project?

II. DEP SED ENVIRONMENTAL RESOURCE PERMITTING

A. Drainage/Engineering

FDEP-II-A-1: As a proposed post-certification requirement prior to construction, it will be necessary for FPL to demonstrate that all runoff from Units 6 & 7 and associated impervious areas will be treated and directed to and contained within the industrial wastewater facility (Cooling Canal System).

DEP Comment: DEP is modifying the above proposed post-certification requirement as shown in strikethrough/underline.

FDEP-II-A-12: As a proposed post-certification requirement prior to excavation, FPL will be required to perform an appropriate environmental site investigation for the fill area. In the event any potential waste disposal areas and/or contaminated soils are identified during the site investigation or encountered during construction activities, FPL will be required to notify and will coordinate closely with FDEP and DERM for a specific plan for handling of any such material. There may be additional specific requirements conditioned for this part of the project.

DEP Comment: FPL has amended the SCA to remove the FPL-owned fill source. As a proposed post-certification requirement, FPL shall notify the DEP of its selection(s) of the fill source(s). FPL shall demonstrate that imported fill materials to be deposited on site is free of contaminants so as to know adversely impact ground water and/or surface water onsite or offsite.

III. DEP OFFICE OF COASTAL AND AQUATIC MANAGED AREAS (CAMA)

Part of the proposed project is located within the boundaries of Biscayne Bay Aquatic Preserve, as described in Chapter 258.397 Florida Statute (F.S.) and Chapter 18-18 Florida Administrative Code (F.A.C.) and is located in Miami-Dade County.

The Biscayne Bay Aquatic Preserve (BBAP) was established to preserve Biscayne Bay in an essentially natural condition so that its biological and aesthetic values may endure for the enjoyment of future generations. Preservation and promotion of seagrass habitat is specifically named in the 'Intent' of the Biscayne Bay Aquatic Preserve Rule, Paragraph 18-18.001(f), F.A.C. Furthermore, it was the intent of the Legislature upon designating and establishing Biscayne Bay an aquatic preserve, including Card Sound, "…that Biscayne Bay be preserved in an essentially natural condition so that its biological and aesthetic values may endure for the enjoyment of future generations" Chapter 258.397, F.S.

The project is located in the waters of the BBAP, which is a Class III Outstanding Florida Waters, pursuant to Rule 62-302.700(9)(h)5 & 6. This rule states, "It shall be the Department [of Environmental Protection] policy to afford the highest protection to Outstanding Florida Waters and Outstanding National Resource Waters." It defines this as "no degradation of water quality."

BBAP staff has identified several areas of the FPL Site Certification Application that lack sufficient data and/or pertinent information to substantiate claims that there will be little or no adverse impacts to the BBAP, thereby prohibiting any further evaluation of the proposed activities until such information can be obtained. In reviewing the Site Certification Application for completeness, staff cited authority in Chapter 18-18 F.A.C. and 258.397 F.S. that established the Biscayne Bay Aquatic Preserve, Chapter 18-21 F.A.C. that rules Sovereignty Submerged Lands Management as well as the Outstanding Florida Water designation pursuant to rule 62-302.700(9)(h) 5 and 6. Staff also employed Environmental Control 403.509(3)(e) and (f) F.S. which states that "…In determining whether an application should be approved in whole, approved with modifications or conditions, or denied, the board, or secretary when applicable, shall consider whether, and the extent to which, the location, construction, and operation of the electrical power plant will…(e) Effect a reasonable balance between the need for the facility as established pursuant to s. 403.519 and the impacts upon air and water quality, fish and wildlife, water resources, and other natural resources of the state resulting from the construction and operation of the facility" as well as "…(f) Minimize, through the use of reasonable and available methods, the adverse effects on human health, the environment, and the ecology of the land and its wildlife and the ecology of state waters and their aquatic life."

Each of the questions or requests that follow is categorized under Groundwater Issues, and Surface Water and Benthic Resources and can be qualified by the authority cited above.

Groundwater Issues

Concerns still remain regarding unknowns related to the Radial Collector Well (RCW) System including, but not limited to: possible impacts to the Bay including benthic flora and fauna; salinity; and possible impacts of the radial collector wells on the freshwater input to the bay, flora and fauna. These issues and concerns will require further review and discussion. Notably, questions related to 2FDEP-VI (CAMA)-1, -2, -4, -5, -6, -7 remain. We look forward to

receiving the additional information to be sent with July 15, 2010 response to better understand these issues and may have further questions after reviewing the new information.

New Groundwater Issues requests/questions relating to FPL's responses:

2FDEP-VI(CAMA)-1: The seepage meter data provided (see excerpt below) indicates that the bay bottom experiences a net loss of freshwater flow, as the "All Days No Pumping" scenario produces a higher flow rate than the "All Days Active Pumping" at all but two meters. Please provide the field data for the "7 day APT Test" and "All Days Active Pumping" as well as all pump tests conducted within the footprint of the proposed units (PW-6U, PW-7U, PW-6L, and PW-7L) including Aqua Trolls data logger results from all observation wells, water quality analyses, and field measurements (i.e., depth to water readings, temperature, conductivity, flow rates, etc.).

Per 2FDEP-VI(CAMA)-2: Please provide further information regarding the operation of the RCWs, including the frequency at which the following readings will be collected; pumped water volume rates, water elevations inside the caissons, and water sample parameters, including a map to scale showing the layout of the RCW laterals and the Biscayne Bay Aquatic Preserve boundaries including the proposed coordinates of the position of the RCWs and the projected cone of influence of the full-scale operation of the RCWs, and a definitive depth at which the laterals will be placed as well as their length and diameter.

Seepage Meter Data Provided:

		Meter Number											
		11 (S. Array)	**12 (S. Array)**	**1**	**3**	**7**	**2**	**4**	**8**	**5**	**6**	**9**	**10**
	Distance from Pump	230'	230'	265'	255'	255'	290'	280'	280'	305'	330'	500 '	900'
7 Day APT Test: Pumping	Minimum	-0.0063	0.0103	0.0017	-0.0013	0.0066	0.0084	-0.0025	0.0072	0.0002	0.0000	0.0016	-0.0035
	Maximum	0.0124	0.0314	0.0173	0.0169	0.0305	0.0276	0.0176	0.0251	0.0195	0.0052	0.0047	0.0055
	Average	0.0081	0.0163	0.0051	0.0027	0.0236	0.0167	0.0056	0.0170	0.0078	0.0015	0.0029	0.0019
2 Day Post APT Test: Not Pumping	Minimum	0.0081	0.0131	-0.0002	0.0002	0.0202	0.0220	0.0069	0.0235	0.0181	0.0006	0.0037	-0.0014
	Maximum	0.0143	0.0174	0.0049	0.0009	0.0256	0.0267	0.0090	0.0305	0.0245	0.0055	0.0055	0.0067
	Average	0.0112	0.0153	0.0024	0.0006	0.0229	0.0243	0.0079	0.0270	0.0213	0.0030	0.0046	0.0026
All Days Active Pumping (n=14)	Minimum	-0.0063	0.0095	-0.0017	-0.0013	0.0066	0.0059	-0.0025	0.0072	0.0002	0.0000	0.0016	-0.0035
	Maximum	0.0132	0.0314	0.0173	0.0214	0.0374	0.0276	0.0176	0.0316	0.0195	0.0055	0.0100	0.0115
	Average	0.0085	0.0165	0.0044	0.0093	0.0253	0.0153	0.0060	0.0198	0.0064	0.0023	0.0046	0.0039
All Days No Pumping (n=12)	Minimum	0.0025	0.0087	-0.0015	0.0002	0.0136	0.0069	0.0025	0.0018	-0.0018	-0.0002	0.0019	-0.0014
	Maximum	0.0146	0.0431	0.0182	0.0227	0.0581	0.0267	0.0126	0.0305	0.0245	0.0097	0.0084	0.0104
	Average	0.0086	0.0210	0.0051	0.0105	0.0288	0.0167	0.0055	0.0221	0.0041	0.0041	0.0047	0.0056

2FDEP-VI (CAMA)-4: Documentation for the Salinity Impact Analysis is incomplete. Please provide published references for the use of an equilibrium mixing chamber model in estuarine environments. Please provide published references and/or supporting documentation for the equations applied and assumptions made for the SFWMD B-63b Mixing Chamber Analysis model (steady state conditions are assumed). Please include published references and/or supporting documentation for the adjustments used to estimate the input parameters provided in the Scenario 1 and Scenario 2 Table of the Salinity Impact Analysis.

2FDEP-VI (CAMA)-5: This question was not adequately addressed in FPL's response to CAMA's submission on December 15, 2009. The SFWMD-B-63b spreadsheet does not appear to produce the exact values displayed in the "Scenario 1 & 2" table, which were used to obtain the linear regression equations that predict the 1 square mile and 4 square mile impact. It is stated that "Within ½ mile of the intake (blue line), the RCWs have a slight moderating effect on the salinity (i.e., low salinities are not as low and high salinities are not as high)," but then it is stated that "At 1.0 mile from the intake (green line), there is no measurable impact from the RCWs. This is indicated in the figure by the fact that the green and black lines separate only in a few locations. CAMA staff look forward to clarification related to this discrepancy, and given that the Biscayne Bay Coastal Wetlands projects (part of the Comprehensive Everglades Restoration Plan) seeks to do just the opposite by returning to lower salinities along the shoreline where they currently are variable depending on season, tide and distance from shore, please explain how moderating salinity in any way helps to meet restoration goals, maintains the Biscayne Bay Aquatic Preserve in an essentially natural condition and does not affect salinity values.

2FDEP-VI (CAMA)-6: FPL's response to this question states that "The ocean is the ultimate source of water flowing into the Bay to replace water withdrawn by the radial collector wells. Operation of the radial collector wells does not change precipitation, evaporation or freshwater inflow from upland areas. Therefore, the ocean salinity concentration of 35 ppt should reflect the ocean salinity. It should not represent the seasonally variable salinity within Biscayne Bay." While there is a semi-diurnal tidal phase in Biscayne Bay that is influenced by the ocean, the water that resides in Biscayne Bay in any one basin at any one time is greatly affected by groundwater inflow from the bay bottom and tributary discharges, wind patterns and other variables. Salinities are typically lower along the shoreline, between a few hundred meters to 1000m and during the wet season (Langevin, 2001). The referenced county water quality site, BB41, is a surface water sample site approximately 4 miles west of Turkey Point peninsula and does not reflect a near-shore salinity regime, which fluctuates seasonally. It also does not reflect the salinity at or near the bay bottom, the depths most likely to be impacted by operation of the RCWs. Please provide more accurate data for salinity in the vicinity (such as data collected on a continual basis and particularly in the vicinity of the Turkey Point) and explain how this affects the results possible impacts by the RCWs. Continuous sampling results with a frequent time-step obtained from the bay bottom are most appropriate in developing a realistic salinity impact analysis, and a bay bottom depth profile represents the depth of most probable impact by the RCWs.

Surface Water and Benthic Resources

2FDEP-VI (CAMA)-7: FPL's response does not adequately address how benthic resources in the footprint of the RCWs and adjacent areas will not be significantly affected given the fact that at least 3% of the water will come from the Biscayne Aquifer, a source of freshwater inputs to the bay bottom, helping to support the benthic community. This may be better addressed after FPL's July 15, 2010 response to 2FDEP-VI (CAMA)-2 is provided.

Conditions of Certification

CAMA reiterates the need for the following conditions (included in the Department's January 13, 2010 2nd Completeness Determination) to be considered in future review of this application.

1. An adequate baseline survey of seagrass cover and benthic fauna in the vicinity of the proposed construction and operation of the radial collector wells and the vicinity of the on-site plant where reuse water would be used, to be conducted within a certain amount of time before the onset of construction-related activities. FP&L will work with DEP staff to design monitoring studies to accomplish these surveys. The monitoring should occur sufficiently prior to and after the beginning of activities at the sites, dates to be determined by FP&L and DEP staff. More information related to the lateral extent of the radial collector wells needs to be provided during this phase also.
2. All dewatering/construction activities happening on the upland may impact the waters of the cooling canal system in that the byproduct will be placed in the system. Given that the cooling canal system has a tidally-connected influence on the groundwater, it can be assumed based on existing knowledge that groundwater moves through the aquifer and into the surface waters of the bay. Best management practices and/or other ways to ensure that artifacts of the dewatering and construction process should be followed to protect the surface waters of the Biscayne Bay Aquatic Preserve.
3. FP&L will provide funds to hire an independent contractor, selected by FDEP, to study the karst features at and adjacent to the radial well collector sites and construction site to determine the feasibility of karst fractures occurring related to their activities. The report will also include recommendations to avoid any fractures during operation and construction as well as proposed mitigation measures in the event of a fracture that impacts benthic communities in the area.
4. FP&L will monitor the velocity of water intake from their collector wells utilizing permanently installed equipment to verify that they are not exceeding the proposed velocities submitted in the application. In addition FP&L will put in place monitoring to verify that no entrainment of vertebrate or invertebrate species is occurring due to their radial collector wells. If entrainment is occurring a remediation plan and mitigation measures will be adopted to eliminate, minimize, or mitigate for this entrainment will be adopted and followed.
5. FP&L will work with CAMA and DEP/ERP to monitor and ensure that no further impacts to the Biscayne Bay Aquatic Preserve will occur from the operation and/or construction of the new units.

EXHIBIT 3

Miami-Dade County Third Completeness Comments for
Plant and Non-Transmission Line Portions of the
FPL Site Certification Application – Turkey Point Units 6 & 7
May 28, 2010

The following comments indicate the additional information necessary for the County to determine if the quality and quantity of the information provided by Florida Power and Light (FPL) is sufficient to conduct an evaluation of their Site Certification Application (SCA) for proposed Turkey Point Units 6 & 7. The comments are referenced by the County's original numbering system and where necessary, to ensure clarity of the third round comments, the full text of original comments had been included.

On May 7, 2010, the County received materials from FPL that documented an amendment to their SCA. FPL has suspended pursuit of local approval for an FPL-owned fill source and has removed this project feature from the SCA. Comments related to Section E: FPL-Owned Fill Source, are no longer relevant to this evaluation and have been removed from this document. Please also note that transmission line comments are not included with this response.

MDC Number **Completeness Comments**

SECTION A – PLANT SITE FOR UNITS 6 & 7 INCLUDING BARGE AREA

MDC-A-1 (Third Round)
Previously determined complete.

MDC-A-2 (Third Round)
Previously determined complete.

MDC-A-3 (Third Round)
No additional information has been provided. This item remains incomplete and information previously requested must be provided to allow the County to determine whether the proposed project meets the substantive requirements of Miami-Dade County Code and the CDMP in order to prepare the reports required by 403.526 F.S. FPL's reference to a proposed plan that may be submitted to Miami-Dade County in the future to achieve compliance with the requirements of Resolution Z-56-07 is not responsive to this application completeness request. The requested information is required within the time frames prescribed in the "Fifth Revised Schedule for Review of Site Certification Application for Florida Power and Light Company's Turkey Point Units 6 & 7 Power Plant Siting App. PA03-45A3; DEP OGC Case No. 09-3107 DOAH Case No. 09-3575-EPP". The County acknowledges FPL's desire to provide information towards the completeness of this item at a later date and the County will review that information in a subsequent round of completeness.

MDC-A-3 (Second Round)
The hydrologic information provided does not satisfy condition 15 of Resolution Z-56-07 or provide sufficient information for evaluation of the proposed project with requirements of Chapter 24, Miami-Dade County Code. Condition 15 requires the submittal of a hydrologic study in accordance with the substantive requirements of Chapter 24, Miami-Dade County Code in order for DERM to evaluate the impacts of the proposed project on surface and groundwater. The APT was of a narrow scope, was not approved by DERM, does not meet the substantive requirements of the County Code, and does not allow for an evaluation of the project's impacts. As an

example, the study does not provide the necessary data to determine whether the model output and conclusions drawn from the modeling are reliable. In addition, it fails to show how the existing groundwater plume created by operation of the cooling canal system would respond to construction dewatering activities. Furthermore, the information provided is inadequate to determine the extent to which the plume would be drawn under Biscayne Bay and/or into the radial collector wells. Also see comments provided in MDC-C-6

MDC-A-3 (First Round)
The application proposes to dewater up to 26 MGD of groundwater by discharging it to the cooling canals. Pursuant to Condition No. 15 of the Unusual Use Approval Resolution Z-56-07, a DERM approved hydrologic study is required. The study results are required to evaluate all impacts to surface and groundwater, including but not limited to all dewatering activities.

MDC-A-4 (Third Round)
No additional information has been provided. This item remains incomplete and information previously requested must be provided to allow the County to determine whether the proposed project meets the substantive requirements of Miami-Dade County Code and the CDMP in order to prepare the reports required by 403.526 F.S. FPL's reference to a proposed plan that may be submitted to Miami-Dade County in the future to achieve compliance with the requirements of Resolution Z-56-07 is not responsive to this application completeness request. The requested information is required within the time frames prescribed in the "Fifth Revised Schedule for Review of Site Certification Application for Florida Power and Light Company's Turkey Point Units 6 & 7 Power Plant Siting App. PA03-45A3; DEP OGC Case No. 09-3107 DOAH Case No. 09-3575-EPP".

MDC-A-4 (Second Round)
The information provided is not sufficient for evaluation of the project with requirements of Chapter 24, Miami-Dade County Code and the CDMP, does not meet the requirements of conditions 4 and 5 of Resolution Z-56-07, and it is not sufficient in comprehensiveness of data or in quality of information to allow the County to prepare the reports required by 403.526 F.S. Additional information and further clarification of information provided is required. As an example, the water source analysis was based, at least in part, on incorrect assumptions and conflicting information. See comments provided in MDC-C-24.

MDC-A-4 (First Round)
Not enough information provided to assess water supply alternatives.
Appendix 10.9 is a summary of alternative water supply study conducted by FPL

MDC-A-5 (Third Round)
No additional information has been provided. This item remains incomplete and information previously requested must be provided to allow the County to determine whether the proposed project meets the substantive requirements of Miami-Dade County Code and the CDMP in order to prepare the reports required by 403.526 F.S. The requested information is required within the time frames prescribed in the "Fifth Revised Schedule for Review of Site Certification Application for Florida Power and Light Company's Turkey Point Units 6 & 7 Power Plant Siting App. PA03-45A3; DEP OGC Case No. 09-3107 DOAH Case No. 09-3575-EPP". The County acknowledges FPL's desire to provide information towards the completeness of this item at a later date and the County will review that information in a subsequent round of completeness.

MDC-A-5 (Second Round)
This comment remains incomplete. The requested information is not strictly a procedural requirement under local law and FPL's response did not address the request for information provided in the County's first completeness comments. Additional information as requested regarding dewatering activities is required for proper evaluation of the potential impacts

associated with the proposed project pursuant to local requirements including Chapter 24, Miami-Dade County Code. With regard to the use of radionuclide tracers such as tritium, there is no federal preemption for use of this parameter for evaluation purposes. Miami-Dade County has repeatedly advised that the use of tracers such as tritium is not related to public health and safety issues and that it would be necessary to use such tracers to determine water sources for the radial collector wells as part of a comprehensive hydrologic study.

MDC-A-5 (First Round)
Sufficient information is not provided to make a determination of dewatering impacts. Please provide a description of all required dewatering activities and the techniques that will be used to ensure that all surface and groundwater quality standards will be met. The application states that "General area dewatering activities will be confined to areas associated with construction within the power block and the effluent released to the existing industrial wastewater facility. Localized dewatering activities may occur during the construction of some associated non-linear facilities. Water produced during dewatering will be managed local to each facility or released to the industrial wastewater facility." Please detail which facilities will require dewatering during construction, provide a dewatering plan for each facility that includes impact to the groundwater (e.g. radius of influence, drawdown), the method of discharging the recovered groundwater, groundwater assessment, potential treatment requirements, and providing a comprehensive monitoring plan are required, a water quality analysis of the source water, duration and total volume for each dewatering project, disposal options for any contaminated water, applicable calculations and supporting models, and justification for why dry conditions are required for each specific construction element where dewatering is proposed. Mention is made of a MODFLOW groundwater model within the submittal, however, no model runs or data is provided for review. The modeling efforts must be provided, including, but not limited to the capabilities and limitations of the model, the assumptions made during the construction of the model, boundary conditions and variables (including background data) utilized, the method in which the groundwater and surface water interaction is simulated, method of calibration, and the resulting reporting outputs

MDC-A-6 (Third Round)
This item remains incomplete. Miami-Dade County acknowledges the additional information provided related to the sanitary sewer wastewater issues and the requested variance to forego connection to sanitary sewers in association with the proposed onsite wastewater treatment plant not in conformance with Section 24-43 of the Miami-Dade Code, which requires connection to the public sanitary sewer system, prohibits an onsite wastewater treatment plant, and prohibits generation of liquid waste at facilities not connected to the sewer system. The appropriateness of any variance request must consider all regulatory standards applicable to the project. Although FPL asserts that all regulatory standards will be met, relevant information in support of this claim has not been provided. In particular, additional information on the wastewater treatment process and resultant discharge water quality is necessary as part of the wastewater discharge plan required by condition 6 of Z-56-07. In addition, FPL has not demonstrated how the proposed disposal of wastewater via injection wells complies with this condition including the use of this wastewater (after appropriate treatment) for the benefit of the Biscayne Bay Coastal Wetlands CERP project as required. The hydrologic study required by condition 15 of Z-56-07 is also necessary to evaluate the appropriateness of this variance request and the proposed discharge of the wastewater treatment plant effluent to deep wells. Therefore, the hydrologic study needs to include an evaluation of all impacts to surface waters as well as the boulder zone, the Floridan, and Biscayne Aquifers including an evaluation of the proposed elimination of the freshwater inputs to the Biscayne Aquifer from the existing treatment plant.

In addition, with regard to the flow analysis provided by FPL in 2MDC-A-6, please explain why the calculation of the assumed volume that would be returned to MDWASD (75,000 MGD) did

not include the contribution form the wastewater retention basin effluent to blowdown sump (590,400 MGD). Please provide a revised analysis with this additional waste stream included. With regard to the existing septic tanks mentioned in FPL's response, please provide detailed information including locations, volumes, size of drainfields, setbacks from wetlands and other surface waters, identification of the facilities served by these septic tanks and a characterization of the wastewater discharge to each system.

MDC-A-7 (Third Round)
This item remains incomplete. Not all of the requested information has been provided such as the technical specifications of the proposed treatment train. With regard to Miami-Dade County's request to identify environmentally sensitive receptors, it is acknowledged that there are no such receptors within the boulder zone. However, sufficient information and assurances have not been provided to establish that wastewater injected via deep wells would not impact sensitive receptors beyond the boulder zone over the operational life of the facility. In addition sufficient information and assurances have not been provided to determine whether variances from Section 24-43 of the Miami-Dade County Code would be appropriate pursuant to Section 24-12 of the Miami-Dade County Code. These variances would be required for the proposed construction and operation of a wastewater treatment plant and the proposed discharge to the boulder zone (including but not limited to discharge of the sanitary wastewater stream) in lieu of the required waste stream connections to the sanitary sewer system, which are otherwise prohibited by Code. . The hydrologic study required pursuant to condition 6 of Z-56-07 is also needed to evaluate the proposed project and modeling may also be necessary to evaluate this aspect. With regard to FPL's reference to a previous EQCB approval related to the existing wastewater treatment plant, no information has been provided in the SCA to demonstrate that a variance would be appropriate relative to the effluent discharge from the proposed wastewater treatment plant to the boulder zone. FPL shall provide the necessary information (including the referenced hydrologic study) for Miami-Dade County to review this application.

Please also see MDC's response MDC-G-12 (Third Round)

MDC-A-8 (Third Round)
This item remains incomplete and information previously requested must be provided to allow the County to determine whether the proposed project meets the substantive requirements of Miami-Dade County Code and the CDMP in order to prepare the reports required by 403.526 F.S. FPL's reference to a proposed plan that may be submitted to Miami-Dade County in the future to achieve compliance with the requirements of Resolution Z-56-07 is not responsive to this application completeness request. The requested information is required within the time frames prescribed in the "Fifth Revised Schedule for Review of Site Certification Application for Florida Power and Light Company's Turkey Point Units 6 & 7 Power Plant Siting App. PA03-45A3; DEP OGC Case No. 09-3107 DOAH Case No. 09-3575-EPP".

Also, during the March 8th, 2010 meeting FPL explained to County staff that, when using reclaimed water as the cooling water source, nearly all of the wastewater streams proposed to be injected into the boulder zone are needed to dilute the liquid radiologic waste that will be generated by the operation of Units 6 & 7. According to the information presented during the meeting (using the waste stream flow rates presented in Table 4.5-1 of the SCA) an estimated volume of 12,458 gpm is required for the dilution of the estimated 3 gpm of liquid radwaste effluent that will be generated by the operation of the proposed Units 6 & 7. . Therefore, further clarification is needed and all information that has been provided to DERM outside of the SCA process shall be submitted in response to this item. This clarification shall include details of all regulatory requirements related to the disposal of liquid radwaste effluent, including but not

limited to the federal requirements to dilute the liquid radwaste effluent discharge and the applicable dilution target concentrations of the discharge. This shall also include a description of the regulatory thresholds based on receiving water volumes or other criteria that pertain to whether dilution is required under federal or other applicable laws. FPL shall also include in the response a description of all the available liquid radiologic waste alternative disposal methods along with any studies and alternative analysis performed and evaluated in the process that led to FPL's selection of the proposed disposal method. FPL shall include a complete characterization of the radiologic components of the waste stream including but not limited to the estimated Gross Beta activity of the proposed discharge prior to and after the proposed dilution relative to the standard contained within Section 24-42 of the Miami-Dade County Code.

During the aforementioned March 8th, 2010 meeting with County staff, FPL explained that FPL had not determined that the proposed dilution of the liquid radwaste effluent was required pursuant to applicable federal law because the volume of the receiving water body within the boulder zone was not known. Rather, FPL conservatively assumed that the volume would be inadequate and is therefore proposing dilution. However this information has not been provided as part of the SCA process and therefore this information shall be included in the applicant's response to this item i. Pursuant to condition 15 of Z-56-07, a hydrologic study is required to evaluate all impacts to surface and groundwaters. Therefore, the hydrologic study shall include an investigation of the receiving waters within the boulder zone to determine if use of the wastewater discharge is required for dilution of the liquid radwaste effluent pursuant to applicable federal law as well as to evaluate the appropriateness of the proposed disposal of wastewaters including liquid radwaste effluent to the boulder zone. FPL shall provide the information necessary including the referenced hydrologic study, for Miami-Dade County to review this application for compliance with the substantive requirements of Miami-Dade County Code and the CDMP.

Please also see MDC's response MDC-A-6 (Third Round)

MDC-A-9 (Third Round)
The information necessary to verify the accuracy of the waste characterization as listed in Tables 4.6-2 and 4.6-3 must be provided. Specifically the concentration of each constituent needs to be provided for each of the individual waste streams listed in Tables 4.5-1 and 4.5-2. In addition, please provide the specific regulatory reference for the numeric target limits provided in FPL's response to MDC-A-9.

MDC-A-10 (Third Round)
Previously determined to be complete.

MDC-A-11 (Third Round)
This item remains incomplete. Based on the information presented to date, it is premature to conclude what waste streams, if any, are necessary for the dilution of the liquid radwaste effluent, or whether this is the appropriate disposal method for said waste. The information requested in other completeness items such as MDC-A-8 (Third Round) above is required in order to evaluate this issue.

FPL's conclusion that the most appropriate option for disposal of cooling water is injection to the boulder zone is premature in the absence of the Miami-Dade County required hydrologic study and wastewater discharge plan and the additional information requested that relates to impacts to surface and groundwaters and to wastewater disposal issues. In addition, information needs

to be provided in support of FPL's characterization that injection of the cooling water to the boulder zone is the most appropriate disposal option for this waste stream and that there are only two potential disposal options (i.e. wastewater treatment plant or deep well injection to the boulder zone). Miami-Dade County acknowledges that disposal of the cooling water to the public sewer system may not be appropriate given the large volume of water involved. However, the feasibility analysis of treating the wastewater discharge for the benefit of the Biscayne Bay Coastal Wetlands project, as required by condition 6 of Z-56-07 has not been adequately performed by FPL.

MDC-A-12 (Third Round)
Previously determined to be complete.

MDC-A-13 (Third Round)
This item remains incomplete and information previously requested must be provided to allow the County to determine whether the proposed project meets the substantive requirements of Miami-Dade County Code and the CDMP in order to prepare the reports required by 403.526 F.S. FPL's reference to a proposed plan that may be submitted to Miami-Dade County in the future to achieve compliance with the requirements of Resolution Z-56-07 is not responsive to this application completeness request. The requested information is required within the time frames prescribed in the "Fifth Revised Schedule for Review of Site Certification Application for Florida Power and Light Company's Turkey Point Units 6 & 7 Power Plant Siting App. PA03-45A3; DEP OGC Case No. 09-3107 DOAH Case No. 09-3575-EPP".

Please also see MDC response MDC-A-6 (Third Round)

> **MDC-A-13 (Second Round)**
> FPL's assertion that Miami-Dade County has no regulatory standards with regard to the disposal of industrial or other wastewater via injection into the groundwaters of Miami-Dade County is incorrect. FPL is advised that the mere generation of liquid waste other than domestic sewage at a property not connected to the sanitary sewers system is not allowed under Chapter 24. The hydrologic study required pursuant to condition 15 of Z-56-07 is intended to examine all aspects of water use and wastewater disposal that will impact surface and groundwaters, including groundwaters within the Floridan Aquifer and boulder zone. No such study has been provided and no information on the impacts to these groundwaters is presented. In addition, FPL has not demonstrated how the proposed disposal of wastewater via injection wells complies with condition 6 of Z-56-07 including the use of this wastewater (after appropriate treatment) for the benefit of the Biscayne Bay Coastal Wetlands CERP project as required. Miami-Dade County notes that FPL is required to provide a wastewater discharge plan that meets the requirements of Chapter 24 and to "modify the plan as needed to satisfy compliance with Chapter 24." (Please see comment under MDC-A-11). This information is required for evaluation of the proposed project with requirements of Chapter 24, Miami-Dade County Code, the CDMP, and with requirements of the local land use approval Resolution Z-56-07.
>
> **MDC-A-13 (First Round)**
> The application proposes the discharges of industrial wastes from several sources to injection wells. No information was provided to ascertain compliance with the applicable discharge standards. No information was provided to show that no treatment is necessary or that contamination will not result from such discharges

MDC-A-14 (Third Round)
Complete. The FPL response is acknowledged and considered sufficient.

MDC-A-15 (Third Round)
Complete. The FPL response is acknowledged, however, Miami-Dade County advises that additional pollution control design details and waste handling procedures are required and may be addressed through conditions of certification.

MDC-A-16 (Third Round)
Complete. The FPL response is acknowledged, however, Miami-Dade County advises that additional pollution control design details and waste handling procedures are required and may be addressed through conditions of certification.

MDC-A-17
Please see MDC's responses MDC-A-18-1 to MDC-A-18-9 (Third Round)

MDC-A-18 (Third Round MDC-A-18-1 to MDC-A-18-4)
This item remains incomplete. Please provide revised calculations following the procedures established in "*Design Example for an Industrial Site*, p XF-1 to XF-20, Permit Information Manual Volume IV, SFWMD, 2009" Please ensure that all drawings and plans accurately depict the location and details of the emergency spill ways, include all necessary elevations and dimensions including length and width of streets, buildings, ponds, weir, orifices, inverts, etc. that are needed to verify (re-calculate) the elevations vs. area/volume curve and hydraulic characteristics of the proposed drainage system. Also please ensure the areas used to calculate surface runoff in pre and post development are the same.

Please also see MDC's response MDC-A-18-8 (Third Round)

MDC-A-18-5 (Third Round)
This item remains incomplete. Miami-Dade County disagrees with FPL's conclusion that FPL is not required to perform the flood routing calculations for the 25-year and the 100-year rainfall events. The absence of stormwater discharges to waters of the state does not exempt the project from this regulatory requirement. These calculations are required to demonstrate absence of impact to the adjacent floodplain.

MDC-A-18-6 and MDC-A-18-7 (Third Round)
This item remains incomplete. Regulatory requirements include water quality and water quantity criteria that must be met by the applicant. Absence of stormwater discharges to waters of the state does not exempt the project from these regulatory requirements. In addition, with regard to the proposed reclaimed treatment facility, please provide the design criteria for emergency overflow and the proposed operation schedule. Please note that onsite retention is required for all rainfall events below the 100-year rainfall event; offsite discharges should only occur for rainfall events above the 100-year rainfall event provided that the applicable water quality discharge criteria are met.

MDC-A-18-8 (Third Round)
This item remains incomplete. The plans, figures and other information provided in Appendix 10.8 of the SCA and FPL's first and second completeness responses are inadequate because they do not meet the minimum required Environmental Resource Permit standards for the 35 % design. Please provide revised plans, figures and information consistent with these requirements.

MDC-A-18-9 (Third Round)

This item remains incomplete. Please explain how stormwater rainfall associated with industrial activity (equipment area runoff) at FPL's proposed reclaimed water treatment facility will be captured, treated as necessary, and reused within the reclaimed water treatment process. The explanation shall include appropriate drawings and flow charts.

The stormwater management facilities exceed the pre-treatment water quality requirements for stormwater runoff, however they do not have the capacity to retain the total runoff volume from the 25-year 72-hour rainfall event. Under those conditions, stormwater could be discharged directly to the adjacent wetlands. For the 100-Y 72-H rainfall event, the runoff volume is 33.94 (Table 22 Appendix 10.8), and the total volume of the two SWBs is 10.11 Ac-FT at 14.0 FT elevation. SWB-A is overtopped at 14 FT, and SWB-B at 16 FT. If FPL believes that the SWB-A and SWB-B will not be overtopped during a 100-year 72-hour rainfall event, FPL shall submit additional information (i.e., modeling information) to demonstrate that the proposed structures will not be overtopped. If FPL agrees with the County's conclusion that the SWB-A and SWB-B will be overtopped during a 100-year 72-hour rainfall event then FPL shall provide a detailed description of alternative stormwater management features that could be used to eliminate the possibility of stormwater discharges to adjacent wetlands and retain any excess stormwater onsite.

Please also see MDC's responses MDC-A-18-1 (Third Round) to MDC-A-18-8 (Third Round)

MDC-A-19 through MDC-A-19-2 (Third Round)
Complete. The FPL response is acknowledged and considered sufficient.

MDC-A-20-1 (Third Round)
Please see responses MDC-A-18-1 (Third Round) through 2MDC-A-18-9 (Third Round).

MDC-A-20-2 (Third Round)
No additional information has been provided. This item remains incomplete and information previously requested must be provided to allow the County to determine whether the proposed project meets the substantive requirements of Miami-Dade County Code and the CDMP in order to prepare the reports required by 403.526 F.S. The requested information is required within the time frames prescribed in the "Fifth Revised Schedule for Review of Site Certification Application for Florida Power and Light Company's Turkey Point Units 6 & 7 Power Plant Siting App. PA03-45A3; DEP OGC Case No. 09-3107 DOAH Case No. 09-3575-EPP". The County acknowledges FPL's desire to provide information towards the completeness of this item at a later date and the County will review that information in a subsequent round of completeness

MDC-A-20 (Second Round)
The information provided is incomplete because the surface water model and groundwater model should be coupled. For example, MODFLOW and HEC-RAS). Please provide revised modeling with coupled surface and groundwater models.

MDC-A-20 (First Round)
The Report does not cover enough drainage area within the hydrologic model. Simulation should cover, at a minimum, the area bounded by SW 344th St in the north, Old Card Sound Road in the west, and the coastline in the south and east. The EPA-SWMM and XP-SWMM are recommended models to simulate the variety of structures within the area, in order to obtain hydrographs and pollutographs at selected points. The model should also simulate contaminant transport and dilution effect. Event simulations should be run to obtain the conditions before and after the proposed development, including the new inflow and loads from the proposed

Administrative/Training Buildings, Parking area, and Reclaimed Water Treatment Facility. Please provide model runs with the expanded area.

MDC-A-21 (Third Round)
No additional information has been provided. This item remains incomplete and information previously requested must be provided to allow the County to determine whether the proposed project meets the substantive requirements of Miami-Dade County Code and the CDMP in order to prepare the reports required by 403.526 F.S. The requested information is required within the time frames prescribed in the "Fifth Revised Schedule for Review of Site Certification Application for Florida Power and Light Company's Turkey Point Units 6 & 7 Power Plant Siting App. PA03-45A3; DEP OGC Case No. 09-3107 DOAH Case No. 09-3575-EPP". The County acknowledges FPL's desire to provide information towards the completeness of this item at a later date and the County will review that information in a subsequent round of completeness.

MDC-A-21 (Second Round)
According to Bechtel (2009) report entitled *Groundwater Model Development and Analysis: Units 6 & 7 Dewatering and Radial Collector Well Simulations Report* did not use MODFLOW packages to include the canal flows and the two/variable groundwater density. Further evaluation will require the MODFLOW input and output files.

MDC-A-21 (First Round)
The SCA does not include sufficient information to evaluate the results and applicability of the referenced models, and does not contain sufficient information to ascertain the effect that the proposed facility would have on surface and groundwater quality, and groundwater table elevation within the C111 Basin (Model Land Area). Furthermore, any model used for evaluation of this project should be able to predict changes, if any, in the contaminant concentrations; in the water table elevations; and in the salinity wedge movement under different scenarios (baseline and post-construction conditions, for a wet, dry, and average year, etc). Models should combine groundwater with surface water and contaminant transport, and shall include the effect of the difference in densities between salt and fresh water. In addition, the area in the model should be large enough to avoid any boundary-induced bias; boundary conditions could be taken from South Florida Water Management District regional models. EPA authorized models, such as MODFLOW, MODPATH, and FEMWATER should be considered for use in this study. Another possible model would be the FEFLOW, which combines the groundwater contaminant transport (MODFLOW and MODPATH capabilities) with the two density fluids wedge salinity difference (FEMWATER capability).

MDC-A-22 (Third Round)
Complete. The FPL response is acknowledged and considered sufficient.

MDC-A-23 (Third Round)
This item remains incomplete and information previously requested must be provided to allow the County to determine whether the proposed project meets the substantive requirements of Miami-Dade County Code and the CDMP in order to prepare the reports required by 403.526 F.S. Miami-Dade County notes that opportunistic observations should not be the sole basis for a determination of which habitats are utilized by wildlife and which of those habitats are critical to wildlife, including threatened and endangered species. Miami-Dade County has continued to request comprehensive, seasonal studies on both wildlife utilization and plant occurrence for the region within and surrounding the proposed locations for the plant and associated non-transmission facilities. Such studies are needed to properly document the use and value of the habitat in order to understand the potential impacts of the proposed project on flora and fauna of the region. Miami-Dade County notes that FPL has continued to dismiss the County's request for comprehensive information for flora and fauna, including seasonal utilization, or any other

information resulting from a Comprehensive Environmental Impact Statement based upon FPL's assertion that the request is procedural in nature. However, Miami-Dade County reiterates that the information regarding flora and fauna including seasonal variations is required to evaluate this project for conformance with nonprocedural requirements of Miami-Dade County. Miami-Dade County acknowledges the additional information provided by FPL in its completeness responses related to this issue; however, the information remains incomplete. Without the requested information, Miami-Dade County is unable to determine whether the proposed plant and associated non-transmission facilities meet the requirements of Chapter 24 of the Miami-Dade Code and the CDMP, and is unable to prepare the reports required by Section 403.526, F.S.

FPL's response also remains incomplete because: 1) Some of the reports cited in FPL's response were missing from the provided CD or were corrupt/unable to be opened, and 2) the requested seasonally-based biological survey for the proposed plant site was not included in the reports that were provided.

FPL shall provide readable copies of:
- *Final Environmental Impact Statement Related to Operation of Turkey Point Plant*, Dockets No. 50-250 and 50-251, Washington D.C. (US Atomic Energy Commission, 1972) [File name: *Final EIS Turkey Point 1972.pdf*]
- *Turkey Point Expansion Project SCA* (FPL, 2003) [File name: *Volume 3.pdf*]

None of the provided reports that were readable contained information on seasonal vegetation shifts for the Units 6 and 7 plant site that might provide an identity for the vegetation that was the source of the observed flush and/or information on seasonal faunal utilization that might result from such a flush. FPL states in its response that "Short-term flushes of vegetation within the mud flat areas are unable to survive the alteration of hydroperiod and exposure to hypersaline waters, regardless of season." Without a seasonal study, it is speculation that vegetation is unable to survive local conditions. It is an equally plausible hypothesis that the flush of vegetation observed by County staff represents an annual event for vegetation that has resistant underground biomass and that this seasonal flush could support use by a variety of other biota, which may include rare, threatened or endangered species.

None of the readable reports provided by FPL included current information on bird utilization of the proposed plant site during the April-June breeding season. County staff observed utilization of the site by juvenile birds, including but not limited to the Wilson's Plover, which is protected by the Migratory Bird Treaty Act, and the Reddish Egret, which is state-listed as Threatened. County staff considers the available habitat potentially suitable for nesting by these and other rare, threatened, and endangered species and requests an appropriate study to determine whether the proposed plant area is being utilized for nesting and if so, by which species.

Miami-Dade County reiterates its request for a seasonally-based biological survey for the proposed facility site that includes, but is not limited to, plant cover, plant species abundance, and utilization by wildlife species including but not limited to birds, insects, fish, reptiles, and amphibians, mammals, and aquatic invertebrates. Wildlife utilization information provided should include but not be limited to behavior, such as but not limited to feeding, roosting, nesting or other breeding behavior, and specific location where the behavior was observed. This information is needed in order to determine the effect of the project on rare, threatened and endangered species as per evaluation factors in Section 24-48.3 of the Miami-Dade Code and relevant policies and objectives in the CDMP.

MDC-A-24 (Third Round)
This item remains incomplete and information previously requested must be provided to allow the County to determine whether the proposed project meets the substantive requirements of Miami-Dade County Code and the CDMP in order to prepare the reports required by 403.526 F.S. FPL's reference to a proposed plan that may be submitted to Miami-Dade County in the future to achieve compliance with the requirements of Resolution Z-56-07 is not responsive to this application completeness request. The requested information is required within the time frames prescribed in the "Fifth Revised Schedule for Review of Site Certification Application for Florida Power and Light Company's Turkey Point Units 6 & 7 Power Plant Siting App. PA03-45A3; DEP OGC Case No. 09-3107 DOAH Case No. 09-3575-EPP".

FPL shall clarify the statement that "Wetland impacts ... will be mitigated at the Everglades Mitigation Bank, which will include seagrass enhancement/restoration". Are seagrasses being restored in the EMB, or is FPL proposing mitigation other than in kind mitigation for impacts to seagrasses?

MDC-A-25 (Third Round)
This item remains incomplete and information previously requested must be provided to allow the County to determine whether the proposed project meets the substantive requirements of Miami-Dade County Code and the CDMP in order to prepare the reports required by 403.526 F.S. FPL's reference to a proposed plan that may be submitted to Miami-Dade County in the future to achieve compliance with the requirements of Resolution Z-56-07 is not responsive to this application completeness request. The requested information is required within the time frames prescribed in the "Fifth Revised Schedule for Review of Site Certification Application for Florida Power and Light Company's Turkey Point Units 6 & 7 Power Plant Siting App. PA03-45A3; DEP OGC Case No. 09-3107 DOAH Case No. 09-3575-EPP".

Miami-Dade County notes that opportunistic observations should not be the sole basis for a determination of which habitats are utilized by wildlife and which of those habitats are critical to wildlife, including threatened and endangered species. Miami-Dade County has continued to request comprehensive, seasonal studies on both wildlife utilization and plant occurrence for the region within and surrounding the proposed locations for the plant and associated non-transmission facilities. Such studies are needed to properly document the use and value of the habitat in order to understand the potential impacts of the proposed project on flora and fauna of the region. Miami-Dade County notes that FPL has continued to dismiss the County's request for comprehensive information for flora and fauna, including seasonal utilization, or any other information resulting from a Comprehensive Environmental Impact Statement based upon FPL's assertion that the request is procedural in nature. However, Miami-Dade County reiterates that the information regarding flora and fauna including seasonal variations is required to evaluate this project for conformance with nonprocedural requirements of Miami-Dade County. Miami-Dade County acknowledges the additional information provided by FPL in its completeness responses related to this issue; however, the information remains incomplete. Without the requested information, Miami-Dade County is unable to determine whether the proposed plant and associated non-transmission facilities meet the requirements of Chapter 24 of the Miami-Dade Code and the CDMP, and is unable to prepare the reports required by Section 403.526, F.S.

In addition, no information or data have been provided in support of FPL's statement that the southern shoreline of Biscayne Bay provides adequate shorebird habitat at low tide. The shoreline of Biscayne Bay is mostly mangroves, and very few exposed mudflats exist in the area other than the proposed development site. Clarification of this statement is also

necessary. Is FPL suggesting that the shoreline habitat along Biscayne Bay is adequate to mitigate the loss of the mudflat habitat proposed for development for the numerous species of shorebirds that utilize the development site? Information is also required in support of FPL's statements that "the impact to the artificial mudflat habitat associated with Units 6 & 7 is not anticipated to result in significant adverse impact to shorebirds". In just one field visit with FPL, staff documented more than 15 species of shorebird including Long Billed Curlew, Whimbrel, American Avocet and Wilson's Plover. In addition, juvenile Wilson's Plover and Reddish Egret (a wading bird that is a listed species of special concern), were also observed, which may indicate that nesting occurs on site. Documentation of all shorebird species at the site, including any nesting species, is important and required to evaluate the proposed mitigation including whether it adequately offsets the loss of what appears may be significant shorebird habitat.

Miami-Dade County also reiterates its request for FPL to provide equivalent information for the other components of the project as well as an "in-kind" mitigation component to compensate for the proposed loss of shorebird habitat currently being provided at the site. Furthermore, we note that creation of this in-kind habitat would not necessarily require impact to other sensitive environmental resources in the vicinity. For example, former agricultural lands now dominated by species such as Brazilian pepper and owned by FPL could be appropriate for this type of mitigation as shore bird habitat need not be located directly along the shoreline.

MDC-A-26-1 (Third Round)
This item remains incomplete and information previously requested must be provided to allow the County to determine whether the proposed project meets the substantive requirements of Miami-Dade County Code and the CDMP in order to prepare the reports required by 403.526 F.S. FPL's reference to a proposed plan that may be submitted to Miami-Dade County in the future to achieve compliance with the requirements of Resolution Z-56-07 is not responsive to this application completeness request. The requested information is required within the time frames prescribed in the "Fifth Revised Schedule for Review of Site Certification Application for Florida Power and Light Company's Turkey Point Units 6 & 7 Power Plant Siting App. PA03-45A3; DEP OGC Case No. 09-3107 DOAH Case No. 09-3575-EPP".

FPL's response is not adequate. All of the requested information is necessary including but not limited to that information sufficient to determine whether the spoil to be stockpiled as depicted in Figure 5.1-1 meets the definition of clean fill of Chapter 24 of the Code of Miami-Dade County. Also please provide an aerial view of the cooling canals identifying those areas used by crocodiles for ingress and egress to the CCS and the surrounding areas including but not limited to the C-107 canal; please include all supporting data and documentation relied upon in the identification of these ingress and egress areas.

Please also see MDC's response MDC-G-46

MDC-A-26-2 (Third Round)
This item remains incomplete and information previously requested must be provided to allow the County to determine whether the proposed project meets the substantive requirements of Miami-Dade County Code and the CDMP in order to prepare the reports required by 403.526 F.S. FPL's reference to a proposed plan that may be submitted to Miami-Dade County in the future to achieve compliance with the requirements of Resolution Z-56-07 is not responsive to this application completeness request. The requested information is required within the time frames prescribed in the "Fifth Revised Schedule for Review of Site Certification Application for Florida Power and Light Company's Turkey Point Units 6 & 7 Power Plant Siting App. PA03-45A3; DEP OGC Case No. 09-3107 DOAH Case No. 09-3575-EPP".

The FPL Turkey Point Threatened and Endangered Species Evaluation and Management Plan, submitted as part of the SCA (Appendix 10.7.1.3), continues to fail to fulfill the requirements of Condition 2 of MDC Zoning Resolution Z-56-07 nor is it consistent with either Chapter 24 of the Miami-Dade Code or the Miami-Dade County CDMP. Sections 24-48, 24-49 and 24-50 of the Code of Miami-Dade County relate to the preservation and protection of the County's natural resources including but not limited to wetlands, trees, Natural Forest Communities (NFCs), Environmentally Endangered Lands (EELs) and rare, threatened and endangered species. Similarly, Objective CM-1, Policy CM-1E, Objective CM-4, Policy CM-4A, Policy, Objective CON-7 Policy CON-7A, Objective CON-9, Policy CON-9A, Policy CON-9B, Policy CON-9C and Policy LU3B, of the County's CDMP require the protection of these natural resources.

The information presented in FPL's Second Completeness Response fails to adequately address comments raised by Miami-Dade County in its second completeness review. Miami-Dade County has concluded from the response that FPL may misunderstand the purpose of the threatened or endangered species management plan required under Condition 2 of Z-56-07 and hereby provides clarification. The intent of this plan is to provide sufficient information for Miami-Dade County to determine whether the proposed project, including ancillary non-transmission facilities, meets the substantive requirements of Chapter 24 of the Miami-Dade Code and the CDMP. FPL has submitted a plan, however, that only covers the "area within which nonlinear project facilities will be constructed and operated, which encompasses the 365-acre Project site where Units 6 and 7 will be located". In addition, FPL has provided information that was primarily gathered from existing sources, when Miami-Dade County has been clear in its request for seasonally-based studies that thoroughly document occurrence of flora and fauna, including listed species of plants and animals, within and adjacent to the proposed plant site. These seasonally-based studies must also document utilization by flora and fauna of habitats found within and adjacent to the proposed plant site and associated non-transmission facilities. Such information is needed to evaluate the short and long-term impacts of the proposed plant and associated non-transmission facilities and determine whether the proposed plant and associated non-transmission facilities are consistent with the requirements of Chapter 24 of the Miami-Dade Code or the Miami-Dade County CDMP.

Examples of more specific deficiencies in the information provided by FPL include, but are not limited to the following: FPL states in its response that "Indirect impacts of construction, such as noise, may potentially reduce the nesting suitability of the berms directly adjacent to Units 6 & 7." FPL shall clarify whether the proposed impacts to this nesting habitat would result in potential abandonment of the significant crocodile nesting area shown in Figure 5 of Appendix 10.7.1.3 as located immediately south of the proposed development site. Please provide information as to the location and nature of any specific project/s proposed to mitigate indirect impacts to crocodile nesting habitat as a result of this project. Please also explain how these mitigation projects will be distinguished from mitigation projects proposed for impacts to crocodile habitat as a result of the Units 3 & 4 Uprate project. FPL has stated that "The primary cooling water intake for Units 6 & 7 will be located within the makeup water reservoir; therefore entrainment of any biota is extremely unlikely" but FPL has failed to provide information on how biota will be kept out of the makeup water reservoir, which is a freshwater pool situated within one of the richest wetland systems in the County. Elevation of the reservoir will not be a deterrent for crocodile or other wildlife access, and this freshwater pool will likely support biota within a short period of operation. FPL shall provide information on how FPL will address possible entrainment of crocodiles and other wildlife in the intakes for the new plants. FPL's information on the Florida panther is incomplete because it only takes into account Florida panther occurrence data within 2 miles of the proposed access road network. Florida panthers

are known to travel at least 5 miles in a day, and have a home range of more than 100 square miles. FPL shall provide all available Florida panther occurrence information within a minimum of 10 miles of the proposed plant and access road network and, given that there have been 2 such documented occurrences within the past 3 years plus several recent anecdotal occurrences, shall provide an assessment of the likelihood that a Florida panther that is neither radio-collared nor microchipped (i.e. undocumented, untracked) could reappear within 10 miles of the proposed plant site (including non-transmission linear facilities) during the construction phase of the project. FPL states that "The roadways are not intended to be used as or to become major public thoroughfares comparable to heavily traveled highways passing through occupied panther habitats, such as I-75 in Collier County" but has not provided specific information on how public access to the proposed access roads will be restricted. FPL states that "speed limits will be set to minimize the likelihood of future panther collisions with motor vehicles" but the information is incomplete because FPL does not provide information on what speed limits will be used or how speed limits on the proposed access roads will be enforced. FPL states that "Recent observations of Eastern indigo snakes have occurred within upland areas of the Everglades Mitigation Bank ..." and "The proposed roadway improvements are primarily surrounded by freshwater marsh wetlands, and will not result in significant impacts to upland habitats preferred by the Eastern indigo snake." The information is incomplete because it inaccurately assesses the area through which the proposed access roads will travel. Miami-Dade County staff experience indicates that the proposed construction access roads will traverse a complex of upland and wetland habitats similar to those in the Everglades Mitigation Bank where the Eastern indigo snake has already been documented. FPL shall provide a corrected analysis of the likelihood for Eastern indigo snake occurrence in this region, including the results of a detailed survey for Eastern indigo snake burrows along the proposed access corridor and adjacent and interconnecting upland road corridors, along with information on what protective measures will be taken once the proposed construction access roads are operational to limit Eastern indigo snake mortality. FPL has also failed to provide detailed information on how potential impacts will be addressed for other federally and state-listed species (including plants) that could potentially be encountered during construction or operation of the facilities, including the proposed access roads. FPL has provided documented occurrence data for federally and state-listed species (including plants), other than crocodiles, that is primarily derived from outside sources and has failed to provide the requested flora and fauna studies that would address the likelihood that these species may be encountered where similar habitat types occur within the proposed site for the plant and associated facilities. This information is needed to determine whether this project is consistent with Chapter 24 of the Miami-Dade Code and relevant objectives and policies of Miami-Dade County's Comprehensive Development Master Plan that protect critical habitat for endangered or threatened species.

MDC-A-27 (Third Round)
Please see MDC response MDC-A-26-1 (Third Round)

MDC-A-28 (Third Round)
Previously determined to be complete

MDC-A-29 (Third Round)
This item remains incomplete and information previously requested must be provided to allow the County to determine whether the proposed project meets the substantive requirements of Miami-Dade County Code and the CDMP in order to prepare the reports required by 403.526 F.S. FPL's reference to a proposed plan that may be submitted to Miami-Dade County in the future to achieve compliance with the requirements of Resolution Z-56-07 is not responsive to this application completeness request. The requested information is required within the time

frames prescribed in the "Fifth Revised Schedule for Review of Site Certification Application for Florida Power and Light Company's Turkey Point Units 6 & 7 Power Plant Siting App. PA03-45A3; DEP OGC Case No. 09-3107 DOAH Case No. 09-3575-EPP".

Please also see MDC response MDC-A-26-2 (Third Round).

MDC-A-30 (Third Round)
Miami-Dade County acknowledges receipt of the requested reports.

Please see MDC's responses MDC-A-23 (Third Round) and MDC-A-26(b) (Third Round).

MDC-A-31 (Third Round)
This item remains incomplete. Historical data indicate that manatees are found in the Turkey Point area and utilize this area for a number of behaviors. A reference in the FPL response states that the existing "Manatee Protection Plan for the Turkey Point Power Plant" will continue to be used during the operational phase of the facility; however, this plan was not provided for review. Furthermore, it is not clear from the application whether the construction of the barge unloading area is proposed to include the required fendering system for barges over 100 feet in length, which provide at least 4 feet of standoff from the bulkhead under maximum compression.

Based on the information that has been provided, it appears that larger barges with potentially deeper drafts will be utilizing this mooring area, as well as the access channel into the barge turning basin. FPL shall provide information regarding the size of the barges and tugs including length, beam and draft of the vessels and barges that will be utilizing the facility in order for the agencies to be able to determine whether there will be adequate clearance between the vessels and the bay bottom.

MDC-A-32 (Third Round)
Please see MDC's response MDC-A-33 (Third Round)

MDC-A-33 (Third Round)
This item remains incomplete. FPL has identified that benthic resources , specifically *Halodule wrightii,* is located within the turning basin at a density of 5 to10 %, over area equal to 0.002 acres. Furthermore, FPL has indicated that no additional mitigation will be provided to offset the dredging of this area of seagrasses. It is not clear from this statement whether or not mitigation has already been proposed for the dredging of the turning basin or this statement is referring to other mitigation being proposed for the Units 6 & 7 project. The MDC Code requires that mitigation be provided for all unavoidable adverse environmental impacts. DERM requires mitigation for the dredging of vegetated and unvegetated substrate, as well as mitigation for potential water quality impacts. Although FPL has indicated that they will be using BMPs to help alleviate secondary impacts to resources, FPL shall identify appropriate mitigation for the direct impacts to both the vegetated and unvegetated benthic communities associated with the dredging of the tidal substrate in the turning basin.

SECTION B – WASTEWATER REUSE

MDC-B-1 (Third Round)
Complete. The FPL response is acknowledged and considered sufficient.

MDC-B-2 (Third Round)

FPL's response is incomplete and does not demonstrate that the proposed alignment adequately avoids or minimizes wetland impacts. For purposes of clarification, Miami-Dade County is not suggesting the removal of SW 107 Avenue and also is not suggesting that the work should be conducted outside the ROW, rather that temporary impacts to the public ROW may be appropriate if the large amount of impacts proposed to mangrove wetlands can be reduced. Elimination of avoidable impacts and minimization of unavoidable impacts are important regulatory requirements where large amounts of mangrove wetland impacts are proposed. Chapter 24-48.4 Miami-Dade Code requires projects to maximize preservation of existing natural resources. The proposed route is described by FPL as the "least environmentally damaging alternative". However, information is needed to support this assertion since there is neither presentation nor discussion of how the proposed route maximizes preservation of existing wetlands resources, when compared with potential alternatives located west of jurisdictional wetlands in areas south of the C-102 Canal. The routes evaluated as shown in Figure SCA P9.0.9-3 are all in areas with little or no wetlands north of the C-102 Canal, however, similar alternatives do not appear to be considered in the large wetland expanses south of SW 256 Street. Information is needed on the locations and environmental impacts for these alternatives, including an explanation and documentation that demonstrates how the selected route "is the least environmentally damaging" alignment in the area south of SW 256 Street.

FPL shall also clarify the accuracy of the following statement "This co-location avoids the impacts of developing a new route for this linear facility", in light of the fact that a new route is required for the area north of the C-102 Canal in any case. FPL should also explain why this would be preferable since as a consequence of co-locating south of this canal, excavation of a 75 foot wide trench though mangrove wetlands would be required through much if not the entire portion of the co-located alignment along more than 5 miles of the corridor. Information is also needed in support of the stated 75 foot excavation width and whether the proposed alignment would minimize wetland impacts within the existing transmission corridor. Is the same width required in the upland areas and/or in public ROW or does this estimate apply only to work in wetlands within the transmission corridor? An explanation shall also be provided to explain whether the impact width can be reduced through construction practices such as sheet pile containment which have been used successfully in sensitive environmental areas with other pipeline projects in Miami-Dade County. In addition, information is needed to describe the improvements to sheet flow across this corridor that would be necessary pursuant to condition 17 of Z-56-07. Per this condition, proposed upgrades within the transmission corridor shall not impede the flow of ground or surface water.

MDC-B-3 (Third Round)
The references to information in the FDEP and SFWMD completeness responses are acknowledged, however, the information remains incomplete. In addition, FPL must provide further clarification. FPL states in FDEP-II-B-85 that the area where the potential impact from deposition to freshwater vegetation is greatest is the area west of the L-31E Canal. FPL concludes that no adverse impacts to the wetland vegetation will occur in this area as these species are salt tolerant. However, much of this area is dominated by freshwater species such as sawgrass which have only limited salt tolerance in comparison to other species present in the area such as buttonwood. In addition, the sawgrass in the area of potential impact is likely already under stress, and may not be able to tolerate additional chronic stress from airborne deposition. Miami-Dade County field staff have observed for many years that the sawgrass in this region is more sparse and lower in stature than other freshwater wetlands either farther west or farther south. FPL must provide a revised analysis based on an assessment of the current vegetation in the area of potential impact, the current physiological condition of that

vegetation, and testing to determine the limits of tolerance of the current vegetation for aerial deposition of total dissolved solids similar in composition to that projected for the radial-collector-wells-saltwater scenario.

The summary of FPL's analysis in FDEP–II-B-53 appears to indicate that total dissolved solids (TDS) under the predicted radial-collector-wells-saltwater scenario would increase in this area about 47% over natural atmospheric background deposition levels. Given the projection of elevated levels of TDS and chlorides in this area, it is not at all clear that the receiving waters would continue to meet the standards contained within Section 24-42(4) of the Miami-Dade County Environmental Protection Ordinance or whether the projected increase in TDS or chlorides would cause prohibited water pollution as defined in Section 24-5 of the aforementioned ordinance. In addition, it is not clear that species such as sawgrass could persist in these freshwater wetlands under such conditions. FPL must provide sufficient information to demonstrate that applicable standards will be met by the operation of the cooling towers, including Miami-Dade County numeric and narrative standards.

With regard to the area immediately east of the cooling canals within Biscayne National Park and/or the Biscayne Bay Aquatic Preserve, FPL's Figure 6.1.4-1 appears to indicate that monthly deposition under the predicted radial-collector-wells-saltwater scenario would range up to about 40 to 80 kg/ha/month in a limited area with typical levels in a larger area similar to natural atmospheric background deposition levels of about 4.5 kg/ha/month. Although the projected amount of deposition in these areas is low relative to existing TDS levels, it does appear to constitute a proposed increase in an area where narrative standards, including antidegradation standards, apply and where salinities are currently already considered too high. FPL must provide sufficient information to demonstrate that applicable standards will be met by the operation of the cooling towers, including federal, state, and Miami-Dade County numeric and narrative standards.

In addition, FPL must provide additional explanation and rationale regarding the calculation of average resultant concentration using annual rainfall data as shown in the tables in FDEP-II-B-53 and B-86. Please explain how this metric is useful in the evaluation of this issue.

The County does not agree with the assertion made in FPL's 2nd Round Plant and Non-Transmission Completeness Responses, that no Unusual Use Approval is necessary for the proposed FPL Wastewater Reuse Plant (reclaimed water treatment facility). Resolution Z-56-07 is to approve a, "nuclear power plant (atomic reactors) and ancillary structures and equipment". The Miami-Dade County Code (Unusual Uses, Section 33-13(e)) establishes that a water treatment plant is a land use that shall not be permitted in any district unless approved upon public hearing. Therefore, the proposed reclaimed water treatment facility will require an Unusual Use Zoning Approval. Florida Statute 403.507(3)(a) requires that agencies' Preliminary Statement of Issues include the following, "A notice of any nonprocedural requirements not specifically listed in the application from which a variance, exemption, exception, or other relief is necessary in order for the proposed electrical power plant to be certified." The County is hereby providing notice to FPL that all information necessary for an Unusual Use review should be supplied to the County at this time, and approval of a wastewater reuse plant as an Unusual Use is necessary prior to certification. This information shall demonstrate whether the proposed reclaimed water treatment facility would adequately avoid or minimize mangrove wetland impacts. FPL shall provide information adequate to determine whether it would be possible to relocate the water treatment facility to an area of lower quality wetlands beyond the CDMP-designated Mangrove Protection Area and/or to an area outside of wetlands jurisdictional to Miami-Dade County. Elimination of avoidable impacts and

minimization of unavoidable impacts are important regulatory requirements where large amounts of mangrove wetland impacts are proposed. Chapter 24-48.4 Miami-Dade Code requires projects to maximize preservation of existing natural resources. Sufficient details about potential project impacts are needed to enable Miami-Dade County to evaluate the proposed primary and secondary impacts of the proposed facility for consistency with the aforementioned and other applicable requirements of the Miami-Dade County Code, plus relevant objectives and policies in the CDMP. FPL shall provide all necessary information demonstrating that construction and operation of this proposed facility would meet all requirements of the Z-56-07, Chapter 24 and the CDMP.

MDC-B-4 (Third Round) Previously determined to be complete.

SECTION C – RADIAL WELLS

MDC-C-1 (Third Round)
No additional information has been provided. This item remains incomplete and information previously requested must be provided to allow the County to determine whether the proposed project meets the substantive requirements of Miami-Dade County Code and the CDMP in order to prepare the reports required by 403.526 F.S. FPL's reference to a proposed plan that may be submitted to Miami-Dade County in the future to achieve compliance with the requirements of Resolution Z-56-07 is not responsive to this application completeness request. The requested information is required within the time frames prescribed in the "Fifth Revised Schedule for Review of Site Certification Application for Florida Power and Light Company's Turkey Point Units 6 & 7 Power Plant Siting App. PA03-45A3; DEP OGC Case No. 09-3107 DOAH Case No. 09-3575-EPP". The County acknowledges FPL's desire to provide information towards the completeness of this item at a later date and the County will review that information in a subsequent round of completeness.

MDC-C-1 (Second Round)
A complete hydrologic study is required in order for Miami-Dade County to evaluate the impacts of the proposed project on surface and groundwater in accordance with the substantive requirements of Chapter 24, Miami-Dade County Code, to meet the requirements of Z-56-07, and to prepare the reports required by 403.526 F.S. The aquifer performance test was of a narrow scope, was not approved by DERM, does not meet the substantive requirements of DERM and the County Code, and does not allow for an evaluation of the project's impacts. FPL's interpretation of condition 4 of Z-56-07 is incorrect. The purpose of this condition is to prevent negative environmental impacts to surface and groundwater that could be caused by pumping from the Biscayne Aquifer.

MDC-C-1 (First Round)
The land use statement in Appendix 10.5 is inaccurate and sufficient information has not been provided to make a land use/zoning consistency determination. The plant site is located in Environmental Protection Subarea F, and is consistent only if the use is deemed consistent with the goals, objectives and policies of the Comprehensive Development Master Plan (CDMP). Conditions outlined in Zoning Resolution Z-56-07 must be met to achieve land use/zoning consistency. This resolution stated that no water will be withdrawn from the Biscayne Aquifer (Condition 4) and that a hydrologic study (Condition 15) will be performed. The radial well component does not demonstrate consistency with these two conditions; therefore this component will be subject to a land use/zoning consistency determination.

MDC-C-2 (Third Round)
No additional information has been provided. This item remains incomplete and information previously requested must be provided to allow the County to determine whether the proposed

project meets the substantive requirements of Miami-Dade County Code and the CDMP in order to prepare the reports required by 403.526 F.S. FPL's reference to a proposed plan that may be submitted to Miami-Dade County in the future to achieve compliance with the requirements of Resolution Z-56-07 is not responsive to this application completeness request. The requested information is required within the time frames prescribed in the "Fifth Revised Schedule for Review of Site Certification Application for Florida Power and Light Company's Turkey Point Units 6 & 7 Power Plant Siting App. PA03-45A3; DEP OGC Case No. 09-3107 DOAH Case No. 09-3575-EPP".

MDC-C-2 (second Round)
Please see response to MDC-C-1 and MDC-C-24

MDC-C-2 (First Round)
Application does not adequately demonstrate that the proposed radial collector wells do not volate Condition 4 of Z-56-07 which prohibits withdrawal from the Biscayne Aquifer.

MDC-C-3 (Third Round)
This item remains incomplete and information previously requested still needs to be provided to allow the County to determine whether the proposed project meets the substantive requirements of Miami-Dade County Code and the CDMP in order to prepare the reports required by 403.526 F.S. The requested information is required within the time frames prescribed in the "Fifth Revised Schedule for Review of Site Certification Application for Florida Power and Light Company's Turkey Point Units 6 & 7 Power Plant Siting App. PA03-45A3; DEP OGC Case No. 09-3107 DOAH Case No. 09-3575-EPP". The County acknowledges FPL's desire to provide information towards the completeness of this item at a later date and the County will review that information in a subsequent round of completeness.

MDC-C-3 (Second Round)
The requested information is required to evaluate potential impacts of the project and determine if the project can be certified as proposed, or whether modification of the project is necessary for certification. Hydrogeologic information from the area of the proposed radial collector well installation is required to evaluate the potential impact of the project on groundwater, surface water, salt intrusion, movement of the hyper-saline plume associated with the cooling canal system, and to evaluate project related impacts to wetlands resources and Biscayne Bay. Also see comments provided in MDC-C-6.

MDC-C-3 (First Round)
Adequate hydrogeologic data have not been presented

MDC-C-4 (Third Round)
This item remains incomplete and information previously requested must be provided to allow the County to determine whether the proposed project meets the substantive requirements of Miami-Dade County Code and the CDMP in order to prepare the reports required by 403.526 F.S. The requested information is required within the time frames prescribed in the "Fifth Revised Schedule for Review of Site Certification Application for Florida Power and Light Company's Turkey Point Units 6 & 7 Power Plant Siting App. PA03-45A3; DEP OGC Case No. 09-3107 DOAH Case No. 09-3575-EPP". The County acknowledges FPL's desire to provide information towards the completeness of this item at a later date and the County will review that information in a subsequent round of completeness.

MDC-C-4 (Second Round)

The requested information is required to evaluate potential impacts of the project and determine if the project can be certified as proposed, or whether modification of the project is necessary for certification. Site specific aquifer characteristics from the area of the proposed radial collector well installation is required to evaluate the potential impact of the project on groundwater, surface water, salt intrusion, movement of the hyper-saline plume associated with the cooling canal system, and to evaluate potential project related impacts to wetlands resources and Biscayne Bay. Also see comments provided in MDC-C-6.

MDC-C-4 (First Round)
Site specific aquifer characteristics have not been made available.

MDC-C-5 (Third Round)
This item remains incomplete and information previously requested must be provided to allow the County to determine whether the proposed project meets the substantive requirements of Miami-Dade County Code and the CDMP in order to prepare the reports required by 403.526 F.S. The requested information is required within the time frames prescribed in the "Fifth Revised Schedule for Review of Site Certification Application for Florida Power and Light Company's Turkey Point Units 6 & 7 Power Plant Siting App. PA03-45A3; DEP OGC Case No. 09-3107 DOAH Case No. 09-3575-EPP". The County acknowledges FPL's desire to provide information towards the completeness of this item at a later date and the County will review that information in a subsequent round of completeness.

MDC-C-5 (Second Round)
Please see comments provided in MDC-C-6.

MDC-C-5 (First Round)
Lithologic descriptions are contradictory. The observations from the site subsurface investigation (Section 3.3.2.2) contradict expectations that almost all the water withdrawn by the radial collector wells would be recharged from the Bay (Section 3.3.4.1). Therefore additional information is necessary to evaluate this aspect of the proposal.

MDC-C-6 (Third Round)
This item remains incomplete and information previously requested must be provided to allow the County to determine whether the proposed project meets the substantive requirements of Miami-Dade County Code and the CDMP in order to prepare the reports required by 403.526 F.S. The requested information is required within the time frames prescribed in the "Fifth Revised Schedule for Review of Site Certification Application for Florida Power and Light Company's Turkey Point Units 6 & 7 Power Plant Siting App. PA03-45A3; DEP OGC Case No. 09-3107 DOAH Case No. 09-3575-EPP". The County acknowledges FPL's desire to provide information towards the completeness of this item at a later date and the County will review that information in a subsequent round of completeness.

With regard to the partial information related to the APT and provided by FPL as part of the second completeness response for this issue, this information should be used to inform the design of the hydrologic study required pursuant to condition 15 of Z-56-07 in order to properly evaluate baseline conditions and the effects of the proposed activities.

It should be noted that monitoring data indicate that the lens of fresher groundwater mentioned by FPL in its response (2MDC-C-6-APT-1) may cover an area much greater than the area of the APT on the Turkey Point peninsula. Please provide information on the extent of this fresher water lens and the degree to which it would be drawn into the proposed radial collector wells during pumping.

MDC-C-6 (Second Round)
The information provided is not sufficient for evaluation of the potential impact of the project on groundwater, surface water, salt intrusion, movement of the hyper-saline plume associated with the cooling canal system, and to evaluate potential project related impacts to wetlands resources and Biscayne Bay. Miami-Dade County has determined the results of the APT and the findings of the groundwater modeling report presented as a part of the site certification application (SCA) completeness review to be incomplete. The following subsections will provide further details of the County's review of both the APT results submitted and the groundwater model referenced above:

Aquifer Performance Test (APT)

General Overview
The APT was performed using a vertical well (36 foot open interval), pumping at a rate of approximately 10 million gallons per day (mgd). However, the RWCs are proposed to be horizontal wells pumping at a rate of approximately 100 mgd. There was no discussion in the HDR report explaining how the results will be utilized to scale up for the proposed RCW pumpage. The increase in pumpage for the RCW by tenfold over the APT pumpage would be expected to result in major hydrologic effects. These hydrologic effects were not addressed in the documents provided.

Exploratory Drilling
The Biscayne Aquifer (BA) is conceptualized based on work completed by the USGS (Cunningham et al, 2009; Renken et al 2008) as a dual porosity aquifer, with stratiform beds of touching vug porosity separated by limestone beds of matrix porosity. The geologic interpretations provided by FPL (HDR 8/19/09, Hydrologic Associates [HA], correspondence dated 4/14/09 and 9/16/08) do not appear to adequately describe the complex lithology of the BA. The following is a discussion of the shortcomings found with respect to the exploratory drilling conducted as a part of the APT.

One pilot hole was drilled at monitoring well MW-1 to a depth of 75 ft below land surface (bls). The base of the BA was determined by HA to be at 115 bls. The pilot hole should have been drilled to the base of the aquifer for complete lithological determination. The logging activities in the pilot hole included caliper, temperature, gamma, and fluid conductivity. In addition, video surveying was conducted in the pilot hole. Vertical borehole flow meters and a more comprehensive use of borehole fluid conductivity and temperature logs when analyzed with depth have proven to be very useful to determine preferential flow zones in the BA. However, optical borehole imaging is now used instead of video surveying as it is more accurate in defining macroporosity of the BA.

Rock cuttings were used in monitoring wells MW-2 through MW-5 to determine the lithology of the area. It should be noted that preferential flow zones cannot be identified using rock cuttings. The assumption of lithology across the site based on rock cuttings may not be an accurate approach. The boreholes should have been logged to determine the vertical and horizontal extent of the preferential flow zones within the aquifer.

The HDR report describes the lithologic features of the BA as follows:

Fill:	0 – 9 ft thick at Point
Peat:	0 to -5.5 ft NAVD 88
Miami Limestone:	top of unit -4 to -7 ft NAVD 88
Cemented Sand:	top of unit 36 – 43 ft bls and not present at MW-5. Note for Figure 2.11 – thickness of the cemented sand layer: there are

	not enough data points to assume the contours as indicated in the figure.
Key Largo Limestone:	top of unit -29 - -40 ft NAVD 88 base of unit ~ 58 feet bls
Lt Gray to white Sandy limestone:	no complete description of unit. Report notes that the cuttings were smaller than the shallower facies.

Geophysical logging results: the logs do not appear to adequately describe the complexity of the BA. It is not clear whether the zones indicated by the caliper log are flow zones, or washout due to the drilling. The temperature and conductivity logs should have been more comprehensive. The logs cannot identify preferential flow zones.

The lithology described in the HDR report does not reference the Q4 and Q2 referenced in the HA correspondences.

Pilot Hole at Monitoring Well MW-1

As noted above, issues were noted with the field activities associated with the pilot hole at monitoring MW-1. The casing depth was determined based on a mud loss zone during drilling (25 -26 ft bls) where the casing target was set at 22 – 24 ft bls. Due to the known complexity of the BA, casing depth based on mud loss may not be the best method to determine casing depth. Based on the above referenced lithology, the casing was set in the Miami Limestone. The target production zone was selected to include the permeable portion of the Miami Limestone, but also the upper portion of the Key Largo Limestone (coralline limestone), with the rationale that this production interval would encompass the potential depth of the RCW laterals. However, this production zone also includes the cemented sand interval (which according to the HDR report indicates that it is discontinuous across the site), the Miami Limestone, and the Key Largo Limestone, which are likely in direct communication with one another.

According to the lithology observed in the rock cuttings described in the HDR report, the cemented sand was only absent at MW-5. Additionally, the lithologies contained in the HA correspondences noted that although the Q4 (cemented sand) was observed only at two borings, they attributed the observations due to non-recoveries at most of the cores inspected. Although permeable zones were noted below the 46 ft bls interval, these lower intervals were not investigated for potential production zones.

Surface Water and Surficial Aquifer Monitoring Wells

Only two surface water monitoring points were installed at the site – one at the Industrial Wastewater Facility (IWWF); the other near the mouth of the barge slip. As indicated in prior discussions during meetings with HDR and FPL, more surface water monitoring points were recommended for the APT.

Furthermore, the number, location, and intervals of the monitoring wells for the APT had been discussed with FPL and HDR in previous meetings prior to the performance of the APT. The County's comments do not appear to have been incorporated into the APT field activities. For example, monitoring well MW-5 is located north of the dredged barge channel, and is close to the FPL pump operations, and these conditions may have overwhelmed any effects seen by the APT. In addition, most of the monitoring wells utilized for the field activities were completed with open holes from an approximate depth of 22 – 47 ft bls. As indicated above, the County does not believe this number, location and intervals are adequate to evaluate the hydrologic behavior of the APT.

Seepage Evaluation

While seepage meters are well documented for their difficulties, data collected during the APT did not show seepage from the Bay into the subsurface (i.e. BA). Rather, a majority of the seepage meter data indicated seepage from the subsurface into the Bay. However, the seepage issue is not discussed in the report as the data was not interpreted and the results were disqualified. The County finds the absence of the seepage evaluation and discussion as a basis to find the results of the APT to be incomplete. Further investigation is required to address this issue in order to understand and quantify the seepage rate and behavior of the site with respect to the region. At a minimum, the Applicant should meet with the County to discuss the most appropriate approach to determine the seepage occurring in the environment.

Water Quality Sampling

The limited water quality data provided in the APT indicated no change in the production zone during the field activities. However, the sampling plan utilized and as discussed in prior meetings with HDR and FPL, was not sufficient.

Specifically, samples collected for the Bay at the time intervals of a week prior, Day 1, and Day 7 of the APT may not be adequate to fully capture water quality changes to the bay as a result of the pumping activities. At a minimum, sufficient samples need to be collected to address baseline conditions, conditions during the APT, and conditions after the completion of the APT to determine the time for the system to return to baseline conditions. In addition, the tidal effects were not taken into account during this time period and thus not addressed by the water quality results. For example, salinity data in MW-1 SS shows an increase in salinity after the APT, but given the limited data provided, it is not possible to distinguish the source of the salinity. In addition, no groundwater samples were collected from the monitoring wells during the conductance of the APT; therefore water quality fluctuations were not captured.

Furthermore, an effort to distinguish the water sources (e.g. Biscayne Bay water versus Biscayne Aquifer) prior to the test was not provided. Based upon review of reports completed by FIU (Stalker et al, 2009), and UM (Swart, 2009), key analyses to distinguish source water was not completed. Although determining source water is not an objective of the report, the water quality does not show any significant fluctuations as a result of the APT, which could indicate water flow to the production well may be primarily BA water. However, the length of time of the APT and the limited parameters do not provide enough data to adequately determine source of water.

APT Data Analysis

The following are specific comments and inquiries that were compiled with respect to the data presented within the APT Report and at a minimum must be addressed as a part of the application completion review:

1.) What was the salinity difference between MW-1 SS and the deep wells?

2.) Why is MW-5 water levels significantly different from the other monitoring points towards the end of February?

3.) Water Contour maps Figures 5.2 and 5.3 do not seem to match the graph in Figure 5.1 The barge slip would probably have an effect on water levels, so it may not be appropriate to interpret water contours through the slip. Additional monitoring points would be necessary. The contour maps indicate a steep (for south Florida) gradient towards the west, indicating flow towards the west at both high and low tide. This is contradictory to published regional groundwater flows. Is this an effect of the CCS and Industrial waste water facility to the west?

4.) Because the open intervals in the MW-1 wells are open to 24 – 60 ft, it may be difficult to assess the vertical hydraulic gradient.

5.) Did the rainfall graph include full monitoring period for the report? Even small amounts of precipitation have been shown to affect water levels, which would hamper data interpretation during the APT.

6.) It is not clear how tidal effects were accounted for, as there was no documentation provided for the USGS model referenced. Was this corrected solely internally in the Excel spreadsheet? It is not clear either how the Level troll and Aqua troll data were used. The HDR report indicates that there were data adjustment factors added or subtracted to the APT readings. Where was adjustment factor applied? Data was not provided to review. Was the data discrepancy consistent?

7.) Results from the USGS model RMSE clearly indicate conditions at MW-5 that would hamper APT result interpretation. Although from Table 5.1 it is not clear how the final R2 is calculated. It would appear that the model fit is most sensitive to barge water level and canal water level.

8.) With respect to the drawdown data, the input files were not provided for review. Turbulent conditions induced by the pumping wells were not addressed. Head losses near the production well as a result of turbulent conditions will result in lower transmissivity (T) estimates.

9.) The water quality graphs (salinity data) provided are too small to read. Linear regression on limited data points is not appropriate. In reference to Graph 6.3, are the fluctuations in salinity at MW-1 DZ Deep and MW-4 before the APT test?

Groundwater Model

General Overview and Findings

Based on a review of the groundwater modeling efforts presented in the report prepared by Bechtel Power Corporation (dated October 2009), the County finds the model unacceptable for the evaluation purposes of the radial collector well system and the effect on the surrounding environment.

While a groundwater model was produced and supplied for review, many questions with respect to the manner in which the model was calibrated and the verification process for the simulated results remain. At a minimum, the MODFLOW data files (input and output files) need to be provided for evaluation by the County. The model report only documents the model construction and analysis of the data obtained from the model runs. It is not clear the manner in which the surface waters associated with the simulations were constructed. No mention of a separate surface water module was listed to illustrate the interaction between the bay, canals, and cooling canal system with the groundwater matrix. More importantly, given the questions associated with the characterization of the groundwater and surface water quality, a separate module was not presented in the model to evaluate the solute transport aspect of the simulations. In addition, seepage from the cooling canal system is not sufficiently addressed in this document.

The groundwater flow model developed for the project is a steady state, constant density three dimensional representation of the Biscayne aquifer. The model was used to evaluate origin of the water when the proposed radial collector wells are in operation, and the resultant drawdown and velocities at the bay/aquifer interface. The model is comprised of nine layers, representing the Biscayne aquifer. Boundary conditions include river boundaries (cooling canal system (CCS), L-31E, C-107, Card Sound Canal and Florida City Canal), constant head boundary (Biscayne Bay), recharge boundary (layer 1), ET boundary (layer 1), general head boundary (model sides), and no flow boundary (bottom of model). The radial collector wells (RCWs) were simulated at a pumpage rate of approximately 124 MGD. The following are specific comments and inquiries that were compiled with respect to the data presented within the above referenced report. At a minimum, the following items should be addressed as a part of the completeness review:

1) The cooling canal system (CCS) contains warm, hypersaline water; Biscayne Bay has varying salinity, and the Biscayne Aquifer ranges from fresh to saline salinities in the model domain. Biscayne Bay and the aquifer have salinity temporal and spatial variations. There has been increasing evidence to suggest the CCS is hydrologically connected to the aquifer. The salinity and temperature of the CCS are significantly greater than the natural salinities in the aquifer and bay, and these will have an effect on the hydrology of the area. All of these hydrologic conditions cannot be simulated by a steady-state constant-density model. The above referenced boundary conditions are not adequate to simulate the complex hydrology of the area.

2) The hydrogeologic framework the model is based on was found to be deficient. The BA is conceptualized as a dual-porosity aquifer; the model assumes equivalent porous media flow regimes. The aquifer contains preferential flow zones and matrix porosity, which will dictate groundwater flow. These zones must be investigated and characterized by appropriate field and geophysical methodologies, and integrated into a model that will be capable of simulating dual-porosity flow regimes.

3) The model was developed as a steady state model, and per assumption 3.3.2 it appears that the model was compared to the average of the monthly averages from June and December 2008. The hydrology of the CCS, Aquifer and the Bay have significant temporal differences that will affect sources of water into the RCWs. Average conditions at the start of the wet and dry season are not adequate to assess source water of the RCWs.

4) The model found 97% of water for the RCWs to originate from the Bay. Although model documentation is not clear how this number was obtained, it appears to be an artifact of the model. The Bay is represented by a constant head boundary, with the zone budget analysis (Figure 51) limited to the Bay area itself. The top two hydrostratigraphic units were assigned an anisotropy ratio of 1:1, and assigned therefore a vertical hydraulic conductivity equal to the horizontal hydraulic conductivity, based on model calibration. This is contrary to published data referenced in the model documentation.

5) Biscayne Bay salinity varies temporally as well as spatially, and the Bay ecosystem is extremely sensitive to the changes and timing of salinity. The RCWs at 124 mgd will place significant stress on the aquifer and Bay (see above – model concludes 97% of water for RCWs comes from the Bay). The model assumes Biscayne Bay is a constant head, constant density, and at steady state, therefore it cannot assess the changes in salinity over time and space in the bay as a result of the RCWs.

Conclusions

Based on the completeness review performed on the results of the APT and the groundwater modeling report provided in the SCA, the County finds the information submitted as being incomplete. With respect to the performance of the APT, the County has determined that the following items must be addressed in order to comply with the completeness determination of this application:

1. The hydrologic effects of increasing the pumpage tenfold over the pumping rates utilized during the field activities associated with the APT.

2. The exploratory drilling activities associated with the lithologic classification of the BA and the identification of preferential flow zones within the subsurface need to be performed to address the shortcomings noted in the APT.

3. The inclusion of the adequate number, location, and intervals of both groundwater monitoring wells and surface water monitoring points to properly evaluate the hydrologic behavior of the APT.

4. Further investigation to understand and quantify the seepage rate and the hydrologic behavior of the site with respect to the region and the proposed RCWs.

5. An adequate water quality sampling plan that provides the collection of sufficient samples to address baseline conditions prior to, during, and after the completion of the new APT to determine the time for the system to return to baseline conditions. The water quality sampling plan shall also increase the frequency of the sample collections to take into account the tidal effects at the site.

6. Provide an adequate approach to adequately determine the source of water being pulled in by the RCWs.

With respect to the groundwater modeling report, the County finds the model unacceptable for the evaluation purposes of the radial collector well system and the effect on the surrounding environment. Regardless, it should be noted that even though issues associated with the groundwater model have been noted, the conclusions demonstrate a violation of Condition No. 4 of Z-56-07 which prohibits the withdrawal of groundwater from the Biscayne Aquifer.

At a minimum, the County requires that the deficiencies noted above to be remedied and incorporated into a single, comprehensive hydrological study for a thorough technical review to allow the County to determine compliance with the requirements of Chapter 24 Miami-Dade County and the CDMP, Condition No. 15 of Z-56-07, and to allow the County to prepare the reports required by 403.526 F.S.

MDC-C-6 (First Round)

FPL proposes to withdraw cooling water from the Biscayne Aquifer. Such withdrawal is specifically prohibited pursuant to Condition 4 of Z-56-07. In addition, the application does not provide sufficient information to support stated conclusions or to adequately evaluate the affect of the radial collector well system on hydrology and water quality. Specifically, the application does not provide adequate information to determine the impact of the radial collector well system on the fate and transport of the groundwater plume associated with the cooling canal system, the potential for and effect of the recharge of the radial collector well system through horizontal preferential flow zones in the aquifer, the impact of the radial collector well system on salt intrusion, and the impact on wetlands and nearshore surface and groundwater water quality in Biscayne Bay, including as it relates to CERP efforts to promote estuarine conditions in nearshore areas.

MDC-C-7 (Third Round)

No additional information has been provided. This item remains incomplete and information previously requested must be provided to allow the County to determine whether the proposed project meets the substantive requirements of Miami-Dade County Code and the CDMP in order to prepare the reports required by 403.526 F.S. The requested information is required within the time frames prescribed in the "Fifth Revised Schedule for Review of Site Certification Application for Florida Power and Light Company's Turkey Point Units 6 & 7 Power Plant Siting App. PA03-45A3; DEP OGC Case No. 09-3107 DOAH Case No. 09-3575-EPP". The County acknowledges FPL's desire to provide information towards the completeness of this item at a later date and the County will review that information in a subsequent round of completeness.

2MDC-C-7 Second Round)

See comments provided in MDC-C-6. In addition, with regard to FPL's response on the use of radiological tracers such as tritium, there is no federal preemption for monitoring of radiological parameters to evaluate the proposed project.

MDC-C-7 (First Round)
The proposed radial collector wells would be located within or adjacent to a groundwater plume emanating from FPL's Cooling Canal System, which contains high levels of chlorides. It also contains tritium, which may be used as a tracer. In addition, portions of this plume contain heated water, although underground directional travel of the heated water has not been established. No information regarding the delineation of this plume is contained within the application and the extent to which this plume would be affected by the proposed groundwater withdrawals is not documented. In addition, no information was found in the application discussing potential effects of inducing ground water flow towards the proposed withdrawal wells. The applicant needs to provide a hydrologic study, as required under Condition 15 of Z-56-07, that shall include but not be limited to delineation of the existing plume that emanates from the Cooling Canal System and characterization of the tritium levels of the groundwater in the area of the Biscayne Aquifer where the wells are proposed. Any existing heat plume that may extend towards Biscayne Bay should also be delineated as part of the hydrologic study to determine whether warmer water would be induced into the cooling water radial collector lines or the Bay during pumping.

MDC-C-8 (Third Round)
No additional information has been provided. This item remains incomplete and information previously requested must be provided to allow the County to determine whether the proposed project meets the substantive requirements of Miami-Dade County Code and the CDMP in order to prepare the reports required by 403.526 F.S. FPL's reference to a proposed plan that may be submitted to Miami-Dade County in the future to achieve compliance with the requirements of Resolution Z-56-07 is not responsive to this application completeness request. The requested information is required within the time frames prescribed in the "Fifth Revised Schedule for Review of Site Certification Application for Florida Power and Light Company's Turkey Point Units 6 & 7 Power Plant Siting App. PA03-45A3; DEP OGC Case No. 09-3107 DOAH Case No. 09-3575-EPP". The County acknowledges FPL's desire to provide information towards the completeness of this item at a later date and the County will review that information in a subsequent round of completeness.

MDC-C-8 (Second Round)
The information provided is not sufficient for evaluation of the potential impact of the project on groundwater, surface water, salt intrusion, movement of the hyper-saline plume associated with the cooling canal system, and to evaluate potential project related impacts to wetlands resources and Biscayne Bay. In addition, the information is not sufficient for evaluation of the project with requirements of Chapter 24, Miami-Dade County Code, the CDMP, requirements of conditions of Resolution Z-56-07, and it is not sufficient in comprehensiveness of data or in quality of information to allow the County to prepare the reports required by 403.526 F.S. Also see response to MDC-C-6.

MDC-C-8 (First Round)
Neither preferential vertical nor horizontal stratigraphic flow directions have been established. Vertical hydraulic conductivity data is not presented in the application, but it is needed to properly evaluate how the horizontal screens installed in the Fort Thompson Formation 30 to 35 feet below the shallow bay bottom are expected to preferentially draw water from the less transmissive Miami Limestone above instead of from the much more transmissive Fort Thompson.

MDC-C-9 (Third Round)
No additional information has been provided. This item remains incomplete and information previously requested must be provided to allow the County to determine whether the proposed project meets the substantive requirements of Miami-Dade County Code and the CDMP in order to prepare the reports required by 403.526 F.S. FPL's reference to a proposed plan that may

be submitted to Miami-Dade County in the future to achieve compliance with the requirements of Resolution Z-56-07 is not responsive to this application completeness request. The requested information is required within the time frames prescribed in the "Fifth Revised Schedule for Review of Site Certification Application for Florida Power and Light Company's Turkey Point Units 6 & 7 Power Plant Siting App. PA03-45A3; DEP OGC Case No. 09-3107 DOAH Case No. 09-3575-EPP". The County acknowledges FPL's desire to provide information towards the completeness of this item at a later date and the County will review that information in a subsequent round of completeness.

MDC-C-9 (Second Round)
The information provided is not sufficient for evaluation of the potential impact of the project on groundwater, surface water, salt intrusion, movement of the hyper-saline plume associated with the cooling canal system, and to evaluate potential project related impacts to wetlands resources and Biscayne Bay. In addition, the information is not sufficient for evaluation of the project with requirements of Chapter 24, Miami-Dade County Code, the CDMP, requirements of conditions of Resolution Z-56-07, and it is not sufficient in comprehensiveness of data or in quality of information to allow the County to prepare the reports required by 403.526 F.S. Also see response to MDC-C-6.

MDC-C-9 (First Round)
Cones of influence are not defined and aquifer pump-test data has not been presented to properly evaluate hydrologic conditions under which the collector wells would be operated. Neither has there been any data presented to indicate the potential cone of depression that pumping more than 120 million gallons a day from a wellfield located along the shoreline would have on the movement of the salt front line. In order to evaluate the application, the results (including all the data) for all the aquifer pumping tests conducted from 2006 to present shall be provided.

MDC-C-10 (Third Round)
No additional information has been provided. This item remains incomplete and information previously requested must be provided to allow the County to determine whether the proposed project meets the substantive requirements of Miami-Dade County Code and the CDMP in order to prepare the reports required by 403.526 F.S. FPL's reference to a proposed plan that may be submitted to Miami-Dade County in the future to achieve compliance with the requirements of Resolution Z-56-07 is not responsive to this application completeness request. The requested information is required within the time frames prescribed in the "Fifth Revised Schedule for Review of Site Certification Application for Florida Power and Light Company's Turkey Point Units 6 & 7 Power Plant Siting App. PA03-45A3; DEP OGC Case No. 09-3107 DOAH Case No. 09-3575-EPP". The County acknowledges FPL's desire to provide information towards the completeness of this item at a later date and the County will review that information in a subsequent round of completeness.

MDC-C-10 (Second Round)
The information provided is not sufficient for evaluation of the potential impact of the project on groundwater, surface water, salt intrusion, movement of the hyper-saline plume associated with the cooling canal system, and to evaluate potential project related impacts to wetlands resources and Biscayne Bay. In addition, the information is not sufficient for evaluation of the project with requirements of Chapter 24, Miami-Dade County Code, the CDMP, requirements of conditions of Resolution Z-56-07, and it is not sufficient in comprehensiveness of data or in quality of information to allow the County to prepare the reports required by 403.526 F.S. Also see response to MDC-C-6.

MDC-C-10 (First Round)

Water quality data summarized in Table 3.3.4-2 is not sufficient to fully assess the hydrologic characteristics of the cooling canal system.

MDC-C-11

No additional information has been provided. This item remains incomplete and information previously requested must be provided to allow the County to determine whether the proposed project meets the substantive requirements of Miami-Dade County Code and the CDMP in order to prepare the reports required by 403.526 F.S. FPL's reference to a proposed plan that may be submitted to Miami-Dade County in the future to achieve compliance with the requirements of Resolution Z-56-07 is not responsive to this application completeness request. The requested information is required within the time frames prescribed in the "Fifth Revised Schedule for Review of Site Certification Application for Florida Power and Light Company's Turkey Point Units 6 & 7 Power Plant Siting App. PA03-45A3; DEP OGC Case No. 09-3107 DOAH Case No. 09-3575-EPP". The County acknowledges FPL's desire to provide information towards the completeness of this item at a later date and the County will review that information in a subsequent round of completeness.

MDC-C-11

The information provided is not sufficient for evaluation of the potential impact of the project on groundwater, surface water, salt intrusion, movement of the hyper-saline plume associated with the cooling canal system, and to evaluate potential project related impacts to wetlands resources and Biscayne Bay. In addition, the information is not sufficient for evaluation of the project with requirements of Chapter 24, Miami-Dade County Code, the CDMP, requirements of conditions of Resolution Z-56-07, and it is not sufficient in comprehensiveness of data or in quality of information to allow the County to prepare the reports required by 403.526 F.S. Also see response to MDC-C-6.

MDC-C-11 (First Round)

Data presented for Groundwater Impact assessment is not sufficient. Visual MODFLOW data files are not provided for assessment.

MDC-C-12

No additional information has been provided. This item remains incomplete and information previously requested must be provided to allow the County to determine whether the proposed project meets the substantive requirements of Miami-Dade County Code and the CDMP in order to prepare the reports required by 403.526 F.S. FPL's reference to a proposed plan that may be submitted to Miami-Dade County in the future to achieve compliance with the requirements of Resolution Z-56-07 is not responsive to this application completeness request. The requested information is required within the time frames prescribed in the "Fifth Revised Schedule for Review of Site Certification Application for Florida Power and Light Company's Turkey Point Units 6 & 7 Power Plant Siting App. PA03-45A3; DEP OGC Case No. 09-3107 DOAH Case No. 09-3575-EPP". The County acknowledges FPL's desire to provide information towards the completeness of this item at a later date and the County will review that information in a subsequent round of completeness.

MDC-C-12 (First Round)

The information provided is not sufficient for evaluation of the potential impact of the project on groundwater, surface water, salt intrusion, movement of the hyper-saline plume associated with the cooling canal system, and to evaluate potential project related impacts to wetlands resources and Biscayne Bay. In addition, the information is not sufficient for evaluation of the project with requirements of Chapter 24, Miami-Dade County Code, the CDMP, requirements of conditions of Resolution Z-56-07, and it is not sufficient in comprehensiveness of data or in quality of

information to allow the County to prepare the reports required by 403.526 F.S. Also see response to MDC-C-6.

MDC-C-12 (First Round)
Not enough data provided to assess statement that radial collector wells are substratum collectors of saltwater that will recharge from below Biscayne Bay.

MDC-C-13 (Third Round)
No additional information has been provided. This item remains incomplete and information previously requested must be provided to allow the County to determine whether the proposed project meets the substantive requirements of Miami-Dade County Code and the CDMP in order to prepare the reports required by 403.526 F.S. FPL's reference to a proposed plan that may be submitted to Miami-Dade County in the future to achieve compliance with the requirements of Resolution Z-56-07 is not responsive to this application completeness request. The requested information is required within the time frames prescribed in the "Fifth Revised Schedule for Review of Site Certification Application for Florida Power and Light Company's Turkey Point Units 6 & 7 Power Plant Siting App. PA03-45A3; DEP OGC Case No. 09-3107 DOAH Case No. 09-3575-EPP". The County acknowledges FPL's desire to provide information towards the completeness of this item at a later date and the County will review that information in a subsequent round of completeness.

MDC-C-13 (Second Round)
The information provided is not sufficient for evaluation of the potential impact of the project on groundwater, surface water, salt intrusion, movement of the hyper-saline plume associated with the cooling canal system, and to evaluate potential project related impacts to wetlands resources and Biscayne Bay. In addition, the information is not sufficient for evaluation of the project with requirements of Chapter 24, Miami-Dade County Code, the CDMP, requirements of conditions of Resolution Z-56-07, and it is not sufficient in comprehensiveness of data or in quality of information to allow the County to prepare the reports required by 403.526 F.S. Also see response to MDC-C-6.

MDC-C-13 (First Round)
The applicant states that almost all the water withdrawn by the proposed radial collectors will be recharged from the Bay; however, no data to support this statement is provided in the application. The applicant shall provide all relevant data relating to recharge of the Biscayne Aquifer that would be induced by operation of the radial collectors.

MDC-C-14 (Third Round)
No additional information has been provided. This item remains incomplete and information previously requested must be provided to allow the County to determine whether the proposed project meets the substantive requirements of Miami-Dade County Code and the CDMP in order to prepare the reports required by 403.526 F.S. FPL's reference to a proposed plan that may be submitted to Miami-Dade County in the future to achieve compliance with the requirements of Resolution Z-56-07 is not responsive to this application completeness request. The requested information is required within the time frames prescribed in the "Fifth Revised Schedule for Review of Site Certification Application for Florida Power and Light Company's Turkey Point Units 6 & 7 Power Plant Siting App. PA03-45A3; DEP OGC Case No. 09-3107 DOAH Case No. 09-3575-EPP". The County acknowledges FPL's desire to provide information towards the completeness of this item at a later date and the County will review that information in a subsequent round of completeness.

MDC-C-14 (Second Round)

The information provided is not sufficient for evaluation of the potential impact of the project on groundwater, surface water, salt intrusion, movement of the hyper-saline plume associated with the cooling canal system, and to evaluate potential project related impacts to wetlands resources and Biscayne Bay. In addition, the information is not sufficient for evaluation of the project with requirements of Chapter 24, Miami-Dade County Code, the CDMP, requirements of conditions of Resolution Z-56-07, and it is not sufficient in comprehensiveness of data or in quality of information to allow the County to prepare the reports required by 403.526 F.S. Also see response to MDC-C-6.

MDC-C-14 (First Round)
The applicant has not provided sufficient geologic, hydrologic and water quality data to evaluate the application.

MDC-C-15 (Third Round)
No additional information has been provided. This item remains incomplete and information previously requested must be provided to allow the County to determine whether the proposed project meets the substantive requirements of Miami-Dade County Code and the CDMP in order to prepare the reports required by 403.526 F.S. FPL's reference to a proposed plan that may be submitted to Miami-Dade County in the future to achieve compliance with the requirements of Resolution Z-56-07 is not responsive to this application completeness request. The requested information is required within the time frames prescribed in the "Fifth Revised Schedule for Review of Site Certification Application for Florida Power and Light Company's Turkey Point Units 6 & 7 Power Plant Siting App. PA03-45A3; DEP OGC Case No. 09-3107 DOAH Case No. 09-3575-EPP". The County acknowledges FPL's desire to provide information towards the completeness of this item at a later date and the County will review that information in a subsequent round of completeness.

MDC-C-15 (Second Round)
The information provided is not sufficient for evaluation of the potential impact of the project on groundwater, surface water, salt intrusion, movement of the hyper-saline plume associated with the cooling canal system, and to evaluate potential project related impacts to wetlands resources and Biscayne Bay. In addition, the information is not sufficient for evaluation of the project with requirements of Chapter 24, Miami-Dade County Code, the CDMP, requirements of conditions of Resolution Z-56-07, and it is not sufficient in comprehensiveness of data or in quality of information to allow the County to prepare the reports required by 403.526 F.S. Also see response to MDC-C-6.

MDC-C-15 (First Round)
The applicant has not provided sufficient information to evaluate the mixing chamber model that was used to project impacts from the radial collector wells. The applicant shall provide a modeling development report that meets all professional modeling standards and provides background information, including but not limited to the capabilities and limitations of the model, assumptions made during model construction, boundary conditions and variables (including background data) utilized, the method in which the groundwater and surface water interaction is simulated, method of calibration, and the resulting reporting outputs.

MDC-C-16 (Third Round)
No additional information has been provided. This item remains incomplete and information previously requested must be provided to allow the County to determine whether the proposed project meets the substantive requirements of Miami-Dade County Code and the CDMP in order to prepare the reports required by 403.526 F.S. FPL's reference to a proposed plan that may be submitted to Miami-Dade County in the future to achieve compliance with the requirements of Resolution Z-56-07 is not responsive to this application completeness request. The

requested information is required within the time frames prescribed in the "Fifth Revised Schedule for Review of Site Certification Application for Florida Power and Light Company's Turkey Point Units 6 & 7 Power Plant Siting App. PA03-45A3; DEP OGC Case No. 09-3107 DOAH Case No. 09-3575-EPP". The County acknowledges FPL's desire to provide information towards the completeness of this item at a later date and the County will review that information in a subsequent round of completeness.

MDC-C-16 (Second Round)
The information provided is not sufficient for evaluation of the potential impact of the project on groundwater, surface water, salt intrusion, movement of the hyper-saline plume associated with the cooling canal system, and to evaluate potential project related impacts to wetlands resources and Biscayne Bay. In addition, the information is not sufficient for evaluation of the project with requirements of Chapter 24, Miami-Dade County Code, the CDMP, requirements of conditions of Resolution Z-56-07, and it is not sufficient in comprehensiveness of data or in quality of information to allow the County to prepare the reports required by 403.526 F.S. Also see response to MDC-C-6.

MDC-C-16 (First Round)
The application states "During the wet season, a seaward gradient exists and groundwater flow is southeasterly towards Biscayne Bay. This gradient tends to disappear during the dry season, where the groundwater levels are depressed below the sea level, resulting in a reverse flow direction. The groundwater at the Turkey Point Plant is classified by FDEP as Class G-III (see Appendix 10.6) that has no reasonable potential as a future source of drinking water due to the high dissolved solids." The radial wells are located so as to draw from the easterly groundwater flow. Please resolve the apparent conflict between the location of the wells and the water from which they are drawing and Condition 4 of Z-56-07, which prohibits withdrawal from the Biscayne Aquifer.

MDC-C-17 (Third Round)
This item remains incomplete. The revised figure (fig. 4.5-3) referenced in FPL's response must be clarified. It does not appear that the full extent of privately owned submerged land is shown as described in the legend; also, the owner of this land should be identified on the figure. It is also not clear what lands, if any, are located within the Biscayne Bay Aquatic Preserve. FPL shall provide the 1925 TIFF survey documents and the navigation channel easement resolution documents referenced in the figure. Also provide information relating to the referenced "potential submerged land easements". Would these potential easements be issued by the State of Florida and if so, what coordination is required, if any, with the Biscayne Bay Aquatic Preserve? Are these lands located within the Aquatic Preserve?

MDC-C-18 Third Round)
No additional information has been provided. This item remains incomplete and information previously requested must be provided to allow the County to determine whether the proposed project meets the substantive requirements of Miami-Dade County Code and the CDMP in order to prepare the reports required by 403.526 F.S. FPL's reference to a proposed plan that may be submitted to Miami-Dade County in the future to achieve compliance with the requirements of Resolution Z-56-07 is not responsive to this application completeness request. The requested information is required within the time frames prescribed in the "Fifth Revised Schedule for Review of Site Certification Application for Florida Power and Light Company's Turkey Point Units 6 & 7 Power Plant Siting App. PA03-45A3; DEP OGC Case No. 09-3107 DOAH Case No. 09-3575-EPP". The County acknowledges FPL's desire to provide information towards the completeness of this item at a later date and the County will review that information in a subsequent round of completeness

MDC-C-18 (Second Round)
FPL is incorrect in its statements that Section 24-43.2 of the Miami-Dade County Code relates solely to domestic water supply wells. FPL's assertion that Section 24-43.2 does not apply to saltwater wells is also incorrect. Section 24-43.2 applies to all surface and groundwaters of the county including coastal waters and applies to all "on-site domestic well systems and other water supply wells" (Section 24-43.2). Miami-Dade County does not agree that the information requested relates to standards that are not applicable and notes that FPL has previously agreed pursuant to conditions 5 and 15 of Z-56-07 to demonstrate that the substantive requirements of this code section are met and to conduct a hydrologic study in compliance with Chapter 24, Miami-Dade County Code. Submittal of the requested information consistent with the Z-56-07 requirements is necessary for Miami-Dade County to evaluate the project and to prepare the reports required pursuant to 403.526 F.S.

MDC-C-18 (First Round)
Adequate hydrogeologic data have not been presented and the application does not include sufficient information to determine whether the proposed withdrawals from the radial collector wells would meet the requirements of Section 24-43.2 Miami-Dade County Code.. Selection of potential locations, idealized designs, number of wells, and even the pipe sizes of the radial lines of the collector wells should be based on hydrogeologic data within the areas under Biscayne Bay that the wells would tap. Such data has not been presented in the application. The applicant shall provide information that is sufficient to determine whether the radial collector wells meet the requirements of Chapter 24 and the CDMP for this aspect of the proposed project.

MDC-C-19 (Third Round)
No additional information has been provided. This item remains incomplete and information previously requested must be provided to allow the County to determine whether the proposed project meets the substantive requirements of Miami-Dade County Code and the CDMP in order to prepare the reports required by 403.526 F.S. FPL's reference to a proposed plan that may be submitted to Miami-Dade County in the future to achieve compliance with the requirements of Resolution Z-56-07 is not responsive to this application completeness request. The requested information is required within the time frames prescribed in the "Fifth Revised Schedule for Review of Site Certification Application for Florida Power and Light Company's Turkey Point Units 6 & 7 Power Plant Siting App. PA03-45A3; DEP OGC Case No. 09-3107 DOAH Case No. 09-3575-EPP". The County acknowledges FPL's desire to provide information towards the completeness of this item at a later date and the County will review that information in a subsequent round of completeness

MDC-C-19 (Second Round)
The information provided is not sufficient for evaluation of the potential impact of the project on groundwater, surface water, salt intrusion, movement of the hyper-saline plume associated with the cooling canal system, and to evaluate potential project related impacts to wetlands resources and Biscayne Bay. In addition, the information is not sufficient for evaluation of the project with requirements of Chapter 24, Miami-Dade County Code, the CDMP, requirements of conditions of Resolution Z-56-07, and it is not sufficient in comprehensiveness of data or in quality of information to allow the County to prepare the reports required by 403.526 F.S. Also see response to MDC-C-6.

MDC-C-19 (First Round)
The application indicates that a surface water sample from Biscayne Bay was collected to characterize the water from the radial collectors. Providing a surface water sample as a surrogate for groundwater data is inappropriate. The applicant shall provide a characterization of groundwater based on actual data from the area in which the radial collector wells are proposed.

MDC-C-20 (Third Round)

This item remains incomplete. The scale of SCA Figure 3.1.3-1 is inadequate to provide the necessary level of detail to be able to clearly identify the wetland areas that may be impacted during the radial well delivery pipeline installation. FPL shall provide a detailed map clearly delineating the jurisdictional wetland areas as well as the existing mangrove mitigation areas and the areas to be impacted by the installation of the radial well delivery pipeline. The scale of this figure must be appropriate to allow for a clear differentiation of all these areas.

MDC-C-21 (Third Round)
This item remains incomplete and information previously requested must be provided to allow the County to determine whether the proposed project meets the substantive requirements of Miami-Dade County Code and the CDMP in order to prepare the reports required by 403.526 F.S. Will any impacts to wetlands or wetland vegetation, such as mangroves, in the in situ restoration areas, be required for maintenance, repair or other activities after restoration is complete? If so, FPL shall provide details of such impacts and shall also provide corrected UMAM scores that account for these future impacts.

MDC-C-22 (Third Round)
No additional information has been provided. This item remains incomplete and information previously requested must be provided to allow the County to determine whether the proposed project meets the substantive requirements of Miami-Dade County Code and the CDMP in order to prepare the reports required by 403.526 F.S. The requested information is required within the time frames prescribed in the "Fifth Revised Schedule for Review of Site Certification Application for Florida Power and Light Company's Turkey Point Units 6 & 7 Power Plant Siting App. PA03-45A3; DEP OGC Case No. 09-3107 DOAH Case No. 09-3575-EPP". The County acknowledges FPL's desire to provide information towards the completeness of this item at a later date and the County will review that information in a subsequent round of completeness

> **MDC-C-22 (Second Round)**
> The information provided is not sufficient for evaluation of the potential impact of the project on groundwater, surface water, salt intrusion, movement of the hyper-saline plume associated with the cooling canal system, and to evaluate potential project related impacts to wetlands resources and Biscayne Bay. In addition, the information is not sufficient for evaluation of the project with requirements of Chapter 24, Miami-Dade County Code, the CDMP, requirements of conditions of Resolution Z-56-07, and it is not sufficient in comprehensiveness of data or in quality of information to allow the County to prepare the reports required by 403.526 F.S. Also see response to MDC-C-6.
>
> **MDC-C-22 (First Round)**
> Please provide adequate analysis in support of the conclusion made that the Biscayne Aquifer is not affected by the Radial Collector wells. A fully three dimensional mathematical model should be used to detemine the boundary conditions (influence cones) of the proposed radial collector well. These boundary conditions should be simulated in the overall ground water model, which was described in the Cooling Canal/Industrial Wastewater Treatment and Disposal Facility.

MDC-C-23 (Third Round)
No additional information has been provided. This item remains incomplete and information previously requested must be provided to allow the County to determine whether the proposed project meets the substantive requirements of Miami-Dade County Code and the CDMP in order to prepare the reports required by 403.526 F.S. FPL's reference to a proposed plan that may be submitted to Miami-Dade County in the future to achieve compliance with the requirements of Resolution Z-56-07 is not responsive to this application completeness request. The

requested information is required within the time frames prescribed in the "Fifth Revised Schedule for Review of Site Certification Application for Florida Power and Light Company's Turkey Point Units 6 & 7 Power Plant Siting App. PA03-45A3; DEP OGC Case No. 09-3107 DOAH Case No. 09-3575-EPP". The County acknowledges FPL's desire to provide information towards the completeness of this item at a later date and the County will review that information in a subsequent round of completeness

MDC-C-23 (Second Round)
The information provided is not sufficient for evaluation of the potential impact of the project on groundwater, surface water, salt intrusion, movement of the hyper-saline plume associated with the cooling canal system, and to evaluate potential project related impacts to wetlands resources and Biscayne Bay. In addition, the information is not sufficient for evaluation of the project with requirements of Chapter 24, Miami-Dade County Code, the CDMP, requirements of conditions of Resolution Z-56-07, and it is not sufficient in comprehensiveness of data or in quality of information to allow the County to prepare the reports required by 403.526 F.S. Also see response to MDC-C-6.

MDC-C-23 (First Round)
A fully three dimensional mathematical model is needed in support of the conclusion made that the Biscayne Aquifer would not be affected by operation of the radial collector wells. This shall assist in the determination of the boundary conditions (influence cones) of the proposed radial collector wells. These boundary conditions should be simulated in the overall ground water model, which was described in the Cooling Canal/Industrial Wastewater Treatment and Disposal Facility. Whether the extraction of water from the Biscayne Bay system will change or reduce the freshwater inflow to the bay and/or increase salinity at least seasonally shall be examined through additional modeling as part of the application

MDC-C-24 (Third Round)
This item remains incomplete and information previously requested must be provided to allow the County to determine whether the proposed project meets the substantive requirements of Miami-Dade County Code and the CDMP in order to prepare the reports required by 403.526 F.S. FPL's reference to a proposed plan that may be submitted to Miami-Dade County in the future to achieve compliance with the requirements of Resolution Z-56-07 is not responsive to this application completeness request. The requested information is required within the time frames prescribed in the "Fifth Revised Schedule for Review of Site Certification Application for Florida Power and Light Company's Turkey Point Units 6 & 7 Power Plant Siting App. PA03-45A3; DEP OGC Case No. 09-3107 DOAH Case No. 09-3575-EPP".

Miami-Dade County acknowledges the information provided in response to the specific questions regarding the March 2008 HDR report. However, without the information required by conditions 5 and 15 of Z-56-07 and the additional outstanding information that has been requested relating to these matters, Miami-Dade County will be unable to complete the evaluation of the issues raised in this item. In addition, FPL has not demonstrated that the radial collector well alternative would be appropriate given the requirement of condition 4 of Z-56-07.

SECTION D – ACCESS ROAD

MDC-D-1(a) (Third Round)
FPL's response is incomplete because they fail to provide the information requested in the first Completeness Response, which is required to evaluate whether the access roads, as currently proposed, fulfill the substantive requirements of Sections 24-48.3, 24-48.4, and 24-49 of the Miami-Dade Code. This is a separate substantive requirement from whether the proposed use

is consistent with the CDMP and detailed information is required in order to evaluate the proposed use as temporary construction access roads and prepare the agency reports required by Section 403.526, F.S. FPL shall provide the requested information, which consists of an evaluation of impacts that "include but are not limited to disruption of ecological corridors, altered hydrogeology in surrounding wetlands (e.g. via barriers to sheetflow), increased invasion rate of non-native species, increased road-kill, impacts to listed species and their habitat, including but not limited to Florida panthers and Eastern indigo snakes, and increased access that may facilitate illegal dumping, ATV riding, poaching, and other activities that may directly or indirectly impact surrounding wetlands. The applicant shall also address how road construction and operation would compromise the ability of the EEL Program and other agencies to appropriately manage public lands. FPL shall provide an analysis of these impacts on the hydrologic and ecological values of the surrounding lands, including information on how these impacts will be minimized and avoided to the maximum extent possible and how unavoidable impacts will be mitigated." (Miami-Dade County Completeness Response, question MDC-D-1).

Miami-Dade County acknowledges FPL's provision of information on federally and state-listed species (including plants), including Florida panthers and Eastern indigo snakes under response 2MDC-A-26-2, however, considers this information still incomplete because of limitations and inaccuracies detailed in Miami-Dade County's response to 2MDC-A-26-2.

Miami-Dade County hereby clarifies that the ability of the EEL Program and other agencies to appropriately manage public lands is the result of several factors, only one of which, access across FPL-owned lands, has been partially addressed by FPL in its response. Information must be provided to allow for a review of these additional factors including but not limited to: 1) impact to access such as the availability of safe pull-out areas for transport vehicles that may be towing trailered equipment and other types of motorized vehicles on the access roads plus elevation differences and/or slopes between the roads and surrounding lands that may preclude accessing the surrounding publicly-owned wetlands with wetland-compatible vehicles, and 2) impact to management costs due to degradation of the wetlands adjacent to the roads that are the result of a) the increased level of disturbance from construction and operation of the roads, which includes an elevated opportunity for the spread of invasive plant species and b) increased access by the general public to an area that has previously been difficult to access by street-compatible vehicles. FPL must address all of these factors in its response.

FPL states that several alternative access roadway configurations were reviewed, but failed to include the information that supported that review with its response. Figure W9.3.1-1 shows only the SW 359 Street corridor alternative in the region immediately around the Turkey Point complex. FPL shall provide all available access road alternatives that were considered and any supporting analyses that resulted in their conclusion that SW 359 Street corridor was the "least environmentally damaging practicable alternative".

MDC-D-1(b) (Third Round)
The item is still incomplete because complete information has not been provided and clarification is needed on a statement that FPL made in its response. FPL stated in its response that, "After construction is complete, public access to SW 359th Street will be restricted by locked gates." FPL shall clarify whether "after construction is complete" refers to construction of the access roads or construction of the plant. If FPL meant that the roads will be restricted after construction of the plant, FPL shall provide information on what specific features and actions will be taken to restrict public access to the access roads after the roads have been constructed but before the plant construction is complete. In addition, FPL shall provide information on how

often the gates will be inspected for integrity and repaired, if necessary, during the foreseeable life of Units 6 and 7.

MDC-D-1(c) (Third Round)
Miami-Dade County acknowledges the information provided by FPL, but considers this item still incomplete. FPL has stated, "SW 359th Street will be reduced to a transmission line patrol road after construction is complete" but has not provided specific information on the future configuration of this road, nor has FPL explicitly stated whether this stretch of transmission line patrol road will continue to be paved or not. FPL shall provide clarification on the pavement status of the future transmission maintenance road within the SW 359 Street corridor, from east of SW 137 Avenue to the plant, once construction of the plant has been completed, and shall provide a cross-sectional figure for the future configuration of this transmission maintenance road. Miami-Dade County acknowledges FPL's commitment that all public roads will be returned to their previous 2-lane configuration, however, it should be noted that SW 117 Ave south of SW 344 St. is presently a single lane roadway. FPL shall provide an explanation whether this road will be returned to a single lane road following construction.

MDC-D-1(d) (Third Round)
Complete. The FPL response is acknowledged and considered sufficient.

MDC-D-2 (Third Round)
Previously determined to be complete.

MDC-D-3 (Third Round)
Complete. The FPL response is acknowledged and considered sufficient

MDC-D-4 (Third Round)
Previously determined to be complete.

MDC-D-5 (Third Round)
Previously determined to be complete.

MDC-D-6 (Third Round)
Previously determined to be complete.

MDC-D-7 (Third Round)
Previously determined to be complete.

MDC-D-8 (Third Round)
Previously determined to be complete.

MDC-D-9 (Third Round)
This item remains incomplete and information previously requested must be provided to allow the County to determine whether the proposed project meets the substantive requirements of Miami-Dade County Code and the CDMP in order to prepare the reports required by 403.526 F.S. FPL's reference to a proposed plan that may be submitted to Miami-Dade County in the future to achieve compliance with the requirements of Resolution Z-56-07 is not responsive to this application completeness request. The requested information is required within the timeframes prescribed in the "Fifth Revised Schedule for Review of Site Certification Application for Florida Power and Light Company's Turkey Point Units 6 & 7 Power Plant Siting App. PA03-45A3; DEP OGC Case No. 09-3107 DOAH Case No. 09-3575-EPP".

Miami-Dade County has concluded from the response that FPL may misunderstand the purpose of the exotic vegetation management plan required under Condition 12 of Z-56-07 and hereby provides clarification. The exotic vegetation management plan is not intended solely for areas where construction of buildings and infrastructure will eliminate existing exotic vegetation, but instead is intended for nearby areas which may be invaded or further invaded by exotic species as a result of construction and operation of the plant site and associated facilities including non-transmission linear facilities. Such areas may include, but are not limited to locations within the plant site that currently have or are likely to have invasive exotic plant species colonize. Such areas may also include, but are not limited to areas near current or future non-transmission linear facilities, because such areas currently have or are likely to have invasive exotic plant species colonize, facilitated by vehicle traffic utilizing the linear facility. This information is required to determine whether the substantive requirements of the Miami-Dade County Code relating to the removal of exotic vegetation would be met by the proposed project.

MDC-D-9 (Second Round)
This request is not outside the scope of a completeness request since Miami-Dade County has the authority to request information on potential impacts to EEL lands that lie adjacent to or near the proposed access corridor under Section 24-48.3(1)(a) of the Miami-Dade Code. The code states that the Board of County Commissioners shall base its decision upon "The potential adverse environmental impact and cumulative adverse environmental impact of the proposed work, including but not limited to, the effect upon....and any other environmental values, affecting the public interest." In addition, Section 24-49.9(1) requires that exotic pest plant species, when present on a development site, shall be removed prior to development. The reference to impacts to EEL lands is only one example of why the County is concerned with the consequences of failure to comply with the provisions of Section 24-49.9(1). Miami-Dade County notes that Condition 12 of Z-56-07 does not specifically limit the plan to roadway improvement rights-of way, and also notes that the exotic vegetation management plan required under Condition 12 is to be prepared and implemented prior to the construction of any roads.

According to MACTECH report entitled "*Geotechnical Exploration and Testing Turkey Point Col Project Florida City, Florida* " dated October 6, 2008, and submitted by FPL, road construction has already begun at the Units 6 and 7 site, therefore, development and implementation of this plan is already past due. The information provided in the Completeness Response lacks a thorough list of exotic vegetation present on FPL lands, and lacks information on appropriate treatment techniques and scheduling that will bring FPL lands into maintenance condition and maintain that status over time.

FPL shall provide the requested exotic vegetation management plan, which shall address factors including but not limited to treatment area boundaries, protection of surrounding habitat, season of treatment, frequency of treatment, variation in treatment techniques to suit terrain and level of infestation, etc.

MDC-D-10 (Third Round)
Please see MDC's Response MDC-D-9 (Third Round).

MDC-D-11 (Third Round)
Miami-Dade County acknowledges that FPL has provided a portion of the information, however, the response remains incomplete because FPL has not provided the requested tree survey for the proposed plant site and associated facilities, including non-transmission linear facilities. Protected tree resources may occur on any upland portion of the proposed plant site and associated facilities, including non-transmission linear facilities. Miami-Dade County staff, for example, observed a spiny black olive (*Bucida molinetii*, fka *Bucida spinosa*) adjacent to one of

the roads near the proposed plant site during a site visit. This rare hardwood species is protected under Section 24-49 of the Miami-Dade County Code and is an example of why such a tree survey is needed. This information is needed to determine whether the project fulfills the substantive requirements of Chapter 24 of the Miami-Dade County Code, including but not limited to Section 24-49, and to prepare the agency reports required by Section 403.526, F.S.

MDC-D-12 (Third Round)
This item remains incomplete and information previously requested must be provided to allow the County to determine whether the proposed project meets the substantive requirements of Miami-Dade County Code and the CDMP in order to prepare the reports required by 403.526 F.S. FPL's reference to a proposed plan that may be submitted to Miami-Dade County in the future to achieve compliance with the requirements of Resolution Z-56-07 is not responsive to this application completeness request. The requested information is required within the timeframes prescribed in the "Fifth Revised Schedule for Review of Site Certification Application for Florida Power and Light Company's Turkey Point Units 6 & 7 Power Plant Siting App. PA03-45A3; DEP OGC Case No. 09-3107 DOAH Case No. 09-3575-EPP".

Miami-Dade County has concluded from the response that FPL may misunderstand the request for information. Construction and operation of non-transmission linear facilities, including but not limited to construction access roads, may have an adverse impact on adjacent and nearby EEL lands, including but not limited to disruption of ecological corridors, disruption of sheetflow patterns, degradation of environmental quality due to disruption of management activities from access limitations, increased mortality of wildlife that utilizes EEL lands for some portion of their life cycle, increased invasive exotic plant colonization due to increased traffic, increased dumping and ATV/ORV use due to improved access for unauthorized parties, and other changes that may occur as a direct or indirect result of constructing and operating construction access roads located in a large, contiguous wetland system. FPL has not provided sufficient information on any of these issues and Miami-Dade County reiterates the need for such information in order to evaluate direct and indirect impacts of access road construction and operation and prepare the reports required by 403.526 F.S

FPL shall provide specific information relating to potential impacts to wildlife associated with access road/wildlife corridor overlap. Without the requested information, Miami-Dade County is unable to determine whether the proposed access roads cross through commonly used migration routes, travel corridors between feeding and breeding or resting areas, and any other types of travel corridors. The locations of such overlap, the types of species that would be affected, and the nature of the impacts need to be identified at this time. The information should ensure that information is included on rare, threatened or endangered species including state listed and federally listed species. Miami-Dade County has previously requested additional information on wildlife impacts that may result from the project in order to evaluate the potential adverse and cumulative adverse environmental impacts of the proposed work pursuant to Chapter 24, Miami-Dade County Code and the Miami-Dade County Comprehensive Development Master Plan. Miami-Dade County also notes that FPL has continued to dismiss the County's request for information resulting from a Comprehensive Environmental Impact Statement based upon FPL's assertion that the request is procedural in nature. However, Miami-Dade County reiterates that the information is required to evaluate this project for conformance with nonprocedural requirements of Miami-Dade County. Miami-Dade County acknowledges additional information provided by FPL in its completeness responses related to this issue, including limited information regarding invasive plant control within the non-transmission linear features; however, the County reiterates that the information remains incomplete.

MDC-D-12 (Second Round)
FPL's response is incomplete and is not sufficient in comprehensiveness or quality of the information to allow Miami-Dade County to prepare the reports required by Section 403.526, F.S. FPL is incorrect in its assertion that Miami-Dade County is requesting information about compliance with Section 24-50 of the Miami-Dade Code in MDC-D-12. With regard to Environmentally Endangered Lands, Miami-Dade County is requesting information that is sufficient to determine compliance with Section 24-48.3 of the Miami-Dade Code, including Section 24-48.3(1)(a) of the Miami-Dade Code, which addresses evaluation of "the potential adverse environmental impact and cumulative adverse environmental impact of the proposed work, including but not limited to the effect upon ... any other environmental values, affecting the public interest." FPL has asserted, but has not demonstrated, that there will be no significant adverse changes to the environment surrounding the linear features associated with Units 6 and 7. For example, research has demonstrated that the increased traffic associated with paved roadways will increase the rate of exotic plant invasion. FPL is obligated, under Condition 12 of Z-56-07, to submit and implement an exotic vegetation management plan, but has not yet done so. This plan is necessary to determine whether there will be a net adverse environmental effect on nearby lands due to increased exotic plant invasion.

MDC-D-12 (First Round)
The application does not adequately depict property ownership in areas surrounding proposed linear features such as access roads, including MDC Environmentally Endangered Lands (EEL) Program projects that have been at least partially acquired. Please provide amended maps showing all EEL projects, along with a complete analysis of the direct and indirect effects of proposed linear feature construction and operation on nearby EEL Project lands.

MDC-D-13 (Third Round)
This item remains incomplete and information previously requested must be provided to allow the County to determine whether the proposed project meets the substantive requirements of Miami-Dade County Code and the CDMP in order to prepare the reports required by 403.526 F.S. FPL's reference to a proposed plan that may be submitted to Miami-Dade County in the future to achieve compliance with the requirements of Resolution Z-56-07 is not responsive to this application completeness request. The requested information is required within the timeframes prescribed in the "Fifth Revised Schedule for Review of Site Certification Application for Florida Power and Light Company's Turkey Point Units 6 & 7 Power Plant Siting App. PA03-45A3; DEP OGC Case No. 09-3107 DOAH Case No. 09-3575-EPP".

FPL states that several alternative access roadway configurations were reviewed, but failed to include the information that supported that review with its response. Figure W9.3.1-1 shows only the SW 359 Street corridor alternative in the region immediately around the Turkey Point complex. FPL shall provide all available access road alternatives that were considered and any supporting analyses that resulted in their determination that "the best course of action is to pursue the roadway improvements described in the SCA."

2MDC-D-13 (Second Round)
FPL's response is incomplete and is not sufficient in comprehensiveness of data or quality of the information to allow Miami-Dade County to prepare the reports required by Section 403.526, F.S. Miami-Dade County is requesting information that is needed to determine compliance with Sections 24-48 and 24-49 of the Miami-Dade Code, which require demonstration of avoidance and minimization of impacts to protected resources, and consistency with objectives and policies in the CDMP that protect sensitive resources such as wetlands and habitat for endangered and threatened species, protect surface water connectivity and flow, and require consistency with CERP.

In addition, the Mitigation Plan required under Condition 9 of Z-56-07 must include information on replacement tree canopy required under Section 24-49 of the Miami-Dade Code. The wetlands in the areas south of SW 344 Street also include mitigation areas (folios 10-7926-001-0020, 10-7927-001-0010 and 30-7927-001-0150) that lie adjacent to the proposed improvements.

FPL has not provided information on possible impacts from the proposed roadway improvements to adjacent properties and the existing mitigation lands.

The information presented in SCA Appendix 10.7.4 is not sufficient to demonstrate compliance with the requirements for avoidance and minimization; in Chapter 24, Miami-Dade Code.

In addition, the response and the SCA application does not adequately address potential access road alternatives along SW 344th Street currently under review with Miami-Dade County.

MDC-D-13 (First Round)
Application fails to provide an alternatives analysis for the proposed access road network, both for construction access to the plant and access to the transmission line corridors, and to adequately deomstrate [demonstrate] that impacts to resources are minimized and avoided. Please provide an analysis of alternatives for the access roads that considers and compares the benefits and impacts of all feasible alternative routes for ingress-egress, and demonstrates minimization and avoidance of impacts including but not limited to wetlands, impacts to state and federally protected species, impacts to existing water management features, impacts to Environmentally Endangered Lands projects, Natural Forest Communities and tree resources protected by Chapter 24, Miami-Dade Code. Alternatives evaluated for ingress-egress to Turkey Point should include but not be limited to utilization of the existing Palm Drive (SW 344 Street) corridor with and without shift change modifications, and alternative construction entrances including but not limited to utilizing the existing plant entrance with shift change modifications or making improvements to the L-31East levee for use as a temporary construction entrance by backfilling a section of the L-31E borrow canal.

MDC-D-14 (Third Round)
Please see MDC's responses MDC-D-1 (Third Round), MDC-D-9 (Third Round), and MDC-D-12 (Third Round).

MDC-D-15 (Third Round)
This item remains incomplete and information previously requested must be provided to allow the County to determine whether the proposed project meets the substantive requirements of Miami-Dade County Code and the CDMP in order to prepare the reports required by 403.526 F.S. FPL's reference to a proposed plan that may be submitted to Miami-Dade County in the future to achieve compliance with the requirements of Resolution Z-56-07 is not responsive to this application completeness request. The requested information is required within the timeframes prescribed in the "Fifth Revised Schedule for Review of Site Certification Application for Florida Power and Light Company's Turkey Point Units 6 & 7 Power Plant Siting App. PA03-45A3; DEP OGC Case No. 09-3107 DOAH Case No. 09-3575-EPP".

MDC-D-15 (Second Round)
The Wetland Mitigation Plan as presented in Appendix 10.4 of the SCA and the information provided in FPL's Completeness Response does not fulfill the requirements of Condition 9 of Z-56-07. The suitability of the Mitigation Plan cannot be evaluated in accordance with the substantive requirements of Chapter 24, Miami-Dade Code, without an understanding of what specific mitigation is being proposed for impacts from the access roads.

MDC-D-15 (First Round)

Pursuant to Condition 9 of Z-56-07, the applicant shall submit a wetlands mitigation plan for the areas impacted by the construction of the access roads. This plan shall be developed in accordance with the substantive requirements of Chapter 24, Miami-Dade Code, and shall be reviewed by DERM for compliance with Chapter 24 as interpreted by DERM based on the impacts of this application. Pursuant to Condition 9 of Z-56-07, the plan shall identify the specific mitigation that is intended to offset impacts from the access roads.

MDC-D-16 (Third Response)
Please see MDC's responses MDC-D-1 (Third Round), MDC-D-9 (Third Round), MDC-D-12 (Third Round), MDC-D-14 (Third Round), and MDC-D-15 (Third Round).

MDC-D-17 (Third Round)
FPL's response is incomplete because the response failed to provide all of the requested information. FPL states that several alternative access roadway configurations were reviewed, but failed to include the information that supported that review in the response. Figure W9.3.1-1 shows only the SW 359 Street corridor alternative in the region immediately around the Turkey Point complex. FPL shall provide all available access road alternatives that were considered and any supporting analyses that resulted in their conclusion that SW 359 Street corridor was the "the least environmentally damaging practicable alternative that meets the Project needs". In addition, FPL shall clarify whether any other access road options were considered, including but not limited to options that would result in reduced or redistributed traffic to avoid the need for additional roadways or options that would limit the number of additional lanes needed to maintain an appropriate level of service or options that would route the additional capacity needed past more highly disturbed wetland areas or non-wetland areas. If such options to avoid and minimize impacts were not considered, FPL shall provide an explanation for why not. Such information is needed to evaluate the mitigation proposed for construction of the access roads, as per Section 24-48.4 of the Miami-Dade Code, and is needed in order for Miami-Dade County to prepare the reports required by 403.526, F.S.

FPL shall also clarify statements made in the response. FPL states that the total difference in wetland impacts between the original proposal and the MDC alternative to maximize utilization of SW 344 Street was only one acre. FPL shall clarify what specific impacts were considered in the analysis, how those impacts were classified (direct or secondary), and whether FPL's analysis included consideration of factors such as disruption of ecological corridors and subsequent effects such as an increased risk for roadkill.

FPL also stated that an insufficient amount of land exists within the road ROW on the north side of New City Canal, and additional easements and/or condemnation would be necessary. FPL shall provide maps showing where New City Canal is located, where the proposed road alignment is projected to be located relative to the existing ROW, and where the need for additional easements and/or condemnation occurs. FPL shall also identify the 19 private property owners over whose lands easements are projected to be needed, and provide justification for why there are no other alternatives using the same general concept for access to the proposed plant site that would further minimize the number of private property owners affected. For example, was expansion to the south of the SW 344 Street ROW considered to avoid the need to acquire 19 private properties?

FPL stated that the MDC alternative would result in an additional $40 million cost to the Project aside from easement acquisition. FPL shall provide a specific breakdown of how the $40 million cost was derived.

MDC-D-18 (Third Round)
Complete. The FPL response is acknowledged and considered sufficient.

MDC-D-19 (Third Round)
This item remains incomplete. The document referenced in page 2 of appendix 10.7.1.3 (Tucker et al., 2004) was requested by Miami-Dade County in the first and second completeness responses; said document has not been provided by FPL in either of its completeness responses to date. Therefore, the County reiterates its request that a copy of this document be submitted with the next completeness response to this item.

Miami-Dade County acknowledges FPL's submittal of The American Crocodile Monitoring Program for the Turkey Point Uprate 2009 Annual Report (Mazotti et al., 2009) and the 2009 Turkey Point American Crocodile Report. For the first report, FPL must provide an explanation of how the surveys conducted in January and May, for Task 1, account for nest success, hatchling sex ratios, and survivorship given that these two surveys were conducted prior to the period that crocodile eggs usually hatch, typically late July early August. FPL shall provide an explanation of why salinity is not being monitored in a continuous manner, like temperature.

MDC-D-20 (Third Round)
Miami-Dade County stated in comments on the Completeness Response that staff has observed crocodiles outside the designated critical habitat. FPL has stated in the response that "It would be beneficial if County staff would document all observances of listed species with the USFWS, FFWCC, and FNAI, as well as the appropriate landowners, to facilitate applicants' ability to fulfill the requirements of Chapter 24, Miami-Dade County Code and the Endangered Species Act." Miami-Dade County notes that opportunistic observations should not be the sole basis for a determination of which habitats are utilized by wildlife and which of those habitats are critical to wildlife, including threatened and endangered species. Miami-Dade County has continued to request comprehensive, seasonal studies on both wildlife utilization and plant occurrence for the region within and surrounding the proposed locations for the plant and associated non-transmission facilities. Such studies are needed to properly document the use and value of the habitat in order to understand the potential impacts of the proposed project on flora and fauna of the region. Miami-Dade County notes that FPL has continued to dismiss the County's request for comprehensive information on flora and fauna, including seasonal utilization, or any other information resulting from a Comprehensive Environmental Impact Statement based upon FPL's assertion that the request is procedural in nature. However, Miami-Dade County reiterates that the information regarding flora and fauna including seasonal variations is required to evaluate this project for conformance with nonprocedural requirements of Miami-Dade County. Miami-Dade County acknowledges the additional information provided by FPL in its completeness responses related to this issue; however, the information remains incomplete. Without the requested information, Miami-Dade County is unable to determine whether the proposed plant and associated non-transmission facilities meet the requirements of Chapter 24 of the Miami-Dade Code and is unable to prepare the reports required by Section 403.526, F.S.

Miami-Dade County acknowledges the information provided by FPL on proposed wildlife protection measures within the roadway improvement corridor, however, this information remains incomplete. Please refer to comments in MDC-D-21 (Third Round).

MDC-D-21 (Third Round)
This item remains incomplete and information previously requested must be provided to allow the County to determine whether the proposed project meets the substantive requirements of

Miami-Dade County Code and the CDMP in order to prepare the reports required by 403.526 F.S. FPL's reference to a proposed plan that may be submitted to Miami-Dade County in the future to achieve compliance with the requirements of Resolution Z-56-07 is not responsive to this application completeness request. The requested information is required within the timeframes prescribed in the "Fifth Revised Schedule for Review of Site Certification Application for Florida Power and Light Company's Turkey Point Units 6 & 7 Power Plant Siting App. PA03-45A3; DEP OGC Case No. 09-3107 DOAH Case No. 09-3575-EPP".

Miami-Dade County continues to consider the application incomplete because FPL omitted information on Eastern indigo snake habitat preferences that was provided as part of the information submittals for the proposed transmission corridors, which has resulted in an inaccurate assessment of the likelihood that the Eastern indigo snake occurs within or near the plant site or associated linear and non-linear features, including the proposed construction access roads. The County continues to request the following information:

- FPL shall provide a revised assessment of the likelihood for occurrence of the Eastern indigo snake that accurately addresses the similarity between nearby habitat where the snake has been documented and habitat available within the boundaries of the proposed plant site and associated linear and non-linear non-transmission features.
- FPL shall also provide information on wildlife protection measures to be incorporated into the design for the access roads, in accordance with requirements under Condition 9 of Z-56-07 that will provide protection for the Eastern indigo snake from mortality due to road kill.

The County has been clear in expressing concern about the potential impact of the proposed construction access roads on wildlife that occupy the upland and wetland habitats near the proposed roads, and has presented information indicating that reptiles, and especially snakes, are disproportionately represented in a roadkill survey for a multilane road, US Highway 1, that passes through habitat similar to where the proposed construction access road will be located. Miami-Dade County wishes to clarify that the County did not claim that there were Eastern indigo snakes represented in the roadkill survey, but instead stated that "reptiles, and particularly snakes, are disproportionately represented in road-kill surveys for other paved roads that have wetlands on both sides of the road, such as US Highway 1". This information may be obtained directly from the Florida Department of Transportation, District 6.

FPL has continued to dismiss the County's concerns, stating in its Second Completeness Response that "The majority of the roadway improvement corridor traverses shallow hydroperiod freshwater marsh wetlands, tree nurseries, exotic wetland hardwoods, mixed wetland hardwoods, and existing roadways. Based on the lack of suitable habitat for Eastern indigo snakes within the roadway improvement corridor, it is highly unlikely that this species would be at risk of adverse impact associated with the proposed roadway improvements." This statement is not consistent with information provided for the transmission corridors, which stated, "In response to Miami-Dade County's request for acknowledgement that indigo snakes could occur in and around wetland habitats along the corridors similar to those found in the FPL Everglades Wetland Mitigation Bank, FPL, in the submittals referenced above, has indicated the snake uses a wide variety of habitats. As Moler (1992)* also indicates, the snake can be found in "habitats ranging from mangrove swamps and wet prairies to xeric pinelands and scrub." Moler also reports the snake favors wetland edges for foraging, preying on frogs and other snakes. FPL has recorded indigo snake sightings within the Everglades Mitigation Bank, but they are typically found on tree islands and spoil berms or roads. In fact, FPL has created an upland indigo snake habitat area within the Crocodile Preserve portion of the Bank. Therefore

FPL does concur that the indigo snake could utilize wetland habitats along the corridors similar to those within the Everglades Wetland Mitigation Bank." (FPL's Turkey Point Units 6 & 7 Supplemental Analysis, Transmission Lines, Third Completeness and Supplemental Analysis CD of SCA Information Submitted by FPL Regarding Turkey Point Transmission Line Corridors, Response MD(3)-09) Given that the construction access roads overlap with the proposed West Transmission Corridor for approximately 3 miles and includes the same habitat, FPL must correct its assessment to provide consistency with information and conclusions that were drawn with respect to the transmission corridors.

In addition, FPL must provide detailed information on how public access will be restricted from the construction access roads (including areas where those access roads occupy a public right-of-way), what steps FPL will take to enforce and/or maintain the means for restricting access, along with a schedule for enforcement/maintenance of those means, what speed limits will be posted, how and how often speed limits will be enforced, language/graphics for any wildlife crossing signage, locations where wildlife crossing signage will be posted and how those locations were selected, locations where the road crosses wildlife travel corridors but wildlife crossing signage will not be posted along with justification for why not, and information on what schedule of maintenance for the signage will be followed.

MDC-D-22 (Third Round)
This item remains incomplete and information previously requested must be provided to allow the County to determine whether the proposed project meets the substantive requirements of Miami-Dade County Code and the CDMP in order to prepare the reports required by 403.526 F.S. FPL's reference to a proposed plan that may be submitted to Miami-Dade County in the future to achieve compliance with the requirements of Resolution Z-56-07 is not responsive to this application completeness request. The requested information is required within the timeframes prescribed in the "Fifth Revised Schedule for Review of Site Certification Application for Florida Power and Light Company's Turkey Point Units 6 & 7 Power Plant Siting App. PA03-45A3; DEP OGC Case No. 09-3107 DOAH Case No. 09-3575-EPP".

Please also see MDC's responses MDC-A-23 (Third Round), MDC-A-26-2(Third Round), MDC-D-1(a) and MDC -D-1(b) (Third Round), MDC-D-9 (Third Round), MDC-D-12 (Third Round), MDC-D-13 (Third Round), MDC-D-21 (Third Round), MDC-D-23(Third Round).

MDC-D-22 (Second Round)
The Threatened and Endangered Species Evaluation and Management Plan presented in Appendix 10.7.1.3 of the SCA and the SCA sections referenced in FPL's response do not satisfy the requirements of Condition 11 of Z-56-07.

- FPL shall provide additional information on how this plan satisfies the requirements of Condition 11 of Z-56-07, including but not limited to when and how FPL fulfilled the requirement for consultation with DERM and the US Fish and Wildlife Service (USFWS), how the plan provides for management of all federal and state listed threatened or endangered species, documented within the proposed access area, and how the plan provides for preservation, to the maximum extent possible, of all habitat identified as critical to these species.
- FPL shall address short-term and long-term measures necessary to protect all critical habitats.
- FPL shall detail how the plan was reviewed and interpreted by DERM for compliance with the substantive requirements of applicable statutes and regulations and how FPL has modified the management plan as needed to satisfy compliance with such applicable statutes and regulations.

MDC-D-22 (First Round)
The application does not include the management plan for all federal and state listed threatened and endangered species documented within the proposed access area, as required under Condition 11 of Z-56-07. Please provide the required plan.

MDC-D-23 (Third Round)
No additional information has been provided. This item remains incomplete and information previously requested must be provided to allow the County to determine whether the proposed project meets the substantive requirements of Miami-Dade County Code and the CDMP in order to prepare the reports required by 403.526 F.S. FPL's reference to a proposed plan that may be submitted to Miami-Dade County in the future to achieve compliance with the requirements of Resolution Z-56-07 is not responsive to this application completeness request. The requested information is required within the time frames prescribed in the "Fifth Revised Schedule for Review of Site Certification Application for Florida Power and Light Company's Turkey Point Units 6 & 7 Power Plant Siting App. PA03-45A3; DEP OGC Case No. 09-3107 DOAH Case No. 09-3575-EPP". The County acknowledges FPL's desire to provide information towards the completeness of this item at a later date and the County will review that information in a subsequent round of completeness.

FPL's response stated, "Co-location of the temporary access roadways with these existing disturbed linear features [existing roadways and linear facilities, including existing FPL transmission line access roads] reduces the probability of adverse impacts to sensitive resources that are discovered at a later date." Miami-Dade County respectfully disagrees with this assertion and requires additional detailed information in order to assess the probability of adverse impacts to sensitive resources. FPL is proposing to convert the existing disturbed linear features south of SW 344 Street, which are unpaved, unmaintained, single or double lane roads that traverse otherwise contiguous and connected wetland habitats and whose use is generally limited to ORV, car, truck, and moderate-duty equipment, into multilane paved access roads that will be continuously used by heavy haul equipment. Impacts to wildlife resources are likely, which is why Condition 9 of Z-56-07 requires the use of wildlife protection features to address this issue.

FPL shall provide information on wildlife protection features that is sufficient to determine whether the requirements of Miami-Dade County Code and the CDMP as well as Condition 9 of Z-56-07 have been met. Pursuant to Condition 9 of Z-56-07, FPL shall provide locations, details, and descriptions of all wildlife protection features, including but not limited to location of any fencing and wildlife underpasses that will be provided for the construction access roads, how public access will be restricted from the construction access roads (especially for areas where those access roads occupy a public right-of-way), what steps FPL will take to enforce and/or maintain the means for restricting access, along with a schedule for enforcement/maintenance of those means, what speed limits will be posted, how and how often speed limits will be enforced, language/graphics for any wildlife crossing signage, locations where wildlife crossing signage will be posted and how those locations were selected, locations where the road crosses wildlife travel corridors but wildlife crossing signage will not be posted along with justification for why not, and information on what schedule of maintenance for the signage will be followed.

MDC-D-24 (Third Round)
FPL states in its response that "FPL acknowledges the requirement pursuant to Condition 9 of Resolution Z-56-07 to maintain sheetflow across roadways and to coordinate with DERM to develop a conceptual plan for the roadway elevations to account for increased water elevations

resulting from planned restoration activities in the area adjacent to the roads." No additional information has been provided. This item remains incomplete and information previously requested must be provided to allow the County to determine whether the proposed project meets the substantive requirements of Miami-Dade County Code and the CDMP in order to prepare the reports required by 403.526 F.S. FPL's reference to a proposed plan that may be submitted to Miami-Dade County in the future to achieve compliance with the requirements of Resolution Z-56-07 is not responsive to this application completeness request. The requested information is required within the timeframes prescribed in the "Fifth Revised Schedule for Review of Site Certification Application for Florida Power and Light Company's Turkey Point Units 6 & 7 Power Plant Siting App. PA03-45A3; DEP OGC Case No. 09-3107 DOAH Case No. 09-3575-EPP". The County acknowledges FPL's desire to provide information towards the completeness of this item at a later date and the County will review that information in a subsequent round of completeness.

FPL's submittal shall include information on how this conceptual plan meets the requirements of Condition 17 of Z-56-07. Those proposed construction access roads that fall within the boundaries of the West Preferred Transmission Corridor qualify as "transmission corridor upgrades to this area" [*i.e.* "within the Biscayne Bay Coastal Wetlands CERP Project study boundaries"] and "improvements to sheet flow such that the corridors do not impede the flow of ground or surface waters" are required.

MDC-D-24 (Second Round)
The requested information is not outside the scope of a completeness request for additional information. FPL's response is incomplete because it fails to provide details on how multilane road construction will be made compatible with restoration features planned by CERP. FPL shall provide details including but not limited to road elevation, location and details on whether any segments of the proposed roads will be elevated, placement within the available right of way, reservations (if any) for planned CERP features including but not limited to Pump PU-M3 and the north-south spreader canal planned for the Tallahassee Road alignment, existing features (natural and man-made) that would be impacted by road construction, total acres of wetlands that will specifically be impacted by the installation of the access roads, and size and location of culverts intended to maintain hydrologic connectivity across the road, The information requested is required to evaluate whether the proposed project is consistent with Condition 9 of Z-56-07, Section 24-48.3 of the Miami-Dade County Code and objectives and policies in the CDMP that require consistency with CERP.

MDC-D-24 (First Round)
Most of the lands adjacent to the proposed roadway segment improvements occur within the boundaries of the Biscayne Bay Coastal Wetlands CERP Project, and several segments would be located where this CERP project proposes infrastructure for restoration of the surrounding wetlands and Biscayne Bay. These road improvements would directly interfere with CERP features associated with the Biscayne Bay Coastal Wetlands Project, including pumps and spreader canals. A pump station is proposed on the south side of the Florida City Canal at the Tallahassee Road (SW 137 Avenue) alignment. The purpose of this pump station is to transfer water south into the Model Lands Basin via a north/south spreader canal that would be constructed within the SW 137 Avenue road right of way. The CDMP requires that the FPL project be consistent with CERP, yet the lands that would be impacted by the FPL roadway improvement feature are the same lands that would be restored under CERP. Please address how the proposed roadway features would be constructed to be consistent with the proposed CERP features.

MDC-D-25 (Third Round)
See MDC's response MDC-D-24(Third Round).

MDC-D-26 (Third Round)
This item remains incomplete and information previously requested must be provided to allow the County to determine whether the proposed project meets the substantive requirements of Miami-Dade County Code and the CDMP in order to prepare the reports required by 403.526 F.S. FPL's reference to a proposed plan that may be submitted to Miami-Dade County in the future to achieve compliance with the requirements of Resolution Z-56-07 is not responsive to this application completeness request. The requested information is required within the timeframes prescribed in the "Fifth Revised Schedule for Review of Site Certification Application for Florida Power and Light Company's Turkey Point Units 6 & 7 Power Plant Siting App. PA03-45A3; DEP OGC Case No. 09-3107 DOAH Case No. 09-3575-EPP". The County acknowledges FPL's desire to provide information towards the completeness of this item at a later date and the County will review that information in a subsequent round of completeness.

MDC-D-26 (Second Round)
The requested information is not outside the scope of a completeness request for additional information. The information requested is required to evaluate whether the
proposed project is consistent with Condition 9 of Z-56-07, Section 24-48.3 of the Miami-Dade County Code, and objectives and policies in the CDMP that require preservation of natural drainage and other wetland functions. As requested and pursuant to Condition 9 of Z-56-07, please provide locations, details and descriptions of all features that are intended to maintain sheetflow across the roadways.

MDC-D-26 (First Round)
Pursuant to Condition 9 of Z-56-07, "Sheet flow shall be maintained across roadway alignments by elevating portions of the roadway and through the installation of culverts in other areas." The application does not contain sufficient information to determine whether the requirements of Condition 9 of Z-56-07 have been met. Pursuant to Condition 9 of Z-56-07, please provide locations, details and descriptions of all features that are intended to maintain sheetflow across the roadways.

MDC-D-27 (Third Round)
No additional information has been provided. This item remains incomplete and information previously requested must be provided to allow the County to determine whether the proposed project meets the substantive requirements of Miami-Dade County Code and the CDMP in order to prepare the reports required by 403.526 F.S. The requested information is required within the time frames prescribed in the "Fifth Revised Schedule for Review of Site Certification Application for Florida Power and Light Company's Turkey Point Units 6 & 7 Power Plant Siting App. PA03-45A3; DEP OGC Case No. 09-3107 DOAH Case No. 09-3575-EPP".

MDC-D-27 (Second Round)
The requested information is required to evaluate potential impacts of the project and determine if the project can be certified as proposed, or whether modification of the project is necessary for certification. Drainage plans and associated calculations for the proposed access roads are needed to evaluate the project for compliance with requirements of the CDMP and Miami-Dade County Code. Including but not limited to Section 24-48.3 of the Miami-Dade Code, which addresses potential adverse environmental impact and cumulative adverse environmental impact of the proposed work, including but not limited to the effect upon hydrology, water quality, water supply, wildlife habitats, floral and faunal values, rare, threatened and endangered species, wetland values, and any other environmental values, affecting the public interest.

MDC-D-27 (First Round)
Please provide drainage plans and associated calculations for the proposed access roads.

MDC-D-28 (Third Round) Complete. The information submitted is considered sufficient.

MDC-D-29 (Third Round)
This item remains incomplete and information previously requested must be provided to allow the County to determine whether the proposed project meets the substantive requirements of Miami-Dade County Code and the CDMP in order to prepare the reports required by 403.526 F.S. The requested information is required within the time frames prescribed in the "Fifth Revised Schedule for Review of Site Certification Application for Florida Power and Light Company's Turkey Point Units 6 & 7 Power Plant Siting App. PA03-45A3; DEP OGC Case No. 09-3107 DOAH Case No. 09-3575-EPP".

Miami-Dade County reiterates the request for "... a detailed map identifying areas where roads or road improvements would not be completely contained within the boundaries of either FPL-owned land or an existing public right-of-way. The applicant must also identify adjacent property owners whose land may need to be obtained to accommodate the road or road improvements, including but not limited to the Miami-Dade Environmentally Endangered Lands, Program, and ex[plain the process by which the additional property will be obtained.".

MDC-D-30 (Third Round) Complete. The information submitted is considered sufficient.

MDC-D-31 (Third Round) Complete. The information submitted is considered sufficient.

MDC-D-32 (Third Round) Complete. The information submitted is considered sufficient.

MDC-D-33 (Third Round) Complete. The information submitted is considered sufficient.

MDC-D-34 (Third Round) Complete. The information submitted is considered sufficient.

MDC-D-35 (Third Round) Complete. The FPL response to MDC-D-35 is acknowledged and considered sufficient.

MDC-D-36 (Third Round) Complete. The *Supplemental Traffic Information* and *New Canal Road Option Traffic Study* submitted by FPL at the request of Miami-Dade County Department of Planning, and the FPL response to MDC-D-36 are acknowledged and considered sufficient.

FPL evaluated several issues related to the MDC alternative, including wetland impacts and cost. According to FPL the wetland impact analysis indicates that the difference in total wetland impacts of the FPL and MDC alternatives is only one acre, the MDC alternative would result in an additional $40 million dollars to the project cost, and the need for additional right-of-way acquisition. Also, FPL surveyed the land along the MDC alternative and found out that insufficient right-of-way exists to accommodate the roadway improvements associated with the MDC alternative.

On April 28, 2010, the Board of County Commissioners (BCC) passed Ordinance No. 10-26 adopting Standard Amendment Application No. 6 filed by FPL to amend the county's Comprehensive Development Master Plan (CDMP) Traffic Circulation Subelement to include a new Figure 3.1 showing the location of FPL's proposed temporary roads. The FPL's temporary roadway improvements include the alignment submitted in the SCA. The BCC adopted the FPL

Application with staff recommended changes. The BCC decided that all roadway improvements associated with the construction of Turkey Point Units 6 and & as shown in Figure 3.1 are to be temporary and must satisfy the following criteria:

1. The temporary roadway improvement serves to accommodate traffic during the construction of Turkey Point Units 6 and 7;
2. The temporary roadway improvements are designed in a manner that provide no more [capacity] than is required for safe roadway conditions and secure access to the construction site;
3. Construction of the temporary roadways and roadway improvements will commence no sooner than two (2) years prior to commencement of construction of Turkey Point Units 6 and 7;
4. Within two (2) years following the construction of Turkey Point Units 6 and 7 (a) all temporary roadway improvement on public owned rights-of-way will be returned to the status of the roadway(s) prior to the commencement of construction of the temporary roadways and roadway improvements, and (b) any privately owned roadway will be returned to the minimum roadway width required to provide maintenance to FPL facilities and shall not be more than two lanes;
5. FPL shall pay all costs associated with construction and removal of temporary roadway improvements;
6. Temporary roadways and roadway improvements shall be designated to meet the substantive requirements of Chapter 24, Miami-Dade County Code, as interpreted by DERM. In addition, the design of the temporary roadways and roadway improvements shall also be consistent with the goals, objectives and policies of the CDMP, the objectives of the Comprehensive Everglades Restoration Plan, County land use approvals, and other applicable County approved environmental management plans for public owned lands, as may be amended from time to time, and appropriate mechanism shall be provided to enhance protection for wildlife in the area, and the Miami-Dade County Department of Environmental Resources Management shall enforce the environmental regulations within its jurisdiction, to the extend allowable by law;
7. Temporary roadway improvements on privately owned property shall not be open to the general public. Miami-Dade County and other agencies with needed access shall, after providing proper notification to FPL, be granted access to this private roadway, and;
8. At FPL's expenses, all temporary roadway improvements south of SW 344 Street shall be patrolled by security personnel when in active use. In addition, FPL shall maintain security gates or other appropriate security measures during enactive periods on privately owned roadway improvements. To the greatest extend possible, FPL shall deter access by the general public on temporary roadways south of SW 344 Street.

MDC-D-37 (Third Round) Complete. The *Supplemental Traffic Information* and *New Canal Road Option Traffic Study* submitted by FPL at the request of the Miami-Dade County Department of Planning and Zoning, and the response to 2MDC-D-36 are considered sufficient.

MDC-D-38 (Third Round) Complete. The *Supplemental Traffic Information* and the *New Canal Road Option Traffic Analysis* submitted by FPL at the request of the Miami-Dade County Department of Planning and Zoning and the response to 2MDC-D-36 are considered sufficient.

MDC-D-39 (Third Round) Complete. The *Supplemental Traffic Information* and the *New Canal Road Option Traffic Analysis* submitted by FPL at the request of the Miami-Dade County Department of Planning and Zoning included SW 137 Avenue north of SW 328 Street. SW 152 Avenue between SW 328 Street and US 1 and SW 162 Avenue between 344 Street and South Dixie Highway (US 1) were not included. However, their omission in the analyses is not critical as SW 137 Avenue, SW 117 Avenue, SW 328 Street, and SW 344 Street are the corridors that will be most impacted by the construction traffic.

MDC-D-40 (Third Round) Complete. In the *Turkey Point Power Plant Peak Construction Traffic Study (June 2009)*, the traffic consultant assumes that approximately 3,650 workers will be involved in the construction of Units 6 and 7 (p. 1 of Traffic Study), and the trip generation was based on the conservative vehicle occupancy assumption of 1.0 workers per vehicle (p. 3 of the Traffic Study). The explanation provided in the traffic study regarding the maximum workforce of 3,650 workers was that this assumption was based on discussions held with individuals experienced in the construction of similar FPL facilities, and the vehicle occupancy rate is based on the fact that each construction worker brings his/her own equipment and use his/her own vehicle. County staff has requested a better justification of both assumptions such as simple derivation of the 3,650 workforce and the auto occupancy rate, especially if the county's average auto occupancy rate is 1.35. Even though detailed supporting data was not provided, the response provided for 2MDC-D-36 is accepted.

MDC-D-41 (Third Round) Complete. The *Turkey Point Power Plant Peak Construction Traffic Study (June 2009)*, the *Supplemental Traffic Information (September 2009)*, based the trip distribution and trip assignment based on existing traffic patterns associated with current employees. The current travel patterns indicate that the majority of the traffic arrives/departs via SW 137 Avenue, SW 344 Street and SW 328 Street. Therefore, these are the major corridors in the vicinity of the application site that will be highly impacted. In addition, two construction shifts are proposed, the first shift is scheduled from 6:00 AM to 4:30 PM and the second shift from 5:00 PM to 3:00 AM. In addition, 70 percent of the workforce will work in the first shift and 30 percent will work in the second shift. Hence the peak impact is projected to occur between 5:00 AM and 6:00 AM. Therefore, the corridors and the area analyzed are considered sufficient.

MDC-D-42 (Third Round) Complete. See response to 2MDC-D-40. County staff has requested a better justification of the workforce and trip generation assumptions and the consideration of the use of car pooling, van pooling, or other transportation demand management. Even though supporting documents were not provided, the response provided is considered sufficient.

MDC-D-43 (Third Round) Complete. The *Supplemental Traffic Information* and the *New Canal Road Option Traffic Analysis* submitted by FPL at the request of the Miami-Dade County Department of Planning and Zoning included SW 328 Street west of SW 137 Avenue, SW 344 Street west of SW 137 Avenue, and SW 312 Street west of SW 137 Avenue, and provided analyses for peak construction, normal operation and outage conditions. US 1/SR 5 and the HEFT were not considered in the analyses. However, their omission in the analyses is not critical as SW 137 Avenue, SW 117 Avenue, SW 328 Street, and SW 344 Street are the corridors to be most impacted by the construction traffic.

MDC-D-44 (Third Round) Completed during Second Round.

MDC-D-45 (Third Round) Complete. The FPL response is acknowledged and considered sufficient.

MDC-D-46 (Third Round) Complete. Attachment D in the *Supplemental Traffic Information* and *New Canal Road Option Traffic Analysis* submitted by FPL at the request of the Miami-Dade County Department of Planning and Zoning addressed this comment. The FPL response is acknowledged and considered sufficient.

MDC-D-47 (Third Round) Complete. The FPL response is acknowledged and considered sufficient.

MDC-D-48 (Third Round) Complete. The FPL response is acknowledged and considered sufficient.

MDC-D-49 (Third Round) Complete. Response to comment number 36, did not answer the comment satisfactorily however, supplemental traffic studies and data provided by the applicant during September and October 2009, along with traffic studies in original SCA application addressed the comment.

MDC-D-50 (Third Round) Complete. Even though detailed supporting documents are not provided, the provided explanation is accepted.

MDC-D-51 (Third Round) Complete. Response to comment number 36, did not answer the comment satisfactorily however, supplemental traffic studies and data provided by the applicant during September and October 2009 addressed the comment.

MDC-D-52 (Third Round) Complete. Even though revised data is not provided, the provided explanation is accepted.

MDC-D-53 (Third Round) Complete. Information submitted is sufficient for the County's review.

MDC-D-54 Completed during Second Round.

MDC-D-55 Completed during Second Round.

MDC-D-56 Completed during Second Round.

MDC-D-57 Completed during Second Round.

MDC-D-58 Completed during Second Round.

MDC-D-59 (Third Round) Complete. Information submitted is sufficient for the County's review.

MDC-D-60 Completed during Second Round.

MDC-D-61 (Third Round) Complete. Information submitted is sufficient for the County's review.

MDC-D-62 (Third Round) Complete. Information submitted is sufficient for the County's review.

MDC-D-63 (Third Round) Complete. Information submitted is sufficient for the County's review.

SECTION E - FPL-OWNED FILL SOURCE

Miami-Dade County comments that pertain to the FPL-owned fill source feature are no longer pertinent to this evaluation due to the fact that this project feature has been removed from FPL's Site Certification Application as of May 2010.

SECTION G - MISCELLANEOUS

MDC-G-1 (Third Round)
This item remains incomplete and information previously requested must be provided to allow the County to determine whether the proposed project meets the substantive requirements of Miami-Dade County Code and the CDMP in order to prepare the reports required by 403.526 F.S. FPL's reference to a proposed plan that may be submitted to Miami-Dade County in the future to achieve compliance with the requirements of Resolution Z-56-07 is not responsive to this application completeness request. The requested information is required within the time frames prescribed in the "Fifth Revised Schedule for Review of Site Certification Application for Florida Power and Light Company's Turkey Point Units 6 & 7 Power Plant Siting App. PA03-45A3; DEP OGC Case No. 09-3107 DOAH Case No. 09-3575-EPP".

With regard to the additional information required relating to Z-56-07, Condition 6 of the Unusual Use approved by the BCC (Resolution Z-56-07) states "That FPL shall prepare and submit a wastewater discharge plan...". It further states that "... The plan shall be developed in accordance with the substantive requirements of Chapter 24, Miami-Dade County Code and shall be reviewed by DERM for compliance with Chapter 24 as interpreted by DERM based upon the impacts of this application ..." To date FPL has not submitted the required report to Miami-Dade County. FPL shall submit to Miami-Dade County the required plan in order to allow the County to determine completeness of this particular issue. The plan shall include all data and supporting documentation evaluated by FPL in order to arrive at the determination that *"... using water after it passed through the cooling towers was not a feasible alternative for regional wetland rehydration project,..."*. In addition, the same information needs to be provided to Miami-Dade County relating to wastewaters other than the blow down waste. The complete results of the required wastewater discharge plan as well as the associated feasibility study for potential rehydration of CERP wetlands are needed at this time.

Miami-Dade County acknowledges the information provided in FPL's response 2MDC-A-6. However, this response is inadequate and does not provide information in answer to the questions contained in MDC-G-1. FPL states that industrial wastewaters will not be acceptable for land application pursuant to Chapter 62-610 F.A.C. Has FPL concluded that the use of wastewater to rehydrate wetlands is not technically feasible based on Chapter 62-610? Has FPL concluded that other uses such as canal or aquifer recharge would not be acceptable under the applicable portions of Florida Administrative Code given appropriate treatment? If so, information is needed to demonstrate this including code references. What "other constituents", as mentioned by FPL, are proposed to be added that would render the water unacceptable from a technical perspective? Has FPL concluded that it is technically infeasible to remove any of these constituents prior to rehydration of wetlands? If so, information is needed including the specific constituents that cannot be feasibly removed.

MDC-G-2 (Third Round)
Previously determined to be complete

MDC-G-3 (Third Round)

No additional information has been provided. This item remains incomplete and information previously requested must be provided to allow the County to determine whether the proposed project meets the substantive requirements of Miami-Dade County Code and the CDMP in order to prepare the reports required by 403.526 F.S. The requested information is required within the time frames prescribed in the "Fifth Revised Schedule for Review of Site Certification Application for Florida Power and Light Company's Turkey Point Units 6 & 7 Power Plant Siting App. PA03-45A3; DEP OGC Case No. 09-3107 DOAH Case No. 09-3575-EPP". The County acknowledges FPL's desire to provide information towards the completeness of this item at a later date and the County will review that information in a subsequent round of completeness.

MDC-G-3 (Second Round)
Please see response to MDC-C-6 and MDC-A-21

MDC-G-3 (First Round)
The application predicts the potential for additional salinization throughout the area as a result of the project by drawing salty water landward via the radial collector wells and from deposition of salts as a result of cooling tower operations. In contrast, the CERP BBCW project seeks to reduce salinity levels in and adjacent to Biscayne Bay to restore more natural estuarine conditions. No documentation is provided to examine the specific impacts to the area from additional salinization generally and for CERP consistency specifically. A study is needed that includes a salt budget and an examination of the cumulative effects of existing and proposed operations at Turkey Point including but not limited to the existing chloride plume created by the cooling canal system and the additional salts that would be added to the area as a result of the proposed project. The study shall also be sufficient to determine the extent to which the radial collector wells would capture, redirect, or otherwise affect groundwater from the existing plume emanating from FPL's Cooling Canal System.

MDC-G-4 (Third Round)
Please see MDC's response MDC-C-24 (Third Round)

MDC-G-5 (Third Round)
Please see MDC's response MDC-C-24 (Third Round)

MDC-G-6 (Third Round)
This item remains incomplete because FPL did not provide any new information that is relevant to the County's request for information. Regarding the reports cited as provided on CD-1, please see MDC's response MDC-A-23 (Third Round).

FPL states in its response that the "proposed Units 6 & 7 Site is isolated and wholly contained within FPL's industrial wastewater treatment facility, a previously impacted area", however, in just one field visit with FPL in 2007, Miami-Dade County staff documented more than 15 species of shorebirds including Long Billed Curlew, Whimbrel, American Avocet and Wilson's Plover, which are rarely seen in Miami-Dade County. In addition, juvenile Wilson's Plover and Reddish Egret (a wading bird that is a state-listed species of special concern), were also observed, which may indicate that nesting occurs on site. The potential for nesting/breeding activity by shorebirds and/or other species protected at state or federal levels on a site considered by FPL to be "impacted" is one example of why Miami-Dade County is requesting seasonal biological surveys for all lands likely to be impacted by the proposed plant and associated non-transmission facilities. Information on wildlife breeding is not likely to be complete without a study whose timing is designed for this purpose.

FPL also states in its response that the "native upland tree resources protected by Chapter 24 of the Miami-Dade County Code are uncommon", however, the response remains incomplete because FPL has not provided the requested tree survey for the proposed plant site and associated facilities, including non-transmission linear facilities. Protected tree resources may occur on any upland portion of the proposed plant site and associated facilities, including non-transmission linear facilities. Miami-Dade County staff, for example, observed a spiny black olive (*Bucida molinetii*, fka *Bucida spinosa*) adjacent to one of the roads near the proposed plant site during a site visit. This rare hardwood species is protected under Section 24-49 of the Miami-Dade County Code and is an example of why such a tree survey is needed. This information is needed to determine whether the project fulfills the substantive requirements of Chapter 24 of the Miami-Dade County Code, including but not limited to Section 24-49, and to prepare the agency reports required by Section 403.526, F.S.

FPL also states in its response that the "SCA includes results from existing databases such as Florida Natural Areas Inventory (FNAI), consultation with FFWCC and USFWS, reconnaissance surveys of the area, ... surveys within the Site and surrounding areas were conducted in June 2009 (fish survey utilizing minnow traps, seines, and cast nests) and April 2009 (small mammal survey utilizing 345 trapnights with Sherman live traps)". Miami-Dade County acknowledges FPL's provision of this information, but the item remains incomplete because the number and type of recent studies that have been conducted to document flora and fauna for this area are inadequate to properly characterize the diverse habitats that are likely to be impacted by the proposed project. For example, Appendix 10.4 of the SCA cites FNAI-provided data as the source for a single occurrence of the golden leather fern (*Acrostichum aureum*, state-listed Threatened) near Black Point. Miami-Dade County staff, in contrast, has spent extensive time in the coastal wetlands surrounding the presumed site for the proposed plant and associated non-transmission facilities, and regularly encounters golden leather fern in the forested wetlands and mangrove swamps in this area. One recently discovered occurrence on public land was less than 3 miles from the proposed access roads in forested wetlands that are similar to those found along the access road corridor. This is a difficult species to distinguish from leather fern (*Acrostichum danaeifolium*) unless the individual is reproductive, which occurs during the late wet season. Table 3 in Appendix 10.4 of the SCA lists the likelihood as low for occurrence of the bracted colic root (*Aletris bracteata*, state-listed Endangered) near the West Preferred/Secondary Transmission Corridor, which overlaps with the construction access roads. Miami-Dade County staff, in contrast, has documented several populations on public land in the region, including one that is located in mixed graminoid prairie approximately 2 miles southwest of the proposed access roads. This species is difficult to identify without a seasonal study, since it consists of a basal rosette of leaves that is inconspicuous when the tall flower spike is not present.

Comprehensive information about flora and fauna within and surrounding the proposed plant site and associated non-transmission facilities, including the construction access roads, is needed to enable Miami-Dade County to evaluate the proposed primary and secondary impacts of the proposed plant and associated non-transmission facilities for consistency with the requirements of Sections 24-48.3 and 24-49 of the Miami-Dade County Code, plus relevant objectives and policies in the CDMP.

MDC-G-7 (Third Round)
No additional information has been provided. This item remains incomplete and information previously requested must be provided to allow the County to determine whether the proposed project meets the substantive requirements of Miami-Dade County Code and the CDMP in order to prepare the reports required by 403.526 F.S. The requested information is required within

the time frames prescribed in the "Fifth Revised Schedule for Review of Site Certification Application for Florida Power and Light Company's Turkey Point Units 6 & 7 Power Plant Siting App. PA03-45A3; DEP OGC Case No. 09-3107 DOAH Case No. 09-3575-EPP". The County acknowledges FPL's desire to provide information towards the completeness of this item at a later date and the County will review that information in a subsequent round of completeness.

MDC-G-7 (Second Round)
The response is insufficient. Please provide complete and detailed water quality information on the treatment methodology, the resulting quality, volume, and timing of the discharge sufficient to determine whether the water quality of the proposed discharge water is sufficient to prevent degradation of the receiving wetlands and meet applicable restoration standards/targets such that mitigation credit would be appropriate. As mentioned in FPL's response, this shall include FPL's evaluation of the reclaimed water from the perspective of nutrients and in comparison with ambient water quality of the Florida City Canal.

MDC-G-7 (First Round)
The mitigation plan proposes to discharge wastewater into the Model Lands and to seek mitigation credit for this discharge. Since the area proposed for discharge is a sawgrass wetland, pollutant levels, including but not limited to nutrient levels, would need to be very low (e.g. less than 10 ppb phosphorous). The application, however, provides insufficient information on the treatment methodology, the resulting quality, volume, and timing of the discharge. The applicant shall provide complete and detailed water quality information for the proposed discharge water that is sufficient to determine whether the water quality of the proposed discharge water is sufficient to prevent degradation of the receiving wetlands.

MDC-G-8 (Third Round)
Complete. The FPL response is acknowledged and considered sufficient.

MDC-G-9 (Third Round)
No additional information has been provided. This item remains incomplete and information previously requested must be provided to allow the County to determine whether the proposed project meets the substantive requirements of Miami-Dade County Code and the CDMP in order to prepare the reports required by 403.526 F.S. FPL's reference to a proposed plan that may be submitted to Miami-Dade County in the future to achieve compliance with the requirements of Resolution Z-56-07 is not responsive to this application completeness request. The requested information is required within the time frames prescribed in the "Fifth Revised Schedule for Review of Site Certification Application for Florida Power and Light Company's Turkey Point Units 6 & 7 Power Plant Siting App. PA03-45A3; DEP OGC Case No. 09-3107 DOAH Case No. 09-3575-EPP".

MDC-G-9 (Second Round)
See response to MDC-G-8.

MDC-G-9 (First Round)
Pursuant to Condition 21 of Z-56-07, FPL has agreed to allow water level increases on the project site on the order of one foot or more, pursuant to regional restoration projects, and will design the project to accommodate these water level increases at FPL's expense. Information in the application is not sufficient to determine whether the requirements of this condition have been met. The applicant shall provide detailed information on all project design elements that must be modified to meet Condition 21 of Z-56-07 that is sufficient to determine whether this requirement is being met.

MDC-G-10 (Third Round)

Please see MDC's response MDC-D-12 (Third Round)

MDC-G-11 (Third Round)
Please see MDC's responses MDC-G-6 (Third Round), as well as comments MDC-D-1 (Third Round), MDC-D-9 (Third Round), MDC-D-12 (Third Round), MDC-D-14 (Third Round), and MDC-D-16 (Third Round).

MDC-G-12 (Third Round)
No additional information has been provided specific to any other variances needed for this project. It is not possible for Miami-Dade County to provide a comprehensive determination of all aspects of FPL's project that would be prohibited by the Miami-Dade County Code until all information requested by Miami-Dade County under the SCA completeness reviews have been provided. However, based on a preliminary review of the information submitted thus far, it appears that the proposed wastewater treatment plant is prohibited pursuant to the Miami-Dade County Code in addition to the proposal to discharge to the boulder zone in lieu of connection to the sanitary sewer system. With regard to the proposed mitigation project involving the discharge of wastewater to the Model Lands wetlands, it appears that the effluent would not meet the water quality standards or criteria that Miami-Dade County has advised FPL are necessary for wetlands rehydration. FPL has also been advised by Miami-Dade County that the proposal to construct a well field in the Biscayne Aquifer for cooling water purposes would be in noncompliance with Z-56-07, most specifically with condition 4. With regard to the modeling that FPL has performed to date related to this proposed well field, condition 5 of Z-56-07 requires the approval of Miami-Dade County. However, this model has not been approved by Miami-Dade County and FPL has been advised that this model is inadequate and inappropriate to address the requirements of Z-56-07, Chapter 24 and the CDMP.

Please also see MDC's response MDC-A-7 (Third Round)

MDC-G-13 (Third Round)
No additional information has been provided. This item remains incomplete and information previously requested must be provided to allow the County to determine whether the proposed project meets the substantive requirements of Miami-Dade County Code and the CDMP in order to prepare the reports required by 403.526 F.S. FPL's reference to a proposed plan that may be submitted to Miami-Dade County in the future to achieve compliance with the requirements of Resolution Z-56-07 is not responsive to this application completeness request. The requested information is required within the time frames prescribed in the "Fifth Revised Schedule for Review of Site Certification Application for Florida Power and Light Company's Turkey Point Units 6 & 7 Power Plant Siting App. PA03-45A3; DEP OGC Case No. 09-3107 DOAH Case No. 09-3575-EPP". The County acknowledges FPL's desire to provide information towards the completeness of this item at a later date and the County will review that information in a subsequent round of completeness.

Please see also MDC's response MDC-C-6 (Third Round)

> **MDC-G-13 (Second Round)**
> The application and response does not contain sufficient information to adequately evaluate the potential impact of the project on groundwater, surface water, salt intrusion, movement of the hyper-saline plume associated with the cooling canal system, and to evaluate potential project related impacts to wetlands resources and Biscayne Bay. Furthermore, Miami-Dade County does not agree that the information provided satisfies Condition 15 of Z-56-07. FPL shall provide information detailing how the various reports and comments provided in the SCA and in the

Completeness Responses document were developed in accordance with the substantive requirements of Chapter 24, Miami-Dade County Code. FPL shall also provide documentation on how and when the information comprising the study was reviewed by DERM for compliance with Chapter 24 as interpreted by DERM based upon the impacts of this application. Please see comments provided in MDC-C6.

MDC-G-13 (First Round)
Pursuant to Condition No. 15 of the Unusual Use Approval Resolution Z-56-07, included in Appendix 10.3, a DERM approved hydrologic study and its results shall be provided that evaluates all impacts to surface and groundwater. This study should include consideration of seasonal differences in groundwater flow cited in Section 3.3.3.2 and determine the extent to which these differences are due to current operations at Turkey Point.

MDC-G-14 (Third Round)
Previously determined to be complete.

MDC-G-15 (Third Round)
Previously determined to be complete.

MDC-G-16 (Third Round)
Previously determined to be complete.

MDC-G-17 (Third Round)
Previously determined to be complete.

MDC-G-18 (Third Round)
FPL shall clarify the response provided in 2MDC-G-18. Will any impacts to wetlands or wetland vegetation, such as mangroves, in the in situ restoration areas, be required for maintenance, repair or other activities after restoration is complete? If so, FPL shall provide details of such impacts and shall also provide corrected UMAM scores that account for these future impacts.

MDC-G-19 (Third Round)
Previously determined to be complete.

MDC-G-20 and MDC-G-21 (Third Round)
This item remains incomplete and information previously requested must be provided to allow the County to determine whether the proposed project meets the substantive requirements of Miami-Dade County Code and the CDMP in order to prepare the reports required by 403.526 F.S. Miami-Dade County requires a detailed Mitigation Plan at this time to evaluate completeness of the application. The plan must identify the specific mitigation for each of the specific impacts proposed in order for the County to evaluate the mitigation and to prepare the reports required by Section 403.526 F.S. and shall include categorization of each specific mitigation type (i.e. direct, secondary, temporary, etc). In addition, as per Miami-Dade County's First Round Completeness comment for MDC-G-35, "the time lag associated with the proposed mitigation projects must be calculated from the initiation of the impacts to the time in which the mitigation reaches the proposed "with mitigation" score". FPL shall also clarify the comment that "some mitigation activities may be initiated prior to the time of impacts. Is FPL proposing to do "up-front" mitigation? If so, FPL shall provide details, including time frames relative to each specific impact.

MDC-G-22 (Third Round)
Previously determined to be complete.

2MDC-G-23 (Third Round)
Please see MDC's response MDC-G-11 (Third Round)

MDC-G-24 (Third Round)
Previously determined to be complete.

MDC-G-25 (Third Round)
Previously determined to be complete.

MDC-G-26 (Third Round)
This item remains incomplete because FPL did not provide the requested information.

Please see MDC's responses MDC-D-1 (Third Round), MDC-D-9 (Third Round), MDC-D-12 (Third Round), MDC-D-13 Third Round), MDC-D-21 (Third Round), and MDC-D-23 (Third Round).

MDC-G-27 (Third Round)
This item remains incomplete. FPL' s response indicates that the acreages derived for the functional lift are estimates based on anticipated volumes of water, size of receiving wetlands, and past modeling for the Everglades Mitigation Bank Weir constructed in Card Sound Road Canal. FPL proposes to perform detailed hydrologic modeling post certification to refine the projected estimates. However, Miami-Dade County requires a detailed Mitigation Plan at this time. The plan must identify the specific mitigation (with finalized functional lift calculations, not estimates) for each of the specific impacts proposed in order for the County to evaluate the mitigation and to prepare the reports required by Section 403.526 F.S. Please also see MDC-D-15 (Third Round)

MDC-G-28 (Third Round)
This item remains incomplete and information previously requested must be provided to allow the County to determine whether the proposed project meets the substantive requirements of Miami-Dade County Code and the CDMP in order to prepare the reports required by 403.526 F.S. Miami-Dade County acknowledges the UMAM score sheets for the hydrologic improvement mitigation projects. However, the initial information provided by FPL regarding risk and uncertainty remains inadequate (please refer to MDC-G-27 (Third Round) above).

MDC-G-29 (Third Round)
Previously determined to be complete.

MDC-G-30 (Third Round)
No additional information has been provided. This item remains incomplete and information previously requested must be provided to allow the County to determine whether the proposed project meets the substantive requirements of Miami-Dade County Code and the CDMP in order to prepare the reports required by 403.526 F.S. The requested information is required within the time frames prescribed in the "Fifth Revised Schedule for Review of Site Certification Application for Florida Power and Light Company's Turkey Point Units 6 & 7 Power Plant Siting App. PA03-45A3; DEP OGC Case No. 09-3107 DOAH Case No. 09-3575-EPP". The County acknowledges FPL's desire to provide information towards the completeness of this item at a later date and the County will review that information in a subsequent round of completeness.

MDC-G-30 (Second Round)

The requested information is required to evaluate proposed project mitigation prior to certification.

MDC-G-30 (First Round)
Please provide additional information on the quality, quantity, timing and reliability of the proposed reclaimed water for hydrologic improvements.

MDC-G-31 (Third Round)
This item remains incomplete and information previously requested must be provided to allow the County to determine whether the proposed project meets the substantive requirements of Miami-Dade County Code and the CDMP in order to prepare the reports required by 403.526 F.S. The requested information is required within the time frames prescribed in the "Fifth Revised Schedule for Review of Site Certification Application for Florida Power and Light Company's Turkey Point Units 6 & 7 Power Plant Siting App. PA03-45A3; DEP OGC Case No. 09-3107 DOAH Case No. 09-3575-EPP". FPL shall clarify the statement regarding modification of HID to UMAM. Since HID has not been modified to UMAM, the relevance of this statement is unclear. Miami-Dade County is trying to verify FPL's proposed mitigation ratios based on the current applicable Basis of Review requirements as they relate to use of the HID. The proposed ratios do not appear to be consistent with applicable Basis of Review requirements, which call for a minimum of 1.5/1. FPL shall provide information to reconcile the discrepancy between the proposed mitigation ratios and the minimum ratios required under State and County law.

MDC-G-32 (Third Round)
This item remains incomplete. Miami-Dade County acknowledges FPL's statement that they have submitted Revised Figure 2MDC-G-32 (Rev. 1) titled FPL Lands Proposed for Preservation/Restoration & Development within the Biscayne Bay Coastal Wetlands & Model Lands Basin, however, the item remains incomplete because the requested figure could not be found, either in hard copy or in electronic format (File name: Figure2MDC-G-32_09387652C014_Rev1_BBCW_ ModelLands.pdf). FPL shall resubmit this map.

MDC-G-33 (Third Round)
Previously determined to be complete.

MDC-G-34 (Third Round)
Previously determined to be complete.

MDC-G-35 (Third Round)
This item remains incomplete and information previously requested must be provided to allow the County to determine whether the proposed project meets the substantive requirements of Miami-Dade County Code and the CDMP in order to prepare the reports required by 403.526 F.S. Miami-Dade County requires a detailed Mitigation Plan at this time to evaluate completeness of the application. The plan must identify the specific mitigation for each of the specific impacts proposed in order for the County to evaluate the mitigation and to prepare the reports required by Section 403.526 F.S. In addition, as per Miami-Dade County's First Round Completeness comment for MDC-G-35, "the time lag associated with the proposed mitigation projects must be calculated from the initiation of the impacts to the time in which the mitigation reaches the proposed "with mitigation" score". FPL shall clarify the comment that "some mitigation activities may be initiated prior to the time of impacts". Is FPL proposing to do "up-front" mitigation, and if so, provide details, including time frames relative to each specific impact.

Please also see MDC-D-15 (Third Round).

MDC-G-36 (Third Round)
Previously determined to be complete.

MDC-G-37 (Third Round)
Previously determined to be complete.

MDC-G-38 (Third Round)
Previously determined to be complete.

MDC-G-39 (Third Round)
Previously determined to be complete.

MDC-G-40 (Third Round)
Please see MDC's responses MDC-A-26-1 (Third Round) and MDC-A-26-2 (Third Round).

MDC-G-41 (Third Round)
This item remains incomplete. The reference to MDC-C-26 is a typographical error. In the first round of Completeness Responses, FPL disagreed with assertions made by Miami-Dade County that water is migrating from the Cooling Canal System (CCS). Miami-Dade County reiterates that the application provides insufficient information with regard to MDC-G-41. FPL shall submit data and information to demonstrate that the water is not migrating from the CCS.

MDC-G-42 (Third Round)
No additional information has been provided. This item remains incomplete and information previously requested must be provided to allow the County to determine whether the proposed project meets the substantive requirements of Miami-Dade County Code and the CDMP in order to prepare the reports required by 403.526 F.S. The requested information is required within the time frames prescribed in the "Fifth Revised Schedule for Review of Site Certification Application for Florida Power and Light Company's Turkey Point Units 6 & 7 Power Plant Siting App. PA03-45A3; DEP OGC Case No. 09-3107 DOAH Case No. 09-3575-EPP".

> **MDC-G-42 (Second Round)**
> Please see comments provided in MDC-A-26.
>
> **MDC-G-42 (First Round)**
> The application does not provide sufficient information to determine whether all construction operations involving earthwork, including disposal, are limited to clean fill. Further, it is not clear that disposal of materials will meet the clean fill definition in Chapter 24 as required pursuant to Condition 14 of Z-56-07. Please provide the required information necessary to demonstrate consistency with Condition 14 of Z-56-07 and Chapter 24, Miami-Dade Code. This shall include, but not be limited to characterization of materials proposed for disposal to demonstrate that they are free of contaminants.

MDC-G-43 (Third Round)
Previously determined to be complete.

MDC-G-44 (Third Round)
No additional information has been provided. This item remains incomplete and information previously requested must be provided to allow the County to determine whether the proposed project meets the substantive requirements of Miami-Dade County Code and the CDMP in order to prepare the reports required by 403.526 F.S. FPL's reference to a proposed plan that may be submitted to Miami-Dade County in the future to achieve compliance with the requirements

of Resolution Z-56-07 is not responsive to this application completeness request. The requested information is required within the time frames prescribed in the "Fifth Revised Schedule for Review of Site Certification Application for Florida Power and Light Company's Turkey Point Units 6 & 7 Power Plant Siting App. PA03-45A3; DEP OGC Case No. 09-3107 DOAH Case No. 09-3575-EPP".

In addition, FPL has not provided to the County the earthwork and materials disposal plan required pursuant to condition 7 of Z-56-07. The plan is required and shall include but not be limited to a description of how the fill material will be characterized in terms of its chemical composition, sampling methodologies proposed to be used to sample the fill material, a list of parameters proposed to be sampled, list of analytical methods including MDLs and PQLs of the proposed analytical methods, how the materials will be stored to prevent storm water runoff from entering adjacent water bodies and wetlands. The aforementioned plan must be submitted to the County for review and approved by DERM.

Please see MDC's response MDC-A-26-1 (Third Round)

MDC-G-44 (Second Round)
Please see comments provided in MDC-A-26.

MDC-G-44 (First Round)
Proposed Spoil Areas: Please submit the earthwork and materials disposal plan required under Condition 7 of Z-56-07. The plan should include, but not be limited to plans and sketches pertaining to the proposed Spoil Areas including elevation details and slope stabilization. The applicant should also provide the management plan for listed species required under Condition 2 of Z-56-07, which should include but not be limited to identifying the plans established to protect endangered or threatened species from impacts resulting from the proposed work.

MDC-G-45 (Third Round)
No additional information has been provided. This item remains incomplete and information previously requested must be provided to allow the County to determine whether the proposed project meets the substantive requirements of Miami-Dade County Code and the CDMP in order to prepare the reports required by 403.526 F.S. FPL's reference to a proposed plan that may be submitted to Miami-Dade County in the future to achieve compliance with the requirements of Resolution Z-56-07 is not responsive to this application completeness request. The requested information is required within the time frames prescribed in the "Fifth Revised Schedule for Review of Site Certification Application for Florida Power and Light Company's Turkey Point Units 6 & 7 Power Plant Siting App. PA03-45A3; DEP OGC Case No. 09-3107 DOAH Case No. 09-3575-EPP".

Please also see MDC's response MDC-A-26-1 (Third Round)

MDC-G-45 (Second Round)
Please see comments provided in MDC-A-26.

MDC-G-45 (First Round)
The application does not include the listed species management plan, as required under Condition 2 of Z-56-07. Please provide the required plan. Pursuant to Condition 2 of Z-56-07, the plan shall include but not be limited to identification, location, and description of features such as permanent physical barriers, visual buffers, and the establishment of development setbacks necessary to prevent both direct and indirect impacts to adjacent critical habitat and disruption of sensitive behaviors such as breeding, nesting and foraging within the adjacent critical habitat.

MDC-G-46 (Third Round)
No additional information has been provided. This item remains incomplete and information previously requested must be provided to allow the County to determine whether the proposed project meets the substantive requirements of Miami-Dade County Code and the CDMP in order to prepare the reports required by 403.526 F.S. FPL's reference to a proposed plan that may be submitted to Miami-Dade County in the future to achieve compliance with the requirements of Resolution Z-56-07 is not responsive to this application completeness request. The requested information is required within the time frames prescribed in the "Fifth Revised Schedule for Review of Site Certification Application for Florida Power and Light Company's Turkey Point Units 6 & 7 Power Plant Siting App. PA03-45A3; DEP OGC Case No. 09-3107 DOAH Case No. 09-3575-EPP".

Please also see MDC's response MDC-A-26-1 (Third Round)

MDC-G-46 (Second Round)
Please see comments provided in MDC-A-26.

MDC-G-46 (First Round)
The application states that muck removed from several construction sites will be stored in the spoil disposal site identified in Figure 5.1-1. It is not possible to determine from the information provided in the SCA whether the spoil disposal site meets the requirements of Chapter 24, Miami-Dade Code and the requirements of Condition 7 of Z-56-07. The applicant must provide the earthwork and spoil disposal plan required under Condition 7 of Z-56-07, which should include but not be limited to information on whether the disposal of spoil in the referenced location will be permanent or temporary, final slopes and elevations for the piles, what measures will be taken to address stormwater runoff from the spoil piles, characterization of the material including but not limited to contamination levels, potential impacts to threatened and endangered species including but not limited to potential impacts to critical habitat, and potential impacts to surrounding coastal wetlands.

MDC-G-47 (Third Round)
No additional information has been provided. This item remains incomplete and information previously requested must be provided to allow the County to determine whether the proposed project meets the substantive requirements of Miami-Dade County Code and the CDMP in order to prepare the reports required by 403.526 F.S. FPL's reference to a proposed plan that may be submitted to Miami-Dade County in the future to achieve compliance with the requirements of Resolution Z-56-07 is not responsive to this application completeness request. The requested information is required within the time frames prescribed in the "Fifth Revised Schedule for Review of Site Certification Application for Florida Power and Light Company's Turkey Point Units 6 & 7 Power Plant Siting App. PA03-45A3; DEP OGC Case No. 09-3107 DOAH Case No. 09-3575-EPP".

Please also see MDC's response MDC-A-26-1 (Third Round)

MDC-G-47 (Second Round)
Please see comments provided in MDC-A-26.

MDC-G-47 (First Round)
The application states that "FPL will prepare and submit an earthwork and materials disposal plan prior to the start of construction." It is not possible to evaluate whether the spoil disposal proposed in the application meets the requirements of Chapter 24 and Condition 7 of Z-56-07 without evaluating the earthwork and materials disposal plan required under Condition 7 of Z-56-07. The applicant must submit the required plan.

EXHIBIT 4

Application of Paleoecologic Methods to Coastal Resource Management: An Example from Biscayne National Park

G. Lynn Wingard

Introduction

THE NATION'S COASTAL ECOSYSTEMS HAVE CHANGED PROFOUNDLY during the last century due to human activities. The Estuary Restoration Act was passed by Congress in 2000 and a component of the act was to develop a *National Strategy to Restore Coastal and Estuarine Habitat* (NOAA 2002). The national strategy identifies the importance of establishing historical or baseline conditions within estuarine ecosystems "to determine rates of loss, evaluate threats and predict future trends for various habitat types and areas within the system" (NOAA 2002:2). The report continues: "The availability of historical information varies greatly from place to place. For some estuarine systems, historical maps ... along with anecdotal information on previous centuries may be available. For other systems, only limited anecdotal information may be available."

Understanding natural patterns and cycles of change that have occurred in a system prior to significant human disturbance is a critical component of restoration; however, land managers do not have to rely on historical maps or anecdotal information, as the above report suggests. Changes in ecosystems take place at many time scales, from diurnal to millennial, and it is not practical or even possible to directly observe change at these longer time scales. Basic paleoecologic methods have been successfully used in ecosystems around the country to determine short- and long-term patterns of change in the physical and biological components of ecosystems. In South Florida, these methods have been utilized to establish the ecosystem history of the Everglades, and those of the downstream estuaries of Biscayne Bay and Florida Bay.

Approach

An integrated approach to interpreting ecosystem history provides significant benefits. Data from different groups of plants and animals enhance the reliability of the results and provide an averaging effect to smooth out species-level responses. Data from different scientific disciplines allow researchers to derive information on many aspects of an ecosystem and to determine if synchronous changes have occurred in different components of the system. For example, if sediment geochemistry analyses detect an increase in nitrogen, paleoecologic assemblage analyses of the same sample will indicate if a corresponding change occurred in the fauna. While these data do

not prove cause-and-effect relationships, they point to areas where observation or experimentation in the living system might be worthwhile.

The process begins by locating areas that have sufficient sedimentary cover and as little bioturbation, storm disruption, and erosion as possible, within the area being evaluated. Once sites are identified, cores are collected using methods that minimize sediment disruption. Cores are x-rayed and described, then cut into samples 1 to 5 cm thick.

An age model for each core is derived using three methods, where possible. Lead-210 analysis establishes the chronology of the upper portions of the cores (see Holmes et al. 2001 for explanation of the methodology). Radiocarbon ages on shells or wood fragments provide data points for the lower portion of the cores. Additional confirmation of the age model comes from pollen of exotic flora with documented dates of introduction into the system. For South Florida, the first occurrence of *Casuarina* (Australian pine) pollen, an exotic introduced around the beginning of the 20th century (Langeland 1990), provides an excellent stratigraphic marker for the early 1900s.

The basic principles of paleoecology are utilized to interpret the faunal and floral assemblages in the core samples. Modern sites are established within the ecosystem for routine observation and sampling. Environmental parameters such as temperature, salinity, and pH of the water and the nature of the substrate are recorded along with information on the faunal and floral species living at each site. These data are entered into a database that is utilized for downcore interpretations. Comparison of the living biota to the core assemblage data allows us to develop a general picture of the environment at the time of deposition, including the range of salinities that existed, substrates, and availability of freshwater. (See Brewster-Wingard et al. 2001; Cronin et al. 2001; Ishman et al. 1998; Willard, Holmes, and Weimer 2001; and Willard, Weimer, and Riegel 2001 for examples of paleoecologic studies in South Florida.)

Biogeochemical analyses of the calcium carbonate tests of ostracodes, mollusks, or forams provide another method for deriving numerical salinity values for each segment of a core. A combination of ostracode and mollusk shell analyses can provide a powerful tool to reconstruct seasonal and annual salinity variations. Ostracode adult tests represent essentially instantaneous secretions recording the salinity and temperature at that point in time. Mollusks provide a nearly continuous record throughout the span of the individual's life. Experiments to calibrate molluscan shell chemistry to water chemistry are currently ongoing; however, calibration curves for the ostracodes have been successfully developed and utilized for South Florida (Dwyer and Cronin 2001; Dwyer et al. 2002).

Geochemical analyses of sediments are conducted to examine historical changes in nutrients, primarily carbon, nitrogen, phosphorous, and sulfur. Information on historical changes in nutrient elements in sediments reflects changes in nutrient load to the watershed from both natural and anthropogenic sources (Orem et al., 1999; Zielinski et al. 2000).

Biscayne Bay

Setting. Biscayne National Park is a unique subtropical preserve, sitting on the edge of the metropolis of Miami and containing part of the only living barrier reef in North America and the third-longest barri-

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er reef in the world. The majority (95%) of the park's 172,924 acres is underwater, making Biscayne the largest underwater park in the national park system. The park itself contains four distinct environments: the mangrove coastline, the shallow waters of Biscayne Bay, the northernmost islands of the Florida Keys, and the reef tract.

The Greater Everglades Ecosystem encompasses most of southern Florida from the Kissimmee River southward, through Lake Okeechobee, into the freshwater marshes of Everglades National Park, and eventually into the estuaries of Biscayne Bay, Florida Bay, and the southwest coast.

Since the beginning of the twentieth century, Biscayne Bay and the Greater Everglades Ecosystem have undergone dramatic changes as the population of Miami-Dade County has grown from 4,955 residents in 1900 to 2,253,362 in 2000 (U.S. Census Bureau). As the population increased, so too did demands for protection from seasonal flooding and for potable water for the residents and for the growing agricultural area. A complex series of canals and water control structures, built throughout the 20th century, have altered the natural flow of freshwater through the wetlands and into Biscayne Bay. Along the shores of Biscayne Bay, power plants, water treatment plants, solid waste sites, and large-scale developments have stressed the ecosystem.

During the 1980s and 1990s, momentum began to build for restoration of a more natural freshwater flow throughout South Florida (National Research Council 2003), which led to the development of the Comprehensive Everglades Restoration Plan (CERP; USACE 1999). The primary goal of the CERP is to restore the timing, quantity, quality, and distribution of freshwater to the ecosystem so that it approximates the predevelopment conditions as closely as possible. The role of the U.S. Geological Survey (USGS) ecosystem history projects is to provide information on the pre-development conditions of the Everglades.

Ecosystem history results and discussion. Nine sites within Biscayne Bay, Card Sound, and Barnes Sound have been cored. Four of the locations are within the park boundaries; the other five are located at sites selected to examine changes in freshwater flow into the estuary (Figure 1). Paleoecologic, biochemical, and geochemical analyses on these cores provide information on historical changes in salinity and nutrient influx into the bay. Details of the core analyses are available in Wingard et al. (2003; 2004), but a brief summary is provided here.

Faunal and floral assemblages from cores at Middle Key and Manatee Bay (Figure 1) indicate that the southern end of the Biscayne system (Card Sound and Barnes Sound), had significantly more freshwater influx prior to 1900 than in the later half of the 20th century. Figure 2 illustrates changes in percent abundance of key indicator species throughout the core and over time. The fauna in the lower portion of Middle Key core, deposited prior to 1900, are predominantly freshwater gastropods (Figure 2, #1), but the environment begins to shift around 40 cm and increasing numbers of species typical of an upper estuarine environment appear (Figure 2, #2–4). Between 30 and 20 cm (approximately 1900), freshwater species begin to decline (Figure 2, #5), and concurrent increases occur in all estuarine species: mesohaline (upper estuary; 5–18 parts per thousand (ppt) dissolved salts), polyhaline (middle to lower estuary; 18–30 ppt), and euryhaline

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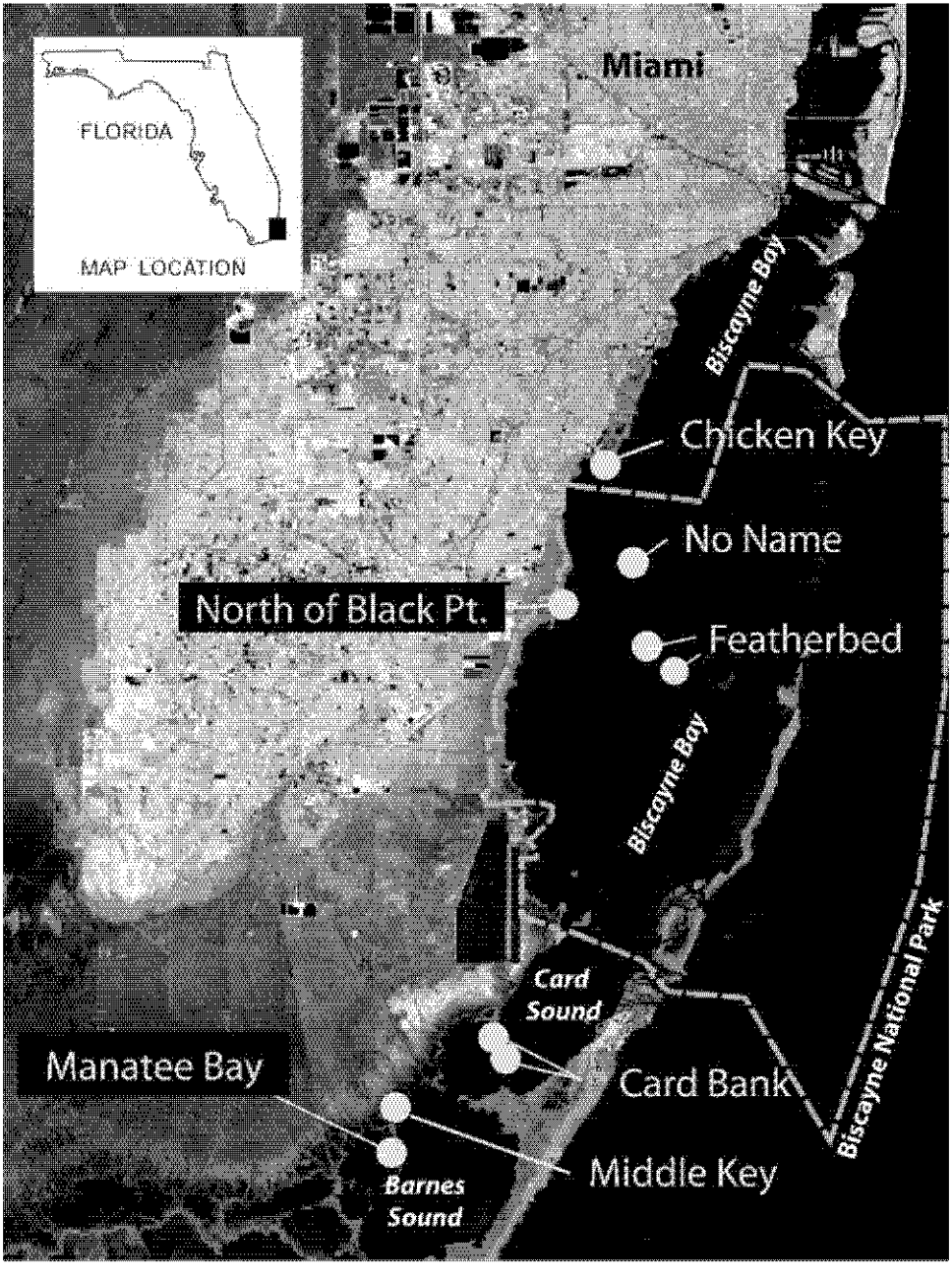

Figure 1. Satellite image map of Biscayne Bay, Florida, showing sites where USGS cores were collected (circles) and the boundary of Biscayne National Park (dashed line). Source: Jones et al. 2001.

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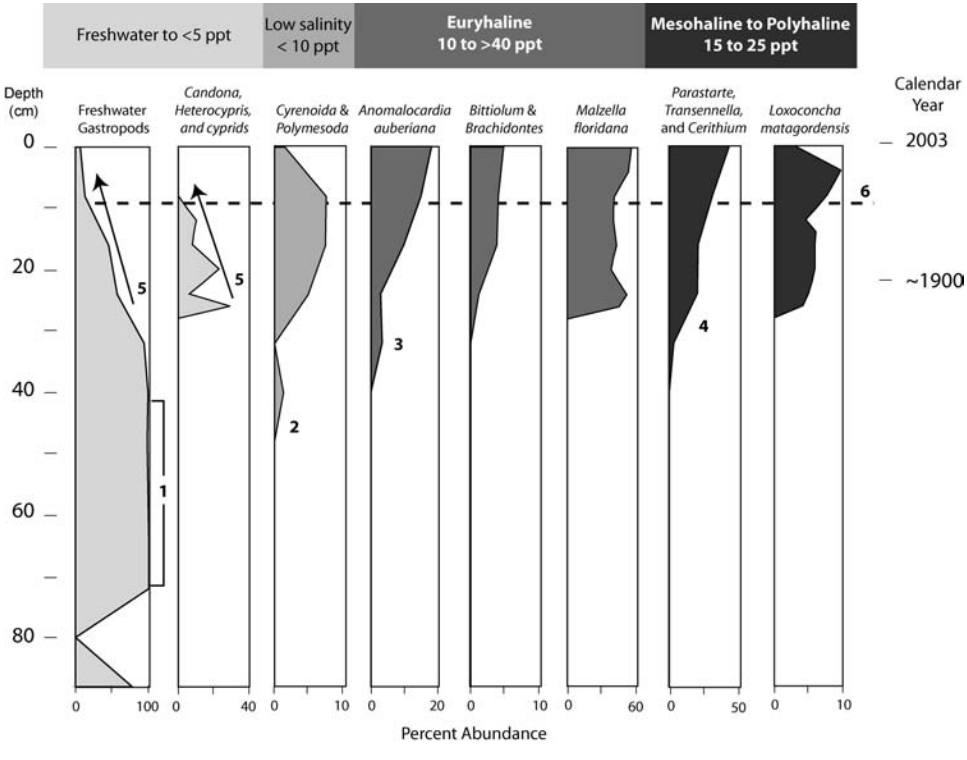
(tolerant of wide fluctuations in salinity from 10 to >40 ppt). At approximately10 cm, (Figure 2, #6) the freshwater and low-salinity species (<10 ppt) almost disappear at the site, and the euryhaline species, tolerant of wide ranges in salinity from 10 to >40 ppt, become increasingly abundant. Similar changes are seen at the Manatee Bay core site, located 2.8 km (1.7 miles) to the south of the Middle Key core site (Figure 1).

Card Sound Bank is a shallow mud-bank that extends from the mainland just north of Card Sound Bridge, over to the northern portion of Key Largo, effectively separating Card Sound and Barnes Sound (Figure 1). The lower portion of cores from Card Sound Bank indicate that the area has been transitional between a more restricted upper estuarine environment and a more open estuarine environment, fluctuating between these conditions over time (Figure 3, below dashed line). During the later part of the 20th century, however, more marine species and fewer euryhaline species are present (Figure 3, above dashed line). This shift in the faunal assemblage indicates a shift from an estuarine environment subject to frequent salinity fluctuations, to a more

Figure 2. Changes in salinity in Middle Key Basin (see Figure 1 for location), as indicated by percent abundance of key ostracode and mollusk indicators plotted against depth in cm, from Middle Key core (GLW603-MKA). Calendar year is indicated on right. Numbers on plots are referenced in text discussion; ppt is a measure of salinity in parts per thousand dissolved solids. Note different percent abundance scales.



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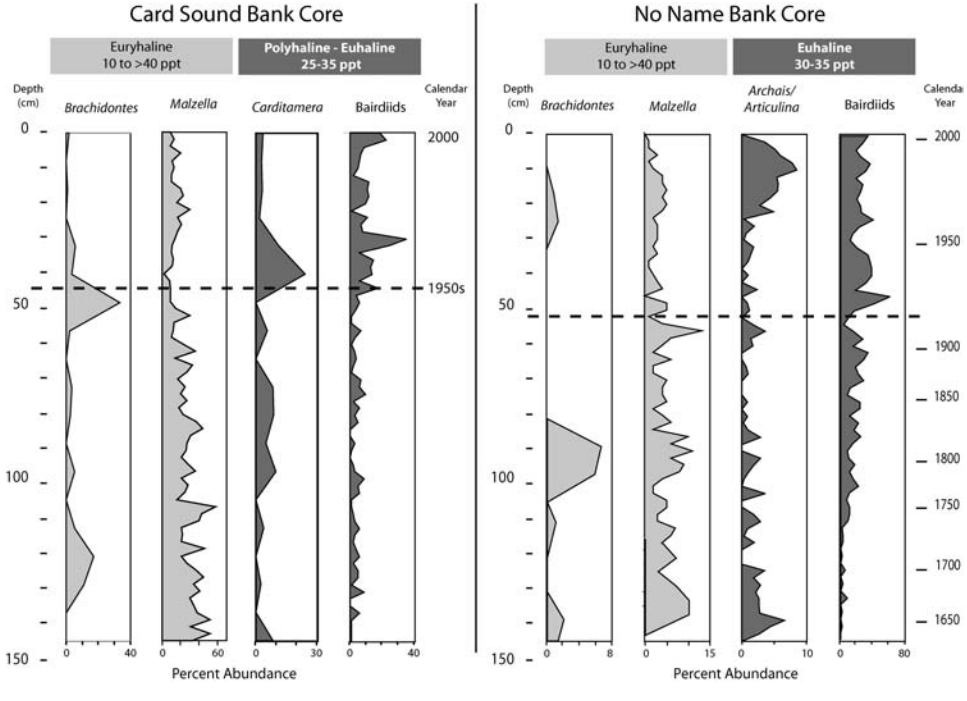
stable marine environment with fewer salinity fluctuations.

Moving north in Biscayne to the more open waters of the mid-bay, the faunal assemblages in cores from Featherbed Bank and No Name Bank (Figure 1) also show shifts from more fluctuating estuarine environments in the lower portions of the core (Figure 3, below dashed line) to more stable marine environments in the 20th century (Figure 3, above dashed line). Figure 3 compares indicator species at Card Sound Bank and at No Name Bank. The trends are very similar at the two sites, but based on our current age models, the environment at No Name began to shift towards more marine sooner than the environment at Card Sound Bank.

Implications and importance to managers

All nine cores demonstrate a common trend—an increase in salinity in the Biscayne Bay ecosystem in the 20th century. The timing of the onset of increased salinity varies at different core sites, and the indicator species differ, but there are no exceptions to this trend. Our preliminary age models indicate that a combination of factors is at work. The earlier onset of increased salinity in the more open portion of the bay at No Name and Featherbed

Figure 3. Comparison of changes in salinity from Card Sound Bank core (SEI297-CB1) and No Name Bank Core (GLW402-NNB)(see Figure 1 for locations) as indicated by percent abundance of key ostracode, mollusk, and foram indicators plotted against depth in cm. Calendar year is indicated on right for No Name Bank core; age model for Card Sound Bank has not been completed. Dashed lines are referenced in text discussion; ppt is a measure of salinity in parts per thousand dissolved solids. Note different percent abundance scales.



Banks, compared with Card Sound Bank and the southern portion of the ecosystem, implies a rise in sea level. The more rapid and dramatic shifts seen in nearshore cores (for example at the top of the Middle Key core) indicate other factors are involved. A number of potential factors could explain the increase in salinity in Biscayne Bay: decreases in runoff entering the bay due to canal construction and water management practices, decreases in rainfall, decreases in groundwater upwelling, increases in evaporation, and a rising sea level. We are currently working on refining our age models and correlating results to known events affecting the bay.

The trend of increasing salinity has immediate and long-term implications for resource managers at Biscayne National Park. In the park's science overview document (NPS 2000), it is stated that "science aids in stewardship of resources" by answering questions such as "How does the condition of our resources change over time?" As Biscayne Bay becomes increasingly marine, the biodiversity and, ultimately, the distribution of the environments within the park will shift.

From the restoration perspective, it is important to understand what component of the increased salinity is due to natural patterns (sea level rise, climate change), and what is anthropogenically induced. Although the goal of restoration is to return to a predisturbance state, this may not always be possible. If a system has undergone significant natural change, such as sea level rise, the effects cannot be reversed within the scope of restoration; however, the component of change due to anthropogenic factors, such as changes in freshwater influx, may be corrected. The results of this research can be used by the restoration managers to set realistic targets and performance measures for restoration. In setting target salinity values, the immediate implications of our findings are the following: (1) significant spatial and temporal variations occur within the system, so separate target values need to be established for different habitats; (2) targets must incorporate the natural range of variation (minimums and maximums) that has existed in the past, and not focus on mean values; and (3) nearshore sites are dramatically different from the mid-bay mudbanks and have been for hundreds of years, so changes in freshwater influx during restoration will have little effect on the central portions of the bay.

Natural systems are not static—they evolve and change over time. So as society attempts to manage and restore these systems, it is important to look at natural patterns of change. Examining decadal to centennial trends in a variety of habitats within an ecosystem using basic paleoecologic methods provides resource managers with the information necessary to make informed decisions and to enlighten the public on what the natural system of the bay looked like prior to significant human alteration of the environment.

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EXHIBIT 5

Florida Department of Environmental Protection

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3900 Commonwealth Boulevard
Tallahassee, Florida 32399-3000

Charlie Crist
Governor

Jeff Kottkamp
Lt. Governor

Michael W. Sole
Secretary

August 10, 2009

TO: Toni Sturtevant, OGC
FROM: Mike Halpin, Siting Coordination

Pursuant to § 403.5252, Florida Statutes, the Department of Environmental Protection (DEP) after consulting with the affected agencies has determined that the portion of the Florida Power & Light (FPL) Turkey Point Units 6 & 7 Nuclear Plant application concerning the plant and associated facilities other than the transmission lines is not complete.

The following represent requests for additional or clarifying information from the DEP Siting Coordination (SCO) and Southeast District (SED) Offices, and the Office of Coastal and Aquatic Managed Areas (CAMA). The items immediately below represent the DEP Southeast District Office's request for additional or clarifying information. The Department received both transmission line and power plant / associated facility questions from DEP-SED within a single submittal, thus the numbering is not in sequence. However, when responding to completeness items, the Department requests that where possible, the applicant maintain the below numbering system.

I. DEP SED WATERSHED MANAGEMENT AND PLANNING

A. Zoning and Land Use Plans

FPL has filed an application to amend Miami-Dade County's Comprehensive Development Master Plan (CDMP) to allow the creation of a mining operation to provide fill needed for the power plant expansion at Turkey Point. The proposed site is not contiguous to the plant site. The mining operation would be located on land currently owned by FPL and zoned as Agriculture land use. The County's CDMP Future Land Use Element designates the proposed location for the Site and associated non-linear facilities as Environmental Protection Subarea F (Coastal Wetland and Hammocks). The proposed fill site is located further from the plant than at least one operational and permitted mine. FPL is pursuing the new site in order to avoid the permitting constraints associated with the rate at which material can be excavated and cost savings of avoiding a contract with commercial mines in the region.

The proposed project area, including the fill mine are within one mile of the ecological sensitive Biscayne National Park (BNP) and Biscayne Bay Aquatic Preserve (BBAP). The proposed work includes road and transmission lines that will affect the South Florida Water Management District (SFWMD) Model Lands Basin conservation area, proposed Comprehensive Everglades Restoration Projects (CERP) including the C-111 Spreader Canal and the Biscayne Bay Coastal Wetlands and FPL's Everglades

Mitigation Bank (EMB) which are located within five miles of the site. The EMB is a 13,000-acre natural wildlife and wetlands area southwest of the Turkey Point nuclear power plant property. The Biscayne Bay Aquatic Preserve is approximately 69,000 acres of submerged State land that has been designated as an Outstanding Florida Water.

B. FPL-owned Fill Source

FPL plans to use a 300-acre site they own as a fill source for the 10.75 million cubic yards of fill needed for the plant expansion. Although much of the site is disturbed from agricultural use, 52 acres of wetlands will be lost due to the proposed excavation. The "water management project" proposed by FPL is to create surface water reservoir in the pit created from the fill removal. FPL has not provided details regarding the water management feature and therefore the Department will need additional information and require a pilot project to provide reasonable assurances that the proposal is feasible. Because of the close proximity to the BNP and BBAP, there may be future environmental impacts to these areas. The Biscayne Bay Coastal Wetlands and the Model Lands Basin are within one mile of the fill source location. The proposed work could exacerbate salt water intrusion in the region.

FPL notes in Chapter 5, that the aggregate extraction process will be done in the freshwater portion of the aquifer and that it will not induce saltwater intrusion.

The Department will need detailed geotechnical and engineering information from FPL to verify this claim. The Department will require that all constructed features be protective of the environment during such times as storm surge created by hurricanes.

C. Radial Collector Wells

Reclaimed water will be provided from the Miami-Dade County Water and Sewer Department South District Wastewater Treatment Plant for makeup water to the circulating water system (CWS). When reclaimed water is not available in sufficient quantity or quality, makeup water will be obtained from radial collector wells. The radial collector wells will withdraw saltwater through laterals installed approximately 40 ft below the bottom of Biscayne Bay. FPL plans to operate the wells in a fashion to allow recharge to occur over a large area by operating at low velocities. How does FPL plan to ensure that the wells do not cause or contribute to environmental degradation? At the depth of 40 ft., this process may actually extract fresh water from the aquifer thus counter acting CERP projects intended to deliver fresh water to the Bay's littoral zone. The use of this type of well is uncommon which increases the uncertainty and associated risk because the laterals may need to be above the 40 ft depth to work effectively. In pre-application meetings with FPL, concerns have been expressed about the use of this technology and possible impacts to the seabed and the salinity of the bay.

Four radial well caissons will be located on the Turkey Point peninsula in previously-disturbed areas of upland fill material. The caissons will house the pumps and equipment needed to operate the laterals.

D. Associated Linear Facilities

The linear facilities proposed by FPL include electrical transmission lines (230 and 500 kilovolt (kV) and associated transmission access, reclaimed water pipelines, roadway improvements and expansions and a potable water pipeline. The proposed linear facilities will result in significant wetland impacts that will require mitigation.

The reclaimed water pipelines will be approximately nine miles in length. The Application notes that the corridor for the reclaimed water pipeline was selected to utilize existing infrastructure in order to minimize environmental impacts. The majority of the corridor is within an existing FPL-owned transmission right-of-way and other FPL-owned property. No Alternate Corridors are proposed for reclaimed water pipelines.

FPL is seeking certification for approximately ten miles of roadway improvements to accommodate peak construction traffic and to provide access to Units 6 and 7. The roadway improvements will involve upgrades to existing paved roads and improvement of existing unpaved roads to paved roads. Additionally, intersection improvements at six locations will be made to accommodate peak construction traffic. The roadway improvements are required to support the safe and efficient construction of the facility. The road expansions and intersection improvements will result in wetland impacts and interference to sheetflow. The Department will require minimization of impacts and mitigation for the lost wetlands. The proposed roads and roadway improvements could potentially impact ongoing environmental restoration projects in the area.

During peak construction activities associated with Units 6 and 7, about 3,650 workers will need access to the Site. The existing plant access cannot accommodate the construction traffic. FPL should consider installing wildlife corridors to protect wildlife from the increased traffic in the area.

A portion of the lands designated as Model Lands Basin are located adjacent to the roadway improvement corridors. The Model Lands Basin was SOR land acquired by the SFWMD. The Model Lands Basin is comprised largely of freshwater and saltwater wetlands that form a contiguous habitat passageway between the ENP, the Southern Glades SOR project located further to the southwest, BNP and other designated protected lands in Miami-Dade County.

The widening of existing paved roads, paving of existing unpaved roads, bridge over L-31E Canal and intersection improvements will result in impacts to wetlands. The information typically provided in an ERP application will be provided to reviewing

agencies for postcertification monitoring of compliance with the Conditions of Certification (COC's).

Potable water pipeline corridor is approximately nine miles in length. The entire length of the pipeline will be installed within established rights-of-way and thus will not impact wetlands.

The Application notes unavoidable wetland impacts resulting from construction of roadway improvements and the potable water pipelines will be mitigated in consultation with FDEP, USACE and DERM. Best Management Practices (BMP's), such as silt fencing and floating turbidity curtains at construction sites, will be required by the Department to prevent secondary impacts to surface waters or wetlands.

II. DEP SED ENVIRONMENTAL RESOURCE PERMITTING

DRAINAGE/ENGINEERING

1. Due to the close proximity of the cooling canal system to the Biscayne Aquatic Preserve and strong tidal an ground water hydraulic connection, Units 6 and 7 project areas shall be designed and operated to meet State water quality standards, as set forth in Chapter 62-302, Florida Administrative Code and in accordance with Section 5.2, Retention/Detention Criteria (SFWMD Basis of Review). Please demonstrate that there will be no adverse impact to adjacent surface water and wetland from stormwater runoff for the project area.

Please note that the applicant is required to comply with State-water quality standards set forth in Rule 62-302, FAC unless approval is obtained for a variance.

Additionally, the stormwater design treatment standard for the proposed project shall achieve at least 95 percent reduction of the average annual load of pollutants that would cause or contribute to violations of state water quality standards in Outstanding Florida Waters Additionally, the 150 % treatment (or 95% removal) should be based on the greater of the 1-inch over the developed project or 2½ –inches times percent impervious (62-40.432).

2. For the proposed reclaimed water facility, proposed water quality computation was based on 1-inch over the contributing area (26.16 acres). However, Per Basis Of Review wet detention volume shall be provided for the first inch of runoff from the developed (vs. contributing) project (This area is interpret as 44.1 acres vs. 26.16), or the total runoff of 2.5 inches times the percentage of imperviousness, whichever is greater noting water surface and roofed areas can be deducted from site areas only for water quality pervious/impervious calculations.

3. Please demonstrate that dewatering activities during construction will not induce salt water intrusion and adversely impact adjacent surface water and wetlands. Provide a dredged material disposal plan, including; design details of all disposal sites, including the heights, widths, and composition of material used to construct confining

berms; details of all interior cells and baffles within the disposal site; details of outfall structures, including control weirs (fixed or removable); design capacity (volume); and data used to size the disposal cell(s); proposed dredging equipment (including maximum pumping rates if a hydraulic dredge is to be used); and proposed turbidity controls. If a barge is to be used to receive dredged material prior to final upland disposal, please provide details of the barge, including fully loaded draft, capacity, and details for containing material on the barge.

4. Condition 4 of the Miami Dade County Board of County Commissioners Resolution No. Z-56-07 states "That FPL shall not apply for any water withdrawals from the Biscayne Aquifer as a source of cooling water for the proposed facility." Do the proposed radial collector wells comply with this condition?

5. For the proposed "FPL owned fill source" please demonstrate compliance with Section 5.6 as follows: (a) Entrapped salt water, resulting from inland migration of salt water or penetration of the freshwater/salt water interface, will not adversely impact existing legal water users; (b) Excavation of the water body shall not penetrate a water-bearing formation exhibiting poorer water quality for example., in terms of chloride concentrations (BOR, SFWMD).

6 Please provide details on existing and proposed surface water flows and hydrology. Specifically, provide an in-depth study of the existing and proposed hydroperiod for the wetland areas affected. What will be done to avoid or offset impacts to wetland dependent species affected by the proposed changes in hydrology?

7. Please submit paving, grading and drainage plans for all of the proposed elements of the project including the plant facilities, roadways, transmission lines, reclaimed water facility and excavation sites. The plans must be signed and sealed by a registered professional engineer licensed in the state of Florida. Also, please submit stormwater calculations for all of the different project areas. Such calculations should include a complete acreage breakdown of total area, building area, preserve/pervious area, parking/roadway area and other impervious coverage as well as sufficient site grading details which support the grading assumptions in Tables 24 & 25 of Appendix 10.8.

8. Please provide stormwater management calculations and construction quality plans that show all the best management practice being used as part of the drainage design for the proposed construction (oil water separators, swales etc.). Please provide stormwater management and details of how the runoff from the potentially oil contaminated areas will be routed to the oil/water separators prior to discharge into the industrial waste water site or the cooling water reservoir (Appendix 10.8). For Units 6 and 7, please identify and explain how stormwater runoff is handled from areas such as chemical storage, waste storage, backwash basin sludge processing and demonstrate that runoff from these areas will not adversely impact ground water or surface water.

A similar table to Table A-2, Attachment A of Appendix 10.8 should be prepared and submitted for Unit 6&7.

9. Please provide a turbidity management and monitoring plan for all facilities (i.e. plant, roadways, transmission lines, fill generation areas, spoil disposal areas, etc.) to ensure compliance with State water quality standards during project construction.

10. Culvert placement under certain, unidentified roadways is contemplated. However, culverts typically reduce the water delivery system to a point source, rather that the historic sheet flow. Please indicate where the culverts are proposed and provide an analysis of peak velocity discharge and demonstrate how erosion will be prevented. Please be aware that following the receipt of additional information, it may be necessary to construct a bridge (s) to maintain adequate hydrologic conditions on either side of the linear disturbance proposed.

11. Based on the submitted information in Section 1.4, the proposed site for the proposed Turkey Points Units 6 and 7 appears to be an existing low area that is proposed to be filled. As required by Section 6.7 of the Basis of Review, please demonstrate that filling of the low lying areas will not adversely impact the existing power plant site and the industrial waste water facility. Also, please indicate how the proposed site preparation (i.e. construction techniques, de-mucking, dewatering and flow pattern changes, etc.) impact the existing plant to the north.

12. Section 3.1.3 indicates a proposed lake excavation on the eastside of the Homestead Air Force Base. Please indicate if any known soil or groundwater contamination areas have been identified within the project boundary. If contamination has been identified, please address any potential conflicts with the proposed surface water management system and construction methodologies.

13. Please provide more detailed information on the temporary and future locations of the storage areas for the excavated material. How will the natural drainage be maintained so that existing flow patterns on the natural areas will not be disturbed? How long will the excavated material be stored on site?

14. The proposed project is located inside the salt intruded area, as established by the U.S. Geological Survey. Please address the proposed lake depth and potential water quality impacts as a result of the project location (i.e. saltwater intrusion).

15. For the proposed "FPL owned fill source", please demonstrate that the fill material is free from contaminants (nutrients, metals, pesticides herbicides etc.) that could adversely impact adjacent surface water and wetlands.

16. The proposed FPL-owned fill source material project area is located on the south side of the canal generally referred to as Military Canal. On the north side of this canal, there is a Miami-Dade DERM stormwater treatment area. Please address and provide documentation that the proposed lake excavation will not adversely impact this project.

17. For the proposed FPL-owned fill source material project, please provide a complete acreage breakdown including total owned area, preserved/pervious area, lake/mining area and other impervious area.

18. Please provide paving, grading and drainage plans for the proposed FPL-owned fill source material project including all the required cross-sections.

19. Please provide a sequencing plan for the works proposed on the lake excavation site. Please provide calculations to demonstrate that during each sequence of excavation, there will be no discharge of water from the pit during storms up to the 25-year, 3-day design event. To accomplish this, it may be necessary to provide a temporary berm around each phase of excavation which could be removed after all excavation is completed and turbidity levels meet State standards. Also, an interceptor swale may be required to convey offsite runoff around the pit during excavation. Please provide plans and cross-sections.

20. In the submittal it is indicated that "The proposed FPL-owned fill source material would result in a water management feature that will be designed to complement and enhance regional wetland rehydration projects". Please indicate how this will be accomplished and provide supporting documentation.

21. There is an existing SFWMD Surface Water Management permit (Permit Number 13-00026-S) within the area proposed as FPL-owned fill source material. This permit has been transferred to FPL as the new owner. Please indicate how this permit will be addressed as part of the power plant certification process.

54. Regarding the proposed FPL-owned fill source:

a. How does the design of this system enhance regional wetland communities? Please provide typical plan- and cross-section views through the proposed site.

b. What is the maximum proposed depth of this proposed borrow area?

c. Please provide proposed depth contours of the pit and indicate how salt water intrusion will be prevented.

d. Please provide information related to roadway improvements necessary to transport materials from the borrow site to the project site.

e. Please include a direct and secondary wetland impact analysis and indicate how wetland impacts associated with this proposal will be offset.

22. Please provide calculations for the 100-year, 3-day design event with zero discharge to demonstrate that the proposed finish floor elevations within the Turkey Point Unit 6 and 7 project will be at or above the calculated stage. Section 10.8.1.3. For the plant area, please demonstrate through analysis compliance with Section 6.4, Flood Protection of Building Floors of the Basis of review (B.O.R.) for Environmental Resource

Permit (ERP) Application within the South Florida Water Management (SFWMD) August 1995, which in part states: Building floors shall be at or above the 100 year flood elevations, as determined from the most appropriate information, including Federal Flood Insurance Rate Maps. Both the 100 year, 3 day storm event and wave run-up storm surge associated with the Probable Maximum Hurricane should be considered in determining building pad elevation.

23. **Section 3.3.1.4** - Spoil disposal. It is anticipated that muck excavation, treatment and storage will result in the release of inorganic and organic nutrients that will likely enter the Wastewater Treatment Facility, and potentially exchange with Biscayne Bay via shallow groundwater movement. What is the expected quantity of nutrient release? What is the anticipated nutrient loading to Biscayne Bay? Please provide an estimate of the cubic yards of spoil material generated vs. spoil disposal capacity of the berms where spoil is proposed to be placed. Will any dewatering be proposed? How will spoil material be transported to the disposal site? How will spoil material be contained and stabilized on the existing berms? Please indicate where all fill will be utilized/disposed.

24. **Section 3.3.1.4** - Spoil disposal. Please provide cross-sections (existing and proposed) with elevation of the upland spoil berms located adjacent to the Grand Canal that will be used to deposit the spoil generated from the de-mucking activities. Also, please indicate how the material will be transported to the proposed disposal site. Please provide a turbidity management plan.

25**.** **Section 3.3.4 –** Surficial Hydrology. Will the increase in cooling water required to address the proposed Units 6 and 7 result in additional, heated water being sent to the canal system. Will this change in operation alter bay temperature or bay hydrology (i.e. salinity)?

Section 3.3.5.2 – Radial Collection System

26. For the proposed radial collector wells, have the conventional vertical wells been considered in lieu of the proposed radial wells? If so, please provide rationale as why conventional vertical wells were not considered. Provide any results from calculation, modeling etc. to substantiate selection.

It is understood that an extensive test of the radial well methodology was conducted by FPL in early 2009. Please provide the results of this test. Please include information related to production and environmental characteristics and responses (hydrology, salinity water quality).

27. How long are the proposed lateral pipes? How long will the screened portions at the ends of the pipe be? How will the lateral pipes be installed?

28. Please provide the sequence of activities necessary to install and operate the radial collection system. Please include information regarding how excavated and/or drilled materials be transported and treated and where it will be stored. What

mechanisms are proposed to ensure State-water quality standards are complied with (OFW, Aquatic Preserve Standards)?

29. The applicant has indicated that a velocity of 0.00001 foot/second is estimated. How was this velocity calculated and what assumptions were made in the calculation?

30. How was the area of influence for the radial well system determined (page 6-3 and Figure 6.1.3-1)?

31. What is the geological structure of the rock where the lateral pipes are proposed to be installed? Do high transmissivity channels exist?

32. What is the thickness of the overlying sediments?

34. **Section 4.6 – Chemical and Biocide Waste**. This section states " waste effluent from the plant demineralized water systems, sanitary waste treatment plant, FLP reclaimed water treatment facility, filter backwash and other non-radioactive drains throughout the plant will be pumped into deep injection wells". Please indicate on revised plans the area where water quality treatment will occur prior to discharge into the wells. Please include drainage calculations to ensure the water quality standards will be achieved prior to injection.

35. **Section 4.8.3 Operational Site Drainage** – In the submittal it is indicated that the stormwater runoff from the proposed facilities will be routed to the existing industrial waste water facility. Provide plans with sufficient grading elevations and details to demonstrate how this is accomplished.

36. **Sections 4.9.2 and 5.7.2.2 and Section 9.0 – Roads**. Please provide all the required drainage calculations, paving, grading and drainage plans for all portions of the roadway improvements and for the new proposed roadways and bridges that demonstrate that the existing and proposed roads will not have an impact on the existing drainage patterns in the area. Also, please be advised that modifications of some existing ERP permits will be required for some of the proposed improvements. Please ensure that the underlying land owner(s) sign the ERP applications when land under their ownership is involved in project development unless there is an easement to FPL or contract for sale that allows FPL to obtain permits for the proposed work.

37. **Section 4.9.2** states that some roads may be culverted, where required to maintain drainage patterns. Please identify these areas where culverts are proposed. The project design may need to be revised to accommodate large culverts or bridges to maintain sheet flow instead of point discharges that constrict flow.

38. **Section 5.2.1.1 – Construction Water Use**. This section states that water used for cleaning, vehicle wash down, and lubrication may be disposed of during construction by routing this water to injection wells. As stated above, the applicant must demonstrate that the state-water quality criteria will be met prior to discharge of water into an injection well.

39. **Ground water Monitoring**. Please provide a groundwater monitoring proposal which includes establishment of monitoring stations. The number of monitoring wells must be sufficient to provide a characterization analysis, at a minimum once every five years. Both upgradient and down gradient wells need to be proposed. Parameters to be monitored should include (but not limited to) aluminum, antimony, barium, beryllium, cadmium, selenium, silver, thallium, fecal coliform, gross alpha-including radium 226, combined radium 226 and 228, uranium, tritium, strontium-90, and all primary organics of EPA Methods 624 and 625, or comparable EPA methods. T he analysis shall be for all primary inorganics in Rule 62-550.310, FAC, secondary standards in Rule 62-550.320, FAC and all organics of EPA Methods 624 and 625, or comparable drinking water standards. The method detection limits must be lower than the drinking/groundwater standards in Rule 62-550, FAC. The characterization analysis also needs to be conducted, at a minimum of once every five years on the wastewater effluent stream.

40. **Ground water Monitoring**. In addition, the following radionuclide will be required to be monitored annually for gross alpha-including radium 226, combined radium 226 and 228, uranium, tritium and strontium-90. Any potential liquid radioactive waste release should also be monitored.

41. **Ground water Monitoring**. Please provide revised figures depicting the locations of all monitoring wells and provide construction details for the monitoring wells.

ENVIRONMENTAL RESOURCES:

General Comments

42. The application indicates that roadway improvements (Roadway Improvement Corridor), reclaimed water pipelines (Reclaimed Water Pipeline Corridor) and potable water pipelines (Potable Water Pipeline Corridor) outside of the Turkey Point plant property boundary, is owned and will be operated by Miami-Dade County. Please provide the legal authority FPL possesses to include these activities in the application. District lands and canals are proposed to be crossed or bridged. Separate approval from the South Florida Water Management District (District) will be required for the use of District-owned lands.

43. Please be advised that there is a concern regarding the extent of wetland impacts proposed. As described in subsection 4.2.1 of the Basis of Review, the Department in determining whether to grant or deny a permit shall consider whether the applicant has implemented practicable design modifications to reduce or eliminate adverse impacts to wetland functions and other surface water functions. Your project proposes direct impacts to 810 acres of wetlands and surface waters and additional secondary impacts to wetlands and surface water functions. The following items exemplify reduction and elimination strategies to be considered.

- Have alternatives such as using previously impacted areas within the project site been explored? Please consider relocating the Reclaimed Water Treatment System to the north in the area of the FPL source area or to the adjacent test cooling canal to the southeast.
- A review of the submittal indicates that there may be existing disturbed corridors where some linear facilities could be located, as well as design modifications that could be incorporated to reduce the extent of impacts in other areas. Please consider using existing disturbed corridors to address this criteria.
- What are the proposed widths of the construction corridors for linear facilities as well as roads? Is it possible to reduce the widths to further minimize impacts? Are the existing roads insufficient to be used for access for the radial collector wells?

Additional comments on reduction and elimination are discussed throughout this request.

62. Figures R9.0.0-1 and R9.0.0-2 indicate roadway improvements. It appears that certain wetland impacts could be reduced by utilizing existing roadway corridors instead of creating new roadways through undeveloped corridors. Please explain, or consider revisions which further reduce wetland impacts.

44. Review of the submittal indicates that the secondary impact analysis does not accurately address secondary impacts associated with the proposed linear or non-linear features. Please explain, or consider revisions that address all secondary wetland impacts associated with project development. The submittal indicated that a 25-ft. buffer would be used for secondary impacts however, the breakdown of impacts in Table 1-1 (Appendix 10-4), there were no secondary impacts identified for the Units 6&7 site, the reclaimed water pipeline, or the transmission line corridors. Specifically, how will the wetlands adjacent to the toe of slope of the perimeter berm be protected from secondary impacts during maintenance of the berm? Additionally, what is the nature of the buffer around the tree island in the northwest corner of the site? Clearly show the distance (in feet) between all proposed structures and adjacent wetlands that are to remain.

45. Is the 33.3 acre western lay-down area comprising of a mix of wetlands and surface water proposed to be restored? If not, please indicate the rationale for not restoring this area in the post construction phase.

46. Temporary wetland impacts have also not been adequately identified or quantified. Please provide a revised temporary wetland impact analysis that identifies all temporary impacts associated with project development. A UMAM analysis of temporary impacts is required to account for the time lag. For example, if forested systems are being converted to herbaceous systems, mitigation will be required.

47. Potential mitigation options are discussed in Appendix 10.4. Once elimination and reduction of wetland impacts has been evaluated, the mitigation plan should be designed to provide type-for-type mitigation for each community type to be impacted.

48. Additional site visits with agency staff from FDEP and SFWMD should be arranged to verify the wetland lines pursuant to Chapter 62-340 F.A.C. (i.e., transmission lines, reclaimed water pipeline, FPL-owned fill source). In addition, staff will need to conduct UMAM scores for any proposed wetland impact areas as well as proposed mitigation sites. This will also help during UMAM analysis.

75. **Section 3.0 of Appendix 10.4** discusses the restoration of temporarily disturbed areas during project development. A UMAM analysis of these areas will be necessary to determine if additional mitigation will be required to offset temporary impacts due to time lag or reduced wetland functions after site restoration.

49. Show all construction equipment staging areas on a plan view. If the specific staging area is not known, describe any provisions proposed to prevent equipment staging from occurring in wetlands beyond the impact area.

50. Provide construction methodologies and details related to excavating, filling and other site construction.

Section 1.4 - Overview of the project

51. Please characterize, quantify, and score any direct and secondary wetland impacts associated with the delivery mechanism (i.e. pipeline), treatment facility, the disposal of filtrate associated with the water treatment facility and the disposal of water.

52. This project is located adjacent to Biscayne Bay which is an Outstanding Florida Water (OFW). Explain how monitoring will be proposed to determine what affects the proposed facilities will have on the OFW. Parameters to be monitored should include (but not limited to) salinity, temperature, turbidity, nutrients, and chlorophyll A concentrations. Monitoring should also include seagrass and major sessile fauna (sponges, corals, etc.). The plan should also include baseline monitoring.

53. Please quantify and provide a graphic indicating the acreage of lands within the FPL Everglades Mitigation Bank (EMB) that will be directly and secondarily impacted by project development. Additionally, please indicate the area within the EMB that will receive salt spray from normal plant operations. Please provide a schedule for when the EMB Environmental Resource Permit will be modified to reflect the credit reduction resulting from direct and secondary wetland impacts resulting from project development.

Section 3.2.4

55. As indicated in this section, a sovereign submerged lands public easement will be required for the radial collector wells associated with this project. Please provide an

easement processing fee of $555 and provide a survey of the easement area in accordance with the attached SLER 0950.

Section 3.3.5.2 – Radial Collection System

56. Will the overlying benthic community (i.e. seagrass, hard bottom communities, etc.) be disturbed as a result of installation of the system? What is the potential for a frac-out and what are the potential impacts to the submerged bottoms (SAV, corals, etc.)?

57. How will sediments and fauna be prevented from entering the well?

58. What mechanism does the applicant propose to prevent sediment particles and nutrients from being depleted in the surrounding area as a result of the downward flow of water in this area? Please evaluate the potential impacts of this proposal on seagrass habitat and fauna.

59. How does the applicant propose to prevent water and biota from being drawn into the wells from the adjacent Biscayne Bay national Park?

Figure 3.3.9-2 and Section 6.9.2 – Lighting.

60. . Do you have an approved Sea Turtle Lighting Plan? If so, the current plan will need to be modified to incorporate the proposed facilities.

61. Section R9.4.4 states that no changes to vegetation, wildlife or aquatic systems are anticipated in the roadway improvement corridors. However, clearing of corridors, vegetation management activities, roadway improvements, altered hydrology and increased traffic will result in direct and secondary wetland impacts requiring analysis. Please provide this analysis to the agencies for review.

63. The typical section provided in Figure R9.3.2.1 indicates that some wetland impacts could be reduced by redesigning the typical section. Please provide a revised typical section that reduces wetland impacts. Additionally, Figure R9.3.2-6 indicates that work is proposed outside of the right of way. Please provide a revised typical section indicating all work it to be completed within the right of way.

64. It appears that proposed crocodile crossings will allow industrial water to enter natural wetland systems. Additionally, based on the soil transmissivity, it appears that an exchange of waters between the adjacent bay and the industrial water is likely. Please indicate how industrial water will be prevented from co-mingling with waters in the surrounding areas.

Section 5.2. 1.2 – Impact Assessment

65. Any proposed improvements to the barge offloading area or access channel must be reviewed by agency staff prior to authorization. Additionally, compliance with State water quality standards must be demonstrated through the submittal of a turbidity

monitoring plan to ensure the project is in compliance with the non-degradation of surface water criteria contained in Rule 62-312, FAC.

66. If channel dredging is required, please evaluate the nutrient and contaminant concentration of the material and indicate the method proposed to prevent the resuspension and release of these components to the surrounding waters. Additionally, if alteration of the barge channel is proposed, please indicate what impacts this alteration will have on Biscayne Bay groundwater.

67. Section 5.2.1.2 also states that the depth of the fill material site has not been determined. Please provide revised plans indicating the proposed maximum depth of the excavation.

71. **Table 1-2 in Appendix 10.4** provides a summary of potential mitigation activities. A number of these alternatives are proposed to be located on lands not owned or controlled by FPL. Please demonstrate that these mitigation proposals are not inconsistent with State and Federal CERP planning in this region. Additionally, State regulatory staff must field verify existing site conditions and potential mitigation credit. Prior to scheduling the field trip necessary to verify site conditions, please coordinate with staff to arrange field visits to verify site conditions.

72. **Table 2-3 in Appendix 10.4** discusses non-transmission line facilities and includes a secondary wetland impact analysis. T his analysis does not appear to accurately address secondary wetland impacts associated with overall project development. Please contact FDEP and District staff to discuss these issues and provide a revised secondary wetland impact analysis for the entire project (linear, non-linear, sub-station improvements, and site improvements) that accurately addresses secondary impacts incurred with project development.

73. **Section 2.1.6 of Appendix 10.4** states that details regarding culvert placement beneath proposed roads, roadway design and other details regarding project design are forthcoming. These details are required to effectively evaluate potential direct and secondary wetland impacts associated with the proposed project and to provide reasonable assurance that proposed wetland impacts will be offset through the development of the mitigation plan. Please provide the locations, sizes and numbers of culverts proposed and indicate how the appropriate locations and sizing were determined. Please indicate how erosion/sedimentation will be controlled.

74. **Section 3.5 of Appendix 10.4** indicates the applicant proposes to use high-nutrient reclaimed water to hydrologically enhance low-nutrient wetland areas within the Model Lands. Please indicate what impact the use of higher nutrient water will have on the vegetative makeup and other functions of the existing low-nutrient driven wetland community. It is anticipated that this proposal will result in a shift in the vegetative component of the natural system. It is likely that this aspect of the plan will

result in adverse impacts to wetlands requiring additional mitigation, rather than resulting in enhancement of those wetlands.

76. **Section 3.1 of Appendix 10.4** discusses the Northwest Restoration Site – Package A. This component of the plan includes hydrologic restoration of mosquito ditches. It is unlikely that sufficient fill material will be available on site to fully restore this area to the pre-alteration conditions. Please indicate where additional fill necessary to fill these ditches will be obtained and what the material will consist of. Additionally, please identify all direct and secondary wetland impacts associated with the transport, delivery and placement of all materials proposed to be utilized during restoration activities.

77. **Section 3.2 of Appendix 10.4** discusses the Water Management Feature Restoration Site. This section indicates that the applicant-owned parcel totals 300-acres and is proposed to provide a source of fill for the proposed project. This section, however, also states that the entire site encompasses 875 acres. Please indicate the ownership of the 575 acres not owned by FPL and what legal mechanism is proposed by FPL to authorize work on these lands.

- Additionally, utilization of the preservation adjustment score, as proposed, will require a site review to confirm the proposed scores.
- This area is proposed to be transferred to public ownership for management following excavation. Please identify the management entity that will be responsible for the long term management activities required and indicate the management entity's acceptance of this proposal.
- Please provide a cost estimate and financial assurance mechanism for the completion of the construction and perpetual management of the proposed restoration area.

78. **Appendix 10.4 Attachment E** - Please identify the long term management entity (and indicate the entities acceptance of the responsibility) for all mitigation activities proposed and indicate how the long term management will be funded by the applicant.

79. **Section 3.4 Appendix 10.4** - Please indicate what impacts (positive or negative) the proposed additional weir will have upstream and how will this relate to the permitted weir. What additional benefit will the weir proposed in Section 3.4 of Appendix 10.4 have in addition to the weir required for the FPL Everglades mitigation? The applicant has provided proposed UMAM scores. These scores, however, do not appear to reflect the lift associated with the required weir associated with the FPL Everglades Mitigation Bank.

80. **Section 3.7.2 of Appendix 10.4** proposes the use of the Hole-in-the-Donut Mitigation Bank (HID) to offset wetland impacts. Any use of the HID Mitigation Bank must be for wetland impacts of a similar type to that found within HID. The HID

Mitigation Bank is currently permitted using mitigation ratios. However, the ratios proposed in this section (1.0:1.0) are lower than the guidelines for mitigation ratios provided in Section 4.3.2 of the Basis of Review. Please revise the proposed ratios. It should be noted that the HID Mitigation Bank is currently being reviewed for conversion to UMAM. If this modification to the HID Mitigation Bank is accomplished in the near future, the mitigation calculations for any use of this bank can be re-evaluated.

81. **Section 3.11 of Appendix 10.4** states that success criteria will be evaluated at a later date. To adequately review any functional wetland scoring and associated "lift" the success criteria must be established prior to the finalization of any wetland functional analysis. Please provide a proposal for success criteria that includes required plant coverages and sizes, survivorship, plant species diversity, measurement of hydrologic improvement and wildlife usage, as well as any other factors appropriate to the mitigation plan.

82. Wetland enhancement/restoration activities are proposed in the vicinity of the Homestead Air Reserve Base (HARB). Please provide written correspondence indicating that the HARB or the Federal Aviation Administration (FAA) does not have any concerns with the proposed enhancement in this vicinity.

Section 5.5 – Air Impacts

83. Chemical dust suppressants or equivalent are proposed to control fugitive dust emissions. Please provide the chemical make-up of the dust suppressants to be used and indicate any adverse impacts to natural systems that may result from their use.

Section 6.1.1 – Temperature Effect

84. The document provided states that there will be no adverse impact to the subsurface aquifer as a result of thermal discharge through the injection wells. Please provide the analysis that was the basis for this determination.

Section 6.1.4.2 – Cooling Tower Deposition

85. Salt water blowdown and other plant operations will result in an increase of atmospheric salt. Please define the zone of influence based on predominant winds and identify non-salt tolerant vegetation that may be impacted by the proposal. Please indicate how this impact will be reduced, and potential wetland impacts offset.

86. Based on anticipated atmospheric emission rates and wind patterns, what is the expected pattern of atmospheric deposition of regulated materials on the surrounding area (including Biscayne Bay)? What is the current pattern of deposition of these materials?

Sections 9.4.1.1 and 9.4.1.3

90. These sections indicate that fill material generated from right of way clearing and transmission line construction may be disposed of by spreading over existing uplands. Please revise this proposal to state that this material may only be used for roadway construction, if appropriate. Please indicate how surplus fill generated from project development will be transported off the site and disposed.

III. DEP SED WASTEWATER SECTION

1. Clarify whether the volume of dewatering for the radial well system construction is included with the 26 MGD for the plant site estimates. If not, how much is estimated and show that the CCS can handle the flow.

2. Provide more detail on the Concrete Batch Plant wastewater system (Type I and II Wastewaters), location, and compliance with FAC 62-621.300(3).

3. Provide details on the off-site rock mine and compliance with FAC 62-660.804.

IV. DEP SED GROUND WATER AND UIC COMMENTS - WFA

1. It is understood that disposal of most of the wastewater will be into a Class I injection well system that will be reviewed under a separate but parallel FDEP process, specifically within the UIC program.

2. It is recognized that the ground water plume from the Cooling Canal System (CCS) is being addressed in Conditions of Certification (COC's) X of the Site Certification modification called the "Uprate"project. Currently a revised monitoring plan is being negotiated and a portion of this plan is intended to determine the vertical as well as lateral extents of the plume. Additionally, COC IX addresses increased monitoring of the surface water within Biscayne Bay adjacent to the CCS – and has not been finalized – with the objective to confirm or deny saline influence to the bay by the CCS. However, neither COC X nor COC IX has been affected and more contaminated water (primarily stormwater) is proposed to be directed to the CCS under this SCA. The monitoring plan under negotiation for the Unit 3 Uprate project should also include consideration of potential impacts to the waters of Biscayne Bay from the 6 & 7 project.

3. Contingent upon location of the rock mine, a ground water monitoring plan may be required in view of the unassessed reaches of the aforementioned ground water contaminant plume in order to verify that mining and dewatering operations will not adversely affect the plume.

V. DEP SED WASTE CLEANUP/HAZARDOUS WASTE

1. Pages 3-2, 5-7 and 5-14 describe and Figures 1.4-2 and 3.3.5-3 illustrate the location of an FPL-owned fill source. Currently, land use of this area appears to be agricultural. Please provide the following: information (e.g. "Environmental Audits" or assessments) concerning whether soil, sediments, groundwater, or surface waters have

been adversely affected (contaminated) by the agricultural and farming operations including, among other things, the details of historical and current pesticide usage, identification, including detailed, scaled maps, of current and historical fertilizer and pesticide / herbicide mixing areas in relation to canals and surface water bodies, locations of any above-ground, underground or temporary storage tanks, farming equipment maintenance and storage, petroleum product storage, on-site landfill / solid waste disposal areas, locations and types of any water production wells within a one mile radius of the site boundary (potable, pesticide make-up, irrigation, industrial, etc.), locations and types of surface water pumps and associated fuel tanks, etc. Agricultural water supply wells will need to be properly abandoned if the agricultural operations are discontinued at the Fill Source. Are there any buildings or residential homes on the Fill Source property? Project developers must ensure that all storage tanks, fertilizer storage areas, pesticide/herbicide storage areas are properly closed out and/or abandoned in accordance with Department rules and regulations, see the link below for copies of those regulations.

2. Vicinity road widening projects, electrical corridor and other off-site construction should include field investigation/reconnaissance, of potentially hazardous materials or contaminated areas within one-half mile of the proposed specific project vicinity. The Department will require a plan that would state how potentially any hazardous materials would be handled if discovered during construction activities. Provisions should be made to stage/separate for proper disposal or recycle any solid waste/potentially hazardous materials encountered during construction and excavation (including dewatering). In the event any unidentified wastes are located or if soil/groundwater contamination is discovered, the DEP Southeast District and the Miami-Dade County Department of Environmental Resources Management (M-D DERM) need to be notified.

3. As stated above, in the event contamination is detected during construction, the Department and the M-D DERM need to be notified and FPL may need to address the problem through additional assessment and/or remediation activities. Reference should be made to the most recent FDOT specification entitled "Section 120 Excavation and Embankment -- Subarticle 120-1.2 Unidentified Areas of Contamination of the Standard Specifications for Road and Bridge Construction" in the project's construction contract documents that would require specific actions by the contractor in the event of any hazardous material or suspected contamination issue arises. Depending on the findings of any environmental assessments, there are "off-property" notification responsibilities potentially associated with this project.

4. Page 5-7. What criteria are proposed to be used to define “clean backfill” or determine what spoils material is suitable for use or “proper disposal”? Will the criteria outlined in Chapter 62-777, F.A.C. be used or referenced? Please be advised that on-site disposal of solid waste can only be conducted in accordance with the requirements of

Chapter 62-701, F.A.C. Off-site disposal of waste should only be at permitted facilities, depending on the nature of the waste.

5. Page 5-10, 4th and 5th paragraphs. Hazardous waste determinations in accordance with the requirements of Title 40 Code of Federal Regulations (C.F.R.) Part 262.11, as referenced in Chapter 62-730, F.A.C. would need to be conducted on all waste streams, accumulated sludges, etc. in order to determine proper management, storage, handling and disposal.

6. Based on our experience, the accurate identification, characterization and cleanup of sites requires experienced consulting personnel and laboratory support, management commitment and will likely be very time-consuming. Early planning to address these issues is essential to meet construction and cleanup (if required) timeframes.

7. What specific steps does FPL propose in order to dispose of land clearing debris and construction and demolition debris generated during facility construction? Chapter 62-701, F.A.C. contains regulations governing solid waste management. Department rules and statutes are found on the DEP's Internet Web site: http://www.dep.state.fl.us/legal/Default.htm

8. Staging areas, with controlled access, should be planned in order to safely store raw material paints, adhesives, fuels, solvents, etc. that will be used during construction. All containers need to be properly labeled. FPL should develop written construction Contingency Plan in the event of a natural disaster (e.g. hurricane), spill, fire or environmental release of hazardous materials stored/handled for the project construction. Contingency planning should also include details on how construction and hazardous materials would be safely stored and secured prior to a hurricane or natural disaster.

9. All waste streams (including wastes generated during construction) need to be evaluated for possible inclusion in RCRA Hazardous Waste facility "Florida Notification of Regulated Waste Activities form 8700-12FL" and in biennial reporting, etc.. For more information see: http://www.dep.state.fl.us/waste/categories/hwRegulation/default.htm

10. Page W9-46, Levee Substation. What is the cleanup status for this substation? For example, were there any transformer fluid discharges? Did it undergo remediation during the transformer lead removal project initiated in the 1990's? Have any environmental assessments or source removals been conducted? If so, please provide details. Will other substations need to be upgraded for this project? If so, please provide details of the cleanup status of those facilities.

11. How will the Turbine Lube Oil (TLO) fluids be managed to eliminate the potential for spills, discharges and releases? Please note that secondary containment,

alarms, access for easy visual inspection/cleanup, engineering solutions, etc. for all pipes, conveyances and storage tanks for TLO fluids is necessary.

12. All regulated storage tanks need to be constructed, operated and maintained in accordance with the requirements of Chapter 62-761 or 62-762, F.A.C., as appropriate.

VI. DEP OFFICE OF COASTAL AND AQUATIC MANAGED AREAS (CAMA)

The proposed project is located within the boundaries of Biscayne Bay Aquatic Preserve, as described in Chapter 258.397 Florida Statute (F.S.) and Chapter 18-18 Florida Administrative Code (F.A.C.) and is located in Miami-Dade County.

The Biscayne Bay Aquatic Preserve (BBAP) was established to preserve Biscayne Bay in an essentially natural condition so that its biological and aesthetic values may endure for the enjoyment of future generations. Preservation and promotion of seagrass habitat is specifically named in the 'Intent' of the Biscayne Bay Aquatic Preserve Rule, Paragraph 18-18.001(f), F.A.C. Furthermore, it was the intent of the Legislature upon designating and establishing Biscayne Bay an aquatic preserve, including Card Sound, "…that Biscayne Bay be preserved in an essentially natural condition so that its biological and aesthetic values may endure for the enjoyment of future generations" Chapter 258.397, F.S.

The project is located in the waters of the BBAP, which is a Class III Outstanding Florida Waters, pursuant to Rule 62-302.700(9)(h)5 & 6. This rule states, "It shall be the Department [of Environmental Protection] policy to afford the highest protection to Outstanding Florida Waters and Outstanding National Resource Waters." It defines this as "no degradation of water quality."

BBAP staff has identified several areas of the FPL Site Certification Application that lack sufficient data and/or pertinent information to substantiate claims that there will be little or no adverse impacts to the BBAP, thereby prohibiting any further evaluation of the proposed activities until such information can be obtained. In reviewing the Site Certification Application for completeness, staff cited authority in Chapter 18-18 F.A.C. and 258.397 F.S. that established the Biscayne Bay Aquatic Preserve, Chapter 18-21 F.A.C. that rules Sovereignty Submerged Lands Management as well as the Outstanding Florida Water designation pursuant to rule 62-302.700(9)(h) 5 and 6. Staff also employed Environmental Control 403.509(3)(e) and (f) F.S. which states that "…In determining whether an application should be approved in whole, approved with modifications or conditions, or denied, the board, or secretary when applicable, shall consider whether, and the extent to which, the location, construction, and operation of the electrical power plant will…(e) Effect a reasonable balance between the need for the facility as established pursuant to s. 403.519 and the impacts upon air and water quality, fish and wildlife, water resources, and other natural resources of the state resulting from the construction and operation of the facility" as well as "…(f) Minimize, through the use of reasonable and available methods, the adverse effects on human health, the

environment, and the ecology of the land and its wildlife and the ecology of state waters and their aquatic life."

Each of the questions or requests that follow are categorized under seven categories including Groundwater Issues, Surface Water Issues, Benthic Resources, Aerial Deposition, Cumulative Impacts, Public Interest and Mitigation and can be qualified by the authority cited above.

Groundwater Issues

1. Provide actual data from recent Aquifer Performance Test (APT) to determine potential impacts from construction and implementation of radial collector wells.

2. Provide the model and the model documentation used to develop the conclusions drawn from the APT.

3. Please provide the model and the model documentation used to evaluate groundwater movement, its interaction with the bay bottom.

4. Please provide the actual data, model, the model documentation used to conclude that the construction and/or operation of the borrow pit for fill with not adversely impact Biscayne Bay hydrology.

5. Please provide the actual data from the test drilling and salinity profiling of the aquifer that suggests the proposed activities will not induce saltwater intrusion.

6. Please provide the actual data, model and model documentation regarding the geological structure of the aquifer to support the assertions regarding directional withdrawal by the radial collector wells.

7. Please provide data to support that moderating salinity in Biscayne Bay, an estuary, at all throughout the year maintains Biscayne Bay in its essentially natural condition.

8. Provide mixing chamber data used to generate the "mixing chamber model" that was used to evaluate the potential impacts of the radial collector wells on the salinity regime of Biscayne Bay.

9. What does available data indicate about the extent of the existing hypersaline plume from the cooling canal system and how will it interact with the proposed hydrologic modifications resulting from Units 6 & 7?

10. Provide data to show that water pumped into cooling canals during construction will not move into groundwater and subsequently into surface waters of the aquatic preserve.

11. List the compounds, constituents, and their concentrations found in process and cooling water at time of entry into and exit from the facility

12. Characterize and provide the concentrations of compounds found in all water to be used on site and provide data and relevant information to describe the ultimate fate of these compounds once they are used in the process.

13. Explain how the reuse water from Miami Dade Water and Sewer Department will be treated coming into the plant, what constituents are contained in said reuse water, how the reuse water will be treated further before being used by units 6 and 7.

14. What will remain in the cooling water after treatment of the reuse water from Miami Dade Water and Sewer and what is the ultimate fate of these compounds?

15. How will site construction such as putting in footings and foundations affect movement of surface and ground water into the aquatic preserve?

Surface Water

1. How is removing surface water and/or raising salinity as proposed consistent with restoration efforts by the state and federal governments or consistent with the intent of the Biscayne Bay Aquatic Preserve to maintain Biscayne Bay in its essentially natural condition? This proposed activity is contrary to information found in the Key Findings in the 2005 summary of *Historical Changes in Salinity, Water Quality and Vegetation in Biscayne Bay*, G. Lynn Wingard, USGS, http://sofia.usgs.gov/projects/summary_sheets05/hist_change.html and in the Biscayne Bay Coastal Wetlands feature of the Comprehensive Everglades Restoration Plan.

2. Provide data to support the assertion that onsite dewatering, excavation, de-mucking, and movement of fill around the site will have no adverse impacts on surface water.

3. Provide assurances and the data to support the assertion that there will be no adverse impacts to surface water from operation of the heat dissipation system.

4. How will construction of the on-site cooling water sewage treatment facility and the proposed plant site construction not decrease flow of fresh surface water to the aquatic preserve?

5. What is the characterization and concentration of the constituents that will be in the slurry mixture from construction and dewatering that may adversely affect surface water?

Benthic Resources

1. Provide baseline assessment of vegetative cover, infaunal and epibenthic species in order to determine any impacts of the proposed project's construction and/or operation on benthic resources. If not currently available or incomplete, please describe how such an assessment might be undertaken or completed.

2. Document the presence, distribution and composition of seagrasses extending along the pattern of the radial collector wells and adjacent areas via hyperspectral analysis and groundtruthing. If not currently available or incomplete, please propose a plan for obtaining or completing such documentation.

3. Provide assurances that presence of as well as habitat function and value of submerged aquatic resources will not be disrupted or diminished by the construction and operation of proposed project. To the extent that such assurances are not presently available, please explain how these concerns could be addressed.

4. Provide data to support the conclusion that the benthic resources that currently exist along the bay bottom over the footprint of the radial wells and adjacent areas will continue to support the habitat function and values that they currently sustain. If not currently available or incomplete, please propose a plan for obtaining or completing such data.

5. Provide data to support the assertion that water intake from wells will be at a slow velocity. If not currently available or incomplete, please propose a plan for obtaining or completing such data.

6. Provide data to substantiate the conclusion that no entrainment of vertebrate and/or invertebrate species at any life stage and will occur. If not currently available or incomplete, please propose a plan for obtaining or completing such data.

7. Provide data on the spatial extent of the radial collector wells and related machinery. If not currently available or incomplete, please propose a plan for obtaining or completing such data.

8. Provide assurances that construction will not lead to localized disturbances in the bay bottom at unpredicted sites. To the extent that such assurances are not presently available, please explain how these concerns could be addressed.

9. Provide assurances that the construction and/or operation of the system will not lead to more wide scale disturbances such as loss of vegetation with the associated loss of ecosystem functions due to displacement or burial of biota, placement of material into the surface water or any other cause of disturbance. To the extent that such assurances are not presently available, please explain how these concerns could be addressed.

10. Provide data on the life history of the American Crocodile, an endangered species, in the vicinity of the proposed project to substantiate the conclusion that this species will not be adversely impacted. If not currently available or incomplete, please propose a plan for obtaining or completing such data.

11. As it is defined currently, what is the spatial extent of the transmission line corridor and to what extent, if any, does the transmission line corridor reside on sovereignty submerged lands?

12. Provide assurances to substantiate the assertion that no benthic resources, surface water resources, vertebrate or invertebrate species will be adversely affected by the use of a barge in shallow coastal areas to conduct the construction portion of the proposed project. To the extent that such assurances are not presently available, please explain how these concerns could be addressed.

Aerial Deposition

1. Per figure 6.1.4-1, the radial extent of the aerial deposition extends into the surface waters of Biscayne Bay. Biscayne Bay is designated an Outstanding Florida Water and as such has a no degradation standard. Please quantify by compound the concentrations and loading over time for the life of the plant within the area of proposed deposition.

Mitigation

1. Please explain how the functional lift provided by the mitigation options listed in this application sufficiently address the potential impacts caused by the construction and operation of the proposed facility.

Public Interest

1. No environmental, social, and economic benefit analysis has been provided by the applicant related to its activity affecting the Biscayne Bay Aquatic Preserve. What is the applicant's analysis and what facts does the applicant contend support a finding that "The use, sale, lease, or transfer of interest and the project planned in conjunction with the use, sale, lease or transfer of interest are in the public interest…." per 18-18.006(3)(b)(ii), F.A.C., where "public interest" means the "demonstrable environmental, social and economic benefits which would accrue to the public at large as a result of a proposed action, and which would clearly exceed all demonstrable environmental, social and economic costs of the proposed action" per 18-18.004(20), F.A.C.

2. In providing this public interest analysis, please account for the following: According to a USGS study of salinity (Wingard, 2005) sea level rise should be considered by resource managers when evaluating the future health and salinity regime of the bay: "Sites in both central and southern Biscayne Bay show indications of increasing marine influence at the sites. These trends could be a result of rising sea level, of changes to the natural flow of fresh water or both, but the timing of changes at some of the near-shore sites suggests both factors are involved." Other key findings include implications for resource managers that "Biscayne Bay appears to be evolving toward a more marine environment and sea-level rise should be factored into the planning process." In what way has sea level rise been factored into the plans to operate the facility over an extended amount of time?

Cumulative Impacts

Chapter 18-18.008 F.A.C. states that "In evaluating applications for activities within the preserve, the Department [of Environmental Protection] recognizes that, while a particular alteration of the preserve may constitute a minor change, the cumulative effect of numerous such changes often results in major impairments to the resources of the preserve. Therefore, the Department shall evaluate a particular site for which the activity is proposed with the recognition that the activity is part of a complete and interrelated system. The impact of a proposed activity shall be considered in light of its cumulative impact on the preserve's natural systems. The Department shall include as a part of its evaluation of an activity:

(1) The number and extent of similar human actions within the preserve which have previously affected or are likely to affect the preserve, whether considered by the Department under its current authority or which existed prior to or since the enactment of the Act; and

(2) The similar activities within the preserve which are currently under consideration by the Department; and

(3) Direct and indirect effects upon the preserve which may be reasonably expected to result from the activity; and

(4) The extent to which the activity is consistent with management plans for the preserve when developed; and

(5) The extent to which the activity is permissible within the preserve in accordance with comprehensive plans adopted by affected local governments."

1. In light of Chapter 18-18.008 F.A.C. and the general lack of knowledge about the extent of the hypersaline plume currently generated by the existing cooling canal system and the potential effects of the radial collectors wells on both saltwater intrusion westward and the hypersaline plume eastward, please describe how the long-term effects of the radial collector wells will be documented, monitored and managed adaptively if adverse impacts to groundwater or surface water occur.

2. Because the proposed activity may result in adverse impacts as defined in Outstanding Florida Waters authority, Biscayne Bay Aquatic Preserve rule and statute, as well as 403.509(3)(e) and (f), please provide:

A. A statement of the project's environmental impacts, benefits, and detriments to determine immediate, long-term and cumulative impacts to the aquatic preserve.

B. An analysis of the environmental, social, and economic benefits required per Chapter 18-21.003(48) F.A.C., Chapter 18-18.006(3)(b)(ii) F.A.C. and Chapter18.-18.001(4)(e) to demonstrate that the project will "protect or enhance

the biological and aesthetic values of the preserve..." and demonstrate that the proposed activity is in the public interest.

VII DEP SITING COORDINATION OFFICE

1. Provide a summary and a map of state owned lands potentially impacted by the plant and associate facilities (other than transmission lines).

2. The Department notes that FPL has conservatively estimated the "maximum" wetland impacts for the plant and associated facilities. Provide an estimate of the anticipated "actual" wetland impacts, following anticipated utility efforts to minimize impacts.

3. Provide comparative topographic maps showing the current sea level and predicted sea level in the year 2060 in the area of the Turkey Point Plant based on the most recent data available. Provide a summary of the background data (with citations) used to support the predicted sea level.

4. Provide copies of permits issued for other radial collector well systems, such as Louisville Water Company, Lake Havasu City, Missouri American Water Company and similar. Provide descriptions/information related to existing radial collector well systems utilizing seawater applications.

OTHER AGENCIES/LOCAL GOVERNMENTS

The following agencies have identified the need for additional information, and their requests are attached:

1. the South Florida Regional Planning Council;
2. the South Florida Water Management District;
3. Miami Dade County;
4. the Department of Transportation;
5. the Florida Fish and Wildlife Conservation Commission; and
6. the City of Homestead.

The above agency comments/questions are attached "*as received*" by the Department without editing. It should be noted that several questions proposed are those for which answers will not likely be available until the post-certification phase of the certification process. Additionally, some questions may be reflective of procedural requirements for which there exist no identifiable state or local standards. Furthermore, some agencies appear to have combined questions related to the transmission line and plant portions of the application.

As such, the Department requests that for this completeness filing the applicant respond to only those questions related to the plant and associated facilities other than the transmission lines. Furthermore, the applicant should identify those items which

are more suitably handled through post-certification submittals, proposing related conditions of certification. Lastly, the applicant should identify those questions for which there exists no applicable standard.

Although a separate federal proceeding coordinated by the Nuclear Regulatory Commission will directly incorporate federal reviews, completeness comments regarding the Site Certification Application were submitted by the U.S. Department of the Interior, National Park Service, Biscayne National Park. Those questions/comments were forwarded to the applicant upon receipt.

Requests for completeness items related to federal permit applications are processed directly by the federally delegated or approved program and are not intended to be included herein.

EXHIBIT 6

SOUTH FLORIDA WATER MANAGEMENT DISTRICT

LAN 04-06

January 6, 2010

Mr. Michael P. Halpin, P.E.
Administrator, Siting Coordination Office
Department of Environmental Protection
3900 Commonwealth Boulevard, MS 48
Tallahassee, FL 32399-3000

Dear ~~Mr. Halpin:~~ Mike

Subject: **FPL Turkey Point Units 6 & 7, PA03-45A3**
Site Certification Application
Power Plant & Associated Facilities (Non-Electrical)
Second Completeness Review

South Florida Water Management District (SFWMD) staff has completed its review of the above subject responses. We have identified a number of outstanding completeness items. Prior to listing those items, we have comments pertaining to our review of the related comprehensive plan amendment applications submitted to Miami-Dade County for the proposed roadway improvements and the fill source/water management feature (please note that the SFMWD does not consider the fill source to be a water management feature; however, we are including references to it in our letter since FPL refers to it as such in their application). We also have comments concerning certain statements made by FPL in the responses. In addition, we are providing you with a summary (i.e., our perspective) of the ground water modeling information submitted by FPL on October 9, 2009.

Comprehensive Plan Amendment Applications

Please note that the completeness items contained within this letter are not intended to restrict any formal SFWMD comments, recommendations and/or objections that may be issued on the proposed comprehensive plan amendments associated with this application (for the proposed roadway improvements and fill source/water management feature). During the formal comprehensive plan amendment review process, pursuant to Chapter 9J-5, F.A.C., the SFWMD will perform a detailed evaluation of all water resource-related issues associated with the proposed amendments and will provide its formal comments, recommendations and/or objections to the Florida Department of

Community Affairs (DCA). In addition, please note that our completeness questions/comments and the issues addressed in our agency report, including our recommended conditions of certification, can only address these features as currently proposed. They cannot address changes to these features that may occur after finalization of our agency report as a result of the Chapter 9J-5, F.A.C., review process. Any changes to these features that occur subsequent to finalization of our agency report may require additional completeness review and/or changes to our agency report and our recommended conditions of certification.

Statements Made By FPL in Responses

The following comments apply to two themes recurring throughout FPL's completeness responses: first, that a SFWMD request is outside the scope of a completeness request for additional information and FPL has not been able to identify a regulatory standard requiring the information, and second, that the SFWMD request is premature and seeks information that will not be available or necessary until the post-certification review process.

Regarding to the first item, Section 403.507(2)(a)2., F.S., directs the water management districts to prepare a report as to matters within its jurisdiction, including but not limited to, the impact on water resources, regional water supply planning, and SFWMD-owned lands and works. The SFWMD has broad responsibilities under Chapter 373, F.S., in regard to water resources, and all the information requested is necessary for preparation of an adequate Agency Report. Legal citations for proposed conditions will be provided in our agency report as required by Section 403.507(3), F.S.

Regarding the second item, we need information of sufficient comprehensiveness and quality in order to prepare our agency report and recommend meaningful conditions of certification. The information requested by the SFWMD is necessary for review of matters that should be included in our Agency Report.

Ground Water Modeling Summary

Regarding the ground water modeling information submitted on October 9, 2009, in support of this application, it should be noted that this information was not included in the original application and, therefore, has not been previously reviewed by the SFWMD. Subsequent to submittal of this additional ground water modeling information, SFWMD modeling staff met with FPL staff and modeling consultants to discuss technical issues related to the ground water modeling information submitted. The following summary is based on staff's review of the ground water modeling and the outcome of our meeting with FPL. Please note that the purpose of this summary is to place these issues into proper context with respect to our review of the overall

application. As previously mentioned, specific completeness items related to the ground water modeling are provided further below and are identified by previous SFWMD question number.

The ground water model (built using MODFLOW and the Visual MODFLOW tool) is a steady state, constant density model. It has no water quality features active and does not purport to simulate density dependent flow or salinity changes resulting from any proposed operations or actions. FPL has indicated, in both the responses and in verbal communications with staff, that this tool is limited in use and scope to two specific narrow questions:

1) What is the pumping rate required to dewater the power block area, as described in the application?; and
2) What is the origin of the water pulled into the radial collector well system?

In both cases, according to FPL, the focus of the modeling analyses is on pump induced drawdown, which FPL contends is the basis of the SFWMD's completeness questions. FPL has made no claim to have addressed flows resulting from water with different temperature or density, both of which are factors associated with the proposed project.

The SFWMD has identified a number of issues associated with the modeling that focus on the following aspects of the modeling:

- *Conceptualization and Configuration*
- *Boundary Conditions*
- *Parameterization*
- *Calibration*

Conceptualization and Configuration

The entire model domain is assumed to be constant density and saline. Both of these assumptions are inconsistent with other submitted documentation. The simulation bounds of the model are neither all saline nor are they of the same density. FPL has asserted that the assumption is valid for the type of analyses (pump induced drawdown of flux) conducted. While this may be possible in the narrowest interpretation, it is likely that impacts of density dependent flow or temperature induced buoyancy may dominate in some areas; however, the modeling provided does not afford the SFWMD or FPL the opportunity to examine these situations. Also, it is unusual for a system that is made up of fresh, brackish, salt and hyper-saline water to be generically represented as sea water. While we understand an equivalent fresh water head was used, the impacts of this representation on gradients, stage (heads), simulated drawdown, and flows, as well as conclusions derived from these, need to be further explored and justified.

Boundary Conditions

By utilizing a steady state simulation, the impact of selected boundary conditions will propagate over the entire model. By definition, a steady state is reached when all hydrologic drivers, including those specified at the boundaries, reach equilibrium. This assumption makes the specification of the model boundaries, such as head in the constant head cells that represent Biscayne Bay, very crucial. It is understood that for permitting purposes, non-exact simulations may be acceptable, if they are conservatively estimated; however, a non-conservative estimate (e.g., the water level in Biscayne Bay) could result in under-estimation or over-estimation of pumping rate necessary to achieve necessary drawdown during dewatering. Similarly, a non-conservatively selected stage in Biscayne Bay could overestimate the contribution of this boundary (source) to the radial collection well system. It is typical in these scenarios for extensive sensitivity analyses to be performed to establish the sensitivity of the outcome or conclusions, to erroneous or non-conservatively specified boundary conditions. FPL has applied an average value to the boundary representing Biscayne Bay. This may mask tidal or seasonal trends and is unlikely to represent the critical condition for dewatering or assessing the impacts of dewatering.

Parameterization

In selecting model parameters and applying them to the model cells, FPL has used a homogeneous representation of aquifer parameters in a highly heterogeneous aquifer system. This representation is, along with some unusual layering in the model construct, suspect, and must be tested to ensure that it does not negate conclusions drawn from the model. Specific concerns include the representation of the vertical hydraulic conductivity of the top two layers in the model (1 to 1 ratio for Kh to Kv), the representations of those layers in locations where canals and other surface features intersect the conceptual (or physical) tops of the model layers, as well as the representation of the vertical connectivity in layers that were split for predictive simulations following the calibration. It is important for FPL to demonstrate that the conclusions and determinations based on modeling remain unchanged, with more correct representation of model parameters.

Calibration

The model was calibrated to the results of on-site pump tests (quantitative) and to regional groundwater gradients and flow directions (qualitative). Both calibrations were based on steady state simulations. FPL justified these simulations by the rapid response of the system to the volumes extracted during the pump test. This was further justified by the intent to apply the tools also in steady state. While these justifications

are understood, the calibration remains insufficient and does not represent stresses to the system similar in magnitude to the intended applications. In addition, the conditions used for calibration do not demonstrate the impact of the effect of boundary conditions on the simulation results. Lastly, the model does not include important on-site operations or features present during the pump test that could contribute to the observed data to which the model is calibrated. The foregoing notwithstanding, a review of the calibration results presented show a number of situations where multiple monitoring wells show exactly the same response in the model while they vary in the measured data. This may be suggestive of impacts of a specified boundary or inadequately tuned model parameter. If the variability that is missing is important to the required outcome from the model, then the model may not be adequately calibrated for use.

Additional Completeness Items

The following items need to be addressed in order for the SFWMD to complete its evaluation of the proposed project and prepare its Agency Report:

SFWMD-A-2

(1) The response to this question states that the water management feature will be constructed so that water could be pumped from the SFWMD C-103 Canal to the facility to improve the hydration of adjacent wetlands. Please address the following:
    (a) It appears that the CH2M Hill design report submitted in support of the response considered only historical flows in the C-103 Canal for the evaluation. Has an evaluation been undertaken to quantify the volume of water available from the C-103 Canal in excess of that required for CERP or other restoration projects? Please be advised that the routing of water from the C-103 Canal into the water management feature will require a Diversion and Impoundment water use permit from the SFWMD. Please provide an evaluation that quantifies the volume of water available to the proposed project in excess of that required by CERP and other restoration projects.
    (b) The proposed use of water from the C-103 Canal constitutes a consumptive use as defined in Section 1.8 of the Basis of Review for Water Use Applications within the SFWMD. However, the application does not include information in support of this requested consumptive use. Please provide all supporting documentation and analysis that provide reasonable assurances that the condition for permit issuance, including whether the proposed use is a reasonable-beneficial use, as defined in Chapter 373.019(13), F.S., will not interfere with existing

legal uses, and is consistent with the public interest, pursuant to Section 373.223, F.S. As part of this demonstration, the conditions for permit issuance in Rule 40E-2.301, F.A.C., must be met for the proposed withdrawals from the C-103 Canal and any other consumptive use withdrawals associated with the proposed project. Please note that, based on the information provided regarding the proposed use of water to date, the SFWMD has significant concerns regarding compliance with these statutes and rules.

(c) Reference is made to the use of water to complement wetland restoration efforts on FPL property. Is the requested consumptive use of water from the C-103 Canal necessary for meeting the mitigation requirements of a regulatory agency? Please note that a consumptive use right is issued for a finite period of time and is not a perpetual right to water.

(d) Please provide the analysis used to determine that the mining operation will not breach the preferential flow paths in the aquifer resulting in the accelerated westward movement of saline water.

(e) Please provide an analysis demonstrating the potential impacts to the ecology of Biscayne Bay that may occur from operation of the proposed water management feature.

SFWMD-B-3

(2) What is the abundance and lateral continuity of preferential flow zones in the Biscayne aquifer in the area of the proposed radial wells, including the area shown in red on Figure 52 in the Bechtel report? Please evaluate the adequacy of APT point measurements from drilling sites (versus broader geophysical surveys, such as those performed at the Unit 6&7 construction site) to characterize hydrologic conditions and assess risks associated with the radial well proposal.

(3) In consideration of recent work performed by Cunningham (2004, 2006, 2009) and site-specific investigations, has enough data been collected to confirm the presence or absence of preferential flow zones in the area to be impacted by radial well operations? If present, how were preferential flow zones considered within the modeling calculations? Please provide geophysical data for the region of the radial wells and adjacent to the radial wells and provide improved modeling or a pilot test using tracer results to more accurately evaluate potential radial well construction and operation impacts. In addition, please address the following:

(a) What is the quantitative effect of preferential flow zones, if present, on the exchange of Industrial Wastewater Facility (IWF) water and associated materials between the IWF and Biscayne Bay?

EXHIBIT 6

(b) The response addresses the concern for voids as they relate to collapse hazard for structures. However, this question also requests additional information concerning preferred flows and flow paths resulting from secondary porosity. Please address this question as it relates to groundwater flow; specifically, the potential for preferred flow that could extend the field of impact of on-site activities well beyond the immediate vicinity of the site.

(c) Please provide a copy of the referenced report "Geohydrologic Conditions Related to the Construction of the Cooling Ponds by Brown and Root (Page 26 of 88, Bechtel Modeling Report).

SFWMD-B-4

(4) Were the findings based on the MACTEC data referenced in the response to this question incorporated in the ground water modeling for the site? Was the selection of the modeling tool used for this effort based on (or consistent with) this knowledge? Was secondary porosity considered in the ground water modeling submitted for this project? If not, do the conclusions reached in this application remain unchanged?

SFWMD-B-6

(5) Two test zones characterized by macroporosity were identified for the testing program in the Key Largo Limestone and Fort Thompson Formation. Were these zones identified in both the Turkey Point and Unit 6 & 7 test areas? If so, are they laterally continuous between the two locations? Drilling logs for soil borings advanced at Turkey Point and the Unit 6 & 7 test areas consistently identify a zone of lost circulation encountered between approximately 20 to 34 feet in depth. Is this zone representative of the upper macroporosity zone referenced?

(6) The response states that no "large vugs or cavities" were observed in the acoustic televiewer data for Units 6 & 7, and locations of vuggy and weathered zones on televiewer correspond with increases in measured borehole diameter and suspension P-S velocity drops. A review of the acoustic televiewer log for B-701 indicates several apparent cavities at the following depths: 24 to 26 feet; 46 to 48 feet; 65 to 67 feet; 68 to 70 feet; 82 to 86 feet; and 95 to 99 feet. Please describe in quantitative terms what constitutes "large vugs or cavities"? How are they distinguished from the referenced vuggy and weathered zones? Would large vugs and cavities not also be characterized by increases in measured borehole diameter and suspension P-S velocity drops?

(7) The response provides a range of porosity characteristics for the site. While not relevant in steady state modeling, have the characteristics of aquifers with porosity in this range been considered in the implementation and parameterization of the existing model? The information provided in response to this question indicates that consideration of secondary porosity and preferred flow paths is essential for a model of this site. Has FPL conducted sensitivity analyses or additional simulations with conservatively selected parameters to assess the potential impact of preferred flow paths on model results and conclusions?

SFWMD-B-10

(8) The response suggests that the gradient reverses past the interceptor ditch in the dry season. Is the gradient westward at any time east of the interceptor ditch? Is this consistent with the intended operation of the interceptor ditch? Please clarify. Is there field data to confirm this observation?

SFWMD-B-11

(9) The response acknowledges that a decrease in water level west of the location of the salt water interface can cause movement of the interface. Similarly, an increase in water level (potentiometric surface) east of the interface could drive movement of the interface. Please provide supporting data or analyses (including modeling) to demonstrate that this project, including the planned discharge of upwards of 30 MGD to the cooling canal system, will not increase the potentiometric surface or induce movement of the salt water interface or hyper-saline water from the site.

SFWMD-B-15

(10) The response states that the Water Use Basis of Review (BOR) is not applicable due to withdrawal of saltwater via the radial wells. Saltwater is defined in Section 1.8 of the BOR as groundwater or surface water with a chloride concentration at or above 19,000 mg/L. The original hydrologic characterization, as submitted, states that almost all of the water withdrawn from the radial collector wells will be recharged from Biscayne Bay. The response to this question assumes the salinity of the Bay to be above that of seawater at all times and that the three dimensional ground water model supports the Bay as the primary source. The statements made in the response appear to be inconsistent with the water quality sampling results presented in the HDR report, "Turkey Point Exploratory Drilling and Aquifer Performance Test Program, August 19, 2009", for monitoring wells MW-2 through MW-5 and the pumping well PW-1, collected on February 17,

March 18, and April 5, 2009 (Appendix G-2), for the APT. The chloride concentration observed in these wells decreased and was below that of seawater at all locations during the APT and ranged between 17,500 mg/L and 18,600 mg/L, suggesting that saline water, as defined by Section 1.8 of the BOR, from the near-shore environment, will be withdrawn by the radial wells. Additionally, the fluid conductivity graph for MW-1SS (Fig 6.3), screened from 12.7 to 17.7 feet, exhibited salinities of around 20 to 23 PSU, prior to and during the APT, well below the salinity of seawater (approximately 32 PSU). Please address the following concerning the ground water modeling and the APT:

(a) The vertical hydraulic conductivity of the layer directly below the constant head boundary condition representing Biscayne Bay is specified as equal to the horizontal hydraulic conductivity. The ratio typically used in literature is 10:1 while the ratio used in this model is 1:1, allowing higher flows downward from this fixed head that represent the bay. In addition, the hydraulic conductivity of the aquifer in which the radial wells are completed is not conservatively selected nor does it reflect the preferred flow due to secondary porosity indentified in several parts of the submittal. Please provide additional information, including sensitivity analyses, on the hydraulic properties below the Biscayne Bay boundary and the hydraulic properties of the layer in which the wells are completed to show a range of possible outcomes. Also, please provide particle tracking results showing the flow paths to the radial wells, consistent with the drawdown provided in the modeling report (Bechtel, 2009). Please provide particle tracking results depicting backwards tracking from the location of the radial wells as well as forward tracking from locations at and proximal to the cooling canal system and Biscayne Bay in order to confirm the contribution to the radial wells from different parts of the model domain. Please provide confirmation of the claimed source of flow to the radial wells through model results demonstrating the impacts of preferred flow paths using MODFLOW package such as the US Geological Survey Conduit Flow Process for MODFLOW (Shoemaker, W.B., Kuniansky, E.L., Birk, S., Bauer, S., and Swain, E.D., 2007, Documentation of a Conduit Flow Process (CFP) for MODFLOW-2005: U.S. Geological Survey Techniques and Methods, Book 6, Chapter A24, 50 p)

(b) The issue regarding the potential migration of the brine from/underlying the cooling canal system towards Biscayne Bay, as a result of operation of the radial wells, was not addressed. The modeling concluded that 97 percent of the water is coming from Biscayne Bay, mainly from the Constant Head Cells located immediately above the simulated radial wells.

(c) A review of the model layering indicates that the upper layers in the model slope upwards and thin from east to west as they approach the various surface water features and canals at the existing site. In addition, the upper layers appear to collapse to the bottom of these canal systems. The river package of MODFLOW provides or removes water from the model based upon, in part, the properties of the layer it is assigned too. Were the aquifer properties modified to reflect that the base of the canal is in the Key Largo or Ft. Thompson formations? If not, what is the rational for this approach?

(d) The simulated cross-sections at the SFWMD L-31 Canal and the E-6 Canal do not match available data. Please correct. The SFWMD L-31E Canal is only 10-12 feet in depth and is simulated as significantly deeper. The canal furthest to the east (E-6 Canal) is shown in the Ray Lyerly cross-section (1976) plans as -21 ft NGVD (cross section D) while it is shown and modeled at the same depths as the shallow area in Canals C1 to C-32. Additional data indicates that the canal joins the Grand Canal where it deepens to -28 feet NGVD.

(e) The response states that the simulation of the radial wells requires that the Key Largo Formation be split into multiple layers. Were the anisotropy and hydraulic conductivities of these new layers modified as a result of this?

(f) It does not appear that the model includes the intake pumps for the existing plant. How was the observed head near the intake pumps simulated, considering that the data provided shows a significant head reduction near the intakes?

(g) The model concludes that the majority of the water is coming from the constant head cells above the radial collector wells. Figure 5.7 of the HDR report indicates that water levels in both the cooling canals and MW-5 drop to nearly 6 feet below sea level by the end of the Turkey Point APT. These two sites are separated by the Barge slip which is connected to Biscayne Bay and does not show a corresponding reduction in levels, perhaps suggesting that the horizontal flow is greater than indicated by the model. Please provide an explanation for these observed stages at MW-5 and IWF. Please explain why the model does not appear to be able to match the observed levels at those two sites, considering that these sites were omitted from Table 5 of the HDR APT report.

(h) The water quality from the monitoring sites shown in Figure 6.3 of the HDR report shows a rise in salinity from just before the beginning of the APT through the APT for the industrial wastewater facility and the Barge Slip. MW-1 SS is also acting erratically; however, it tends to show increasing salinities during the same time period. FPL concludes

from the modeling that 97 percent of the water is coming from Biscayne Bay, which appears to be hyper-saline at the time of the test. The remaining monitoring wells do not noticeably reflect this trend, with the possible exception of MW-4, which is adjacent to the industrial wastewater facility. Please provide an explanation as to why noticeable changes in salinity were not observed during the APT as recorded by the Aqua Troll Data.

(i) No analysis was provided which indicates the degree of movement from the hyper-saline water in and underneath the cooling ponds as a result of the operation of the radial wells. Please provide an analysis of the degree of movement of this denser water. A solute transport model may be required to address this issue.

(j) Please provide the modeling results that show that the calibrated model adequately simulates the additional aquifer performance test results conducted at the Units 6 & 7 site for the other test wells, aside from the well 7L test.

(k) Given modeling uncertainty regarding broad-scale effects and local evidence in the HDR APT report of the presence of groundwater with lower salinity than in Biscayne Bay, please re-evaluate the effects of radial well construction and operation on freshwater resources and Outstanding Florida Waters within Biscayne Bay.

(l) Please provide laboratory reports for the water quality sample results shown in Table 6.1 and Appendices G-1 and G-2 of the HDR report.

SFWMD-B-19

(11) The response refers to Table 3.3.4.2. This table does not list salinity or specific conductance and only provides an "average" value and "maximum" value. It does not state how many locations, sampling events, or periods of record associated with these summary values by these values. Please provide the previously requested data (rather than just a single average) pertaining to salinity within the Industrial Wastewater Facility.

SFWMD-B-20

(12) In selecting the model parameters, was accommodation made for secondary porosity observed during drilling?

(13) The information provided contains only a qualitative description and does not contain any geotechnical information, as previously requested, to support the statements made. Please specify the basis for stating there are no direct connections to Biscayne Bay. Please provide the geotechnical information

requested to support the statement that the area is isolated and does not connect to the Bay. If this conclusion is based on the presence of culverts draining to Biscayne Bay and no site specific geotechnical information is available, then please state accordingly.

SFWMD-B-24

(14) Mixing scenarios for 100 percent reclaimed water, 100 percent saline water, and 50 percent reclaimed/50 percent saline water are provided. FPL indicates that an adequate volume of reclaimed water will be available beginning in 2018. What is FPL's contingency plan if reclaimed water is not available for the provided scenarios?

SFWMD-B-26

(15) Please explain the finding by Genapure of very high phosphorus and zinc concentrations and low pH during the APT test (TP = 0.956 mg/L in well sample MW1-D2 P1/ on 3/17/09; TP=0.702 mg/L in SP1 on 3/17/09; Zn = 7.27 mg/L in PW-1/ on 4/13/09; Zn = 0.024 mg/L in PW-1 on 5/5/09; pH = 7.01 in PW-1 on 4/13/09).

(16) Please explain the apparent inconsistency of specific conductance and salinity results from the APT reported from Aqua Troll measurements (with near marine values reported in Figures 6.2 and 6.3 of HDR APT report) and much lower conductance and salinity results reported from some of the same times and sites by Genapure in the HDR report. Genapure reported conductivity (in μmhom/cm) of 17,300 in MW1-D2 P1 on 3/17/09, 17,600 in SP-1 on 3/17/09, and 15,500 in PW-1 on 5/5/09. Aqua Troll results from well MW-1 (a well where significant "mud loss" occurred during drilling) also exhibits relatively low salinity. Please address the implication that a relatively low salinity water source (either existing low salinity estuarine water or freshwater mixed with higher salinity water during the APT) was intercepted and affected by the APT.

(17) Stable hydrogen (deuterium) isotope ratios in PW-1 reported by HDR (APT report) were much lower than values found in Biscayne Bay waters and also exhibited a trend of increasing ratios during the APT. This may indicate the withdrawal of water sources other than Biscayne Bay and possibly a fresh water source. This finding appears to contradict FPL's modeling estimate that Biscayne Bay water will provide 97% of radial wells withdrawals. Please explain these findings.

(18) Please provide digital raw data files for all Aqua Troll physical data (temp, conductivity, etc) from the APT, including from PW-1, monitoring wells, and surface water sites (including Biscayne Bay, IWF, and Barge Slip). Please note that the HDR report provides graphs (Fig. 6.2, 6.3) showing salinity from most monitoring sites; however, production well PW-1 is not included. Please provide.

(19) Please provide all raw seepage meter data in an Excel format collected during the radial well APT at Turkey Point.

(20) Where is site SP1?

(21) The HDR summary stated that: "The horizontal groundwater flow pattern at the site prior to the APT was evaluated by plotting the groundwater elevation contours of a base map of the site. The water levels on February 25, 2009, representing a high tide, and on March 1, 2009, representing a low tide, show that groundwater flow is generally to the west toward the Industrial Wastewater Facility." What wind vectors were measured on those two days? How would the stated conclusions, as well as FPL inferences regarding groundwater flow and radial well water sources, change if other days of the year had differing patterns?

SFWMD-B-27

(22) Please provide the elevation survey that shows that the radial well construction site is "a few feet above high tide" and that ground surface elevations are typically 2.5 to 4.5 ft NAVD". Please provide data regarding long-term bay surface elevations to support FPL's conclusion that the site would be submerged (and susceptible to erosion) only during "a significant storm event".

SFWMD-B-29

(23) As previously requested, please provide specific core test data pertaining to waste characterization in the muck referencing those constituents from Table 4.6-1, including radiological data. In addition, please provide laboratory or other data regarding potential contaminants in the muck.

(24) Please provide the location for the one muck test performed in 2008 for common or structural backfill. Please provide information on any other testing performed on this sample. Please indicate the number and locations of samples collected in 1976 and all other testing performed on this sample. Is the information provided an average of all samples, or an example of 1 test result?

EXHIBIT 6

(25) Please address the following for the previous subsections to this question listed below:

(a) Please specify the timeframe in which additional protection, such as rip-rap, will be installed along the perimeter to provide erosion protection for stored muck. What additional measures will be taken after installation of temporary sheet piling during the hurricane season (June-November), or in the event of a storm or storm watch conditions, to ensure adequate protection is provided? What monitoring measures will be taken to ensure that any additional protections utilized are adequate to prevent erosion and ensure there is no interaction via ground waters or adjacent surface waters (wetlands and Biscayne Bay)? Regarding the reference to SFWMD B-40, please note that the response to this question is also incomplete.

(b) With respect to the industrial wastewater facility, a groundwater plume is known to exist. The plume extends past the G-III boundaries. The potential exists for contaminants within the industrial wastewater facility to enter surrounding groundwater and the surrounding surface waters, including Biscayne Bay. Materials currently within or directed into the industrial wastewater facility do not remain contained within the facility. What measures are proposed to contain the wastes within the permitted industrial wastewater facility? The statement concluding "adverse impacts to the water bodies of Biscayne Bay and the surrounding wetlands would not be expected and no monitoring is required" is not supported by the information and known site conditions.

(c) Please provide the radiological materials testing, as previously requested.

(d) Please provide the specific properties that would make muck suitable for reuse (other than for structural applications), as previously requested.

(e) The response only indicates the proposed location of the muck material. Please specify the disposal methods that will be employed including, but not limited to, handling and moving, erosion protection, storm events, high wind events, runoff events, management, testing of nutrients and other contaminants that may cause adverse impacts if in contact with surrounding environments, and measurements and verification procedures to demonstrate that no impacts to any surrounding areas will occur.

(f) Please provide the specific location, dates and types of analytical methods and procedures used to obtain the values shown in all 3 tables in this response. What is the specific basis for the assumption

that the information provided will be applicable to the muck that will be excavated throughout the Turkey Point plant site?

(g) The conclusion that "the locations of the storage areas are located within the industrial wastewater facility so there will be no impacts outside this facility" is not adequately justified. The industrial wastewater facility has a known groundwater plume, groundwater exchange with Biscayne Bay, as well as a potential for interaction with surface waters. Please address the concern that nutrients (including dissolved organic nutrients) and other materials derived from 1.8 million cubic yards of muck (subject to decomposition and leaching via rainwater) will enter Biscayne Bay and other adjacent areas and potentially cause ecological impacts.

SFWMD-B-30

(26) The response does not address the question. Please provide the information previously requested. Given the addition of about 21,000 gpm of dewatering effluent to the Industrial Wastewater Facility (IWF), how will this affect the exchange of water and materials between the IWF and adjacent areas including, but not limited to, Biscayne Bay? Based on sampling and chemical analysis of the construction site, please provide an estimate of the likely quantity of associated material (nutrients, organic carbon, salts, sulfide, contaminants, etc.) that will be routed to the IWF.

SFWMD-B-34

(27) The response does not address the question. Please provide the information previously requested.

SFWMD-B-35

(28) The responses to subsections (a) and (c) do not address the questions. Please provide the information previously requested. The response to subsection (b) refers to the response to FDEP-VII-4; however, that response only provides information on the existence of other radial well systems (with associated permits) and does not provide information or documentation regarding environmental effects. Please provide information from those sites that is relevant to an application in Biscayne Bay (e.g. karst systems with shallow water bodies supporting submerged aquatic vegetation habitat).

SFWMD-B-36

(29) The response to FDEP-VI-C-4 is referenced. The FDEP response states: "The extremely low recharge velocity induced by the radial collector well withdrawals will not result in significant adverse impacts to benthic resources near the radial collector wells or anywhere else in Biscayne Bay." This response is based on the Bechtel groundwater modeling estimates. Please provide additional information to address the following concerns:

(a) What is the likelihood that vertical conduits, such as solution cavities or solution enhanced fractures, will "short-circuit" the predicted relatively slow and even vertical transport of Biscayne Bay surface waters into the radial wells? What effect would such vertical conduits in the overlying strata that are hydraulically connected to laterally continuous zones of high hydraulic conductivity have on flow velocities at these surface sites and on sediment and biotic entrainment? Please provide geophysical data to address this concern.

(b) The radial wells are estimated in the Bechtel report to result in water flow velocities of up to 0.00056 cm/s at the Biscayne Bay sediment-water interface. This vertical flux can impact seagrass bed productivity and viability because it would advect porewaters in the root-zone of seagrass beds downward, replacing nutrient-rich water that is necessary for seagrass growth, with lower nutrient surface water. Please address. Please note that these rates (with porewater replacement time of less than one day) are far faster than diagenetic processes that regenerate nutrients (buried organic matter can be expected to decay on the magnitude of 1% per day). In addition to nutrient availability, other aspects of rhizosphere chemistry and microbial ecology (e.g., temperature, redox status, sulfice concentrations, microbial interactions) could be altered that could negatively affect plant physiology and growth. Please provide an analysis of this issue, including the results of experimental or modeling tests estimating the range of potential radial well effects on Biscayne Bay benthic habitat.

SFWMD-B-39

(30) Regarding the response to subsection (b), the efficacy of turbidity curtains depends upon local wave energy. Given the open waters around Turkey Point, they would not likely be effective at times when the potential for erosion is greatest (with wind and waves). Please provide additional detailed information on plans to prevent such erosion. In addition to controlling particle movement, how will the construction area be configured to minimize the discharge of dissolved materials (including nutrients and sulfides) to adjacent waters?

EXHIBIT 6

SFWMD-B-40

(31) Please explain/justify how the other information referenced in response to this question directly answers the question previously posed. Please substantiate the conclusions presented on page 29 with all available supporting data, rather than just modeling predictions and estimates.

(32) The response includes statements that "there is no evidence that water from the Industrial Wastewater Facility (IWF) flows to surface waters, including Biscayne Bay" and "there is no reason to believe there would be impacts to surface waters associated with construction dewatering at the Unit 6 & 7 site". Arguments are presented to support these statements; however, insufficient information is considered in these arguments. The response focuses on net groundwater flux from Biscayne Bay and the IWF, ignoring that very large water fluxes move both from the Bay to the IWF and from the IWF to the Bay. The Bechtel hydrologic modeling report estimates that this input to Biscayne Bay is about 4,000 acre-feet per month, equivalent to about 30,000 gpm (more than the estimated input to the IWF from dewatering the Unit 6&7 site). Given that concentrations of salts and wastewater contaminants are much higher in the IWF than in Biscayne Bay, there is almost certainly a large gross flux of these materials from the IWF to the bay and a resultant net flux in this direction as well. Additional materials will be added to the IWF from dewatering activities and muck storage. Please address the original question, considering gross fluxes of water and materials and resultant net flux between the IWF, Biscayne Bay, and other adjacent areas.

(33) The response states that average water levels in the return canals must be at or below local sea level, and that water must flow from the east through the surficial aquifer into the IWF (based on evaporation and a net groundwater inflow). Are these statements accurate, considering outgoing tides and the southern end of the IWF where water elevations are approximately equal to sea level?

(34) The response states that any outflow from the IWF to the underlying G-III aquifer must occur from the western distribution canals. Does this statement consider the potential for hypersaline water in the return canals to flow vertically downward?

(35) The response states that there is no reason to expect that water flowing out of the IWF will flow back up to Biscayne Bay, or any other surface water. Does this statement consider the upward hydraulic gradients evidenced in the following well pairs in the Units 6 & 7 footprint: OW-606U& L, OW-621U&L, OW-706U, OW-721 U&L, OW-735-U, OW-802U, OW-805U, and OW-809U, listed in Table 1 of the Bechtel (2008) report? The report states (page 5) that "the well pairs

consistently show an upward hydraulic gradient. An upward hydraulic gradient indicates groundwater flows from deeper to shallower depths". The FPL response to SFWMD-81(c) explains that the upward gradient is likely due to extracting cooling water from the return basin that is hydraulically connected to the same hydrogeologic unit as the upper zone wells. The well pairs are approximately one-half to one-mile south of the intake basin. What is the influence of extracting cooling water on vertical gradient in the Biscayne aquifer to the east of the IWF, below Biscayne Bay and intertidal areas that are closer to the plant intake than the listed well pairs?

(36) Figure 5.7 of the HDR (2009) report shows that the water levels in the industrial wastewater facility (IWF) monitoring station and MW-5, outside the IWF, dropped significantly and closely tracked one another during the APT test period. Was this the result of pumping during the APT, extraction of cooling water from the return basin, or some other process? Is this indicative of hydraulic connection between the IWF and MW-5? If so, could an upward gradient be expected beneath MW-5 during cooling water extraction? Please provide the report graphics and data shown in Figure 5.4, 5.5, 5.7, 6.2, 6.3 and Appendix E in an electronic Excel format.

(37) Please provide the manual field measurements/verification values (tape downs) on monitor well MW-5 graphic Figure 5.1 in the HDR APT report.

SFWMD-B-42

(38) Regarding the response to subsection (a), will the proposed discharges require a modification of the existing permit? If not, will these discharges be addressed in any other permit?

(39) Regarding the response to subsection (b), please provide the specific characteristics of the wastewater discharges that will be directed into the cooling canal system. Please provide the estimated time-frames and loadings of all nutrients and other constituents that may be temporarily directed into the cooling canal system during construction. Please use site-specific data in your calculations. Please also include potential storm loadings in your estimates and any and all assumptions used in your calculations.

(40) Regarding the response to subsection (c), the conclusion that "there is no reason to believe that construction-related wastewaters that are released to the industrial wastewater facility would impact Biscayne Bay" is not substantiated, as referenced herein or elsewhere in the information that has been provided. Given the known occurrence of the groundwater plume flowing out of the G-III aquifer

from the industrial wastewater facility and the potential interaction with surrounding waters, including surface waters, the conclusions reached in the response are not substantiated. Please address.

SFWMD-B-43

(41) Please provide the information previously requested for subsections (a), (b), and (c).

SFWMD-B-44

(42) Review of the submitted ground water modeling shows that the parameters (vertical hydraulic conductivity) used for simulations to estimate the pumping rate necessary to achieve the required drawdown during dewatering is non-conservative and may yield a pumping rate significantly lower than is required to dewater to the desired depths. Please demonstrate, through modeling, how this volume of water will be discharged and what impacts to the groundwater system will occur as a result of discharging this volume into the cooling canal system. In simulating key features of the dewatering, such as the location of the base of the cut-off wall and the base of the excavation, changes were made to the layering of the calibrated model. Please demonstrate that these changes do not alter the model behavior and results. Please demonstrate that retaining the anisotropy ratio for horizontal and vertical hydraulic conductivity in the split layers does not result in an underestimate of the upwards flow of water and pumping rate required to dewater the pit.

(43) How many estuarine acres are within the zone of influence of the radial wells, as shown in red on Figure 52 of the Bechtel report? What is the proportion in the Biscayne Bay Aquatic Preserve and Biscayne National Park?

SFWMD-B-45

(44) The response to SFWMD-B-40 acknowledges that the hydrologic exchange between the industrial wastewater facility and Biscayne Bay is tidally driven; however, the Bechtel groundwater modeling assumes constant sea level (based on June-December average). Note that average January-May water levels in Biscayne Bay are about 0.5 feet lower than June-December levels. How will the inclusion of tidal variations, including diurnal and seasonal sea level fluctuations, affect hydrologic modeling conclusions? How will this affect conclusions regarding radial well water sources and operational effects?

SFWMD-B-46

(45) Please provide a copy of the referenced report: "The Turkey Point Cooling Canal Study" (Ray Lyerly, October, 1998).

(46) FPL acknowledges the cooling canal water elevations will be, on average, approximately 0.21 ft higher in elevation during dewatering operations after discharge of this water into the cooling canal system. Please provide the following:

(a) Information describing how these higher heads in the cooling canal system will not cause a violation of the gradient criteria in the current monitoring agreement. The current monitoring agreement requires the control water elevation of the cooling canal system to be maintained below 0.2 feet. Is increased operation of the Interceptor Ditch pumping system anticipated to overcome this implied increase in the cooling canal system water level?

(b) The change in head within the cooling canal system for discharging the initial estimate of 31 MGD for the duration of dewatering and for the range of likely pumpage rate to achieve dewatering from a more conservative choice of aquifer parameters, including vertical hydraulic conductivity and parameters derived from it for the various layers in the model.

(c) An analysis of the potential movement of the saline interface westward and northwestward as a result of the increase of the head 0.21 feet higher in the hyper-saline environment of the cooling canal system.

SFWMD-B-47

(47) Please provide a schematic showing areas proposed to be filled, including the proposed fill elevations.

SFWMD-B-48

(48) How much deeper will the barge canal be after dredging? How will dredging affect the exchange of water and materials between the industrial wastewater facility and the barge canal? What is the magnitude of this exchange currently? Please provide information on the chemical constituents within the material that is proposed to be dredged and stored on the banks of cooling canals. Please estimate leaching rates and expected fate (rate of transport out of the industrial wastewater facility to adjacent areas).

SFWMD-B-49

(49) Please provide the details of the proposed BMPs, as previously requested.

SFWMD-B-50

(50) Please provide detailed information to support the conclusion on page 5-22 that "no impacts are expected as a result of construction of radial wells on the Turkey Point peninsula".

SFWMD-B-51

(51) The response does not clarify whether the unnatural continuous downward flux of water, as might be produced by operation of the radial well system, would impact benthic organisms adapted to normal tidal oscillatory fluxes. Please address.

SFWMD-B-53

(52) Please provide the location, including page number references within the cited report, that contain the specific information requested by this question and to which the other references, such as salinity data, are made. Please specify how the information provided or referenced specifically answers this question. The referenced table (Table 3.3.4-1) does not show the "water quality characteristics of the potentially affected areas adjacent to the project site." Please revise.

SFWMD-B-55

(53) The information referenced in Section 6.1.3.1 is not adequate to address this question. Please provide the model documentation, calibration, and sensitivity analyses.

SFWMD-B-56

(54) Please provide the data and analyses to support the statement that the "average salinity in the area of Turkey Point is 34 ppt and ocean water is 35 ppt" (the correct units should be psu). What is the areal extent of the "Turkey Point area" that is referenced in this response? Please be specific and indicate the area referenced in this question on a figure. What are the monitoring data used to support the determination of the average of the Turkey Point area and the reference for average ocean of 35 ppt? Is this average Biscayne Bay ocean or average ocean value? What is the statistical significance level in the difference between 34 and 35 (psu). Please be specific and support your conclusions with specific technical analyses (if FPL is asserting that the Turkey Point area has a mixoeuhaline salinity).

SFWMD-B-57

(55) Please provide more recent estimates of groundwater flow into Biscayne Bay. Please note the variability in the various estimates. As a reminder, SFWMD staff provided FPL with this information in 2008 during the development of a monitoring plan for the Units 3 & 4 Uprate project.

SFWMD-B-58

(56) Please verify the correct usages of ppt and psu in the application and the responses. Although the two expressions are sometimes interchanged, they represent different measurements.

SFWMD-B-60

(57) Based on the information provided, the analyses could not be verified. Please provide the missing ground water model documentation and sensitivity analyses (see also SFWMD B-63). What is the basis for the statement that this change would have "no adverse impact on the estuarine biota that would be acclimated to salinity between 13 and 40 ppt"? Please indicate which estuarine biota reside in the area and are acclimated to the salinity range of 13 - 40 (psu). Please be specific. Please provide the studies that demonstrate this acclimation.

(58) Please analyze salinity at station BISC 122 and re-evaluate calculations based on BB41. BISC 122 is the closest near-shore station to Turkey Point and is not directly influenced by regional drainage canals.

SFWMD-B-61

(59) Attachments SFWMD-B-63b and c are relevant to this question; however, they do not explain the origin, assumptions, and interpretation of the spreadsheet information shown. As previously requested, please provide a copy of the working model, including supporting data/documentation.

SFWMD-B-62

(60) Based on the information provided, the analyses could not be verified. Please provide the missing model documentation and sensitivity analyses referenced in question SFWMD-B-63.

SFWMD-B-63

(61) Attachment SFWMD63(a) could not be located. Please provide.

SFWMD-B-64

(62) Were sensitivity analyses performed to establish that selected parameters do not result in underestimation of impact? Was the impact of using an anisotropy ration of 1:1 for the horizontal to vertical hydraulic conductivity instead of the more typical 10:1 ratio examined to establish how the conclusion would change as a result of this parameterization choice?

SFWMD-B-65

(63) Please provide all data and analyses showing projected salinity increases to waters, including nearshore waters, littoral zone Biscayne Bay waters, and wetland waters as a result of cooling tower deposition. Please include the area covered by the modeling performed, all input data used, and all assumptions, including those assumptions regarding the percent use of the treated reclaimed water and saltwater from the radial wells. Was deposition from the maximum proposed amount of radial well use simulated?

(64) Please address the following concerning the table entitled "Deposition rates and concentrations resulting from treated reclaimed water and saltwater":
- (a) What is the areal extent that pertains to the information provided in the table as part of the response (i.e., what area does the information cover)?
- (b) What is the time period used to generate the numbers on the table?
- (c) How was the background number obtained? Please provide all assumptions, calculations or measurements (including locations) and data used to generate the background numbers shown on the table.
- (d) The references provided in the notes to this table could not be located. Please provide.

SFWMD-B-66

(65) The referenced figures (FDEP- II B-53-1) could not be located. Please provide. Please quantify potential migration into the subsurface groundwater. Please provide specific information or calculations as to where the drift deposited salt may potentially migrate on an annual basis. Please also provide a seasonal analysis to compare the difference between wet season and dry season. Will the drift materials stay in place and accumulate over time? Does the potential exist

for drift material to migrate into the subsurface groundwater and/or enter surface waters? Please provide a quantitative response.

SFWMD-B-67

(66) Is there any potential contact of cooling water with radiological components at any time during the cycling of the cooling water through the power plant facility to the cooling water towers? Is there any chance the cooling water may contain radiological components?

SFWMD-B-68

(67) Please provide documentation concerning ecological impacts to all aquatic biota in mangroves and Biscayne Bay. The discussion provided in Section 6.1.4 includes a very limited subset of aquatic biota (the mangroves) and does not address this question. In addition, please provide the increase in salinity and the reference data and information, as previously requested.

SFWMD-B-69

(68) Please document the pre-construction conditions of all adjacent areas that could potentially receive drift material. Please include all monitoring and testing data available for soils, waters, flora and fauna, including any recent monitoring. The referenced response to FDEP-VI-C-1 only addresses data collected for benthic monitoring within Biscayne Bay. It does not address the wetland areas that could potentially be impacted by the cooling tower deposition.

SFWMD-B-70

(69) Please provide the specific pages in the referenced report where the data to address this question is located. Please note that additional information may be requested following the completion of testing at the underground injection well site.

SFWMD-B-76

(70) Please provide the missing portions of the MACTEC report, as previously requested.

SFWMD-B-81

(71) Regarding the response to subsection (b), please provide data from regional monitoring wells justifying the statement that the density of groundwater in the plan area (i.e., pertaining to the domain of the groundwater model, including Biscayne Bay), is "relatively constant".

(72) No variable density modeling results have been provided for this project, although density differences due to salt concentration and temperature are prevalent in the project area. Please provide any density dependent flow and transport modeling conducted for this project.

SFWMD-B-83

(73) The response does not address the question. Please provide the information previously requested.

SFWMD-B-84

(74) The response does not address the question. Please provide the information previously requested.

SFWMD-B-87

(75) The groundwater model and model documentation suggests low drawdown impact in the proximity of the proposed dewatering activities. Please provide parameter sensitivity analyses to demonstrate the sensitivity of the conclusions to the selected parameters.

SFWMD-B-89

(76) Please address the following pertaining to Table 3 of the Bechtel (2009) report:
- (a) The Model Calibration parameters show the vertical hydraulic conductivity for the Miami Limestone as equal to the horizontal hydraulic conductivity. Considering the semi-confined nature of the formation (and the solution used in analysis of the APT data) and vertical K values, as discussed in the HDR (2009, p. 5-5 to 5-7) report, and the published findings of aquifer heterogeneity within the Miami Limestone (Technos, 2009, Appendix A), how is a ratio of 1:1 justified in the numerical model?
- (b) Please provide the Aqtesolv input and output files for all aquifer analysis results, including pump and slug tests conducted in the Unit 6 & 7 footprints and the radial well APT. Please provide all downhole optical images (including video surveys), geophysical logs, and flow

logs associated with any boreholes or monitoring wells constructed in support of the proposed project. Please provide this information in pdf format, where applicable, and electronic video file and Log ASCII Standard (LAS) electronic format for the geophysical logs.

SFWMD-B-91

(77) The response to subsection (a) refers to the response to SFWMD B-43(a). However, the response provided to SFWMD B-43(a) does not address that question either. Please provide responses to both questions, as previously requested.

SFWMD-B-92

(78) The response to subsection (a) refers to the response to SFWMD B-29; however, the response to that question does not address this question. Please provide the information previously requested.

SFWMD-B-93

(79) In reviewing the cross-references to responses provided elsewhere, they do not answer this question. Please provide the information previously requested. In addition, please provide an estimate of the quantity of ammonia (per unit time) that will be used for pH control and resultant industrial wastewater facility concentration changes.

SFWMD-C-95

(80) Please demonstrate with modeling or other appropriate analyses how removal of matrix material (excavation) will not affect water level? Where would the flow to fill the void created by the extraction of material (excavation) come from and what impacts will the diversion of those flows have on the current receiving waters or users?

SFWMD-C-96

(81) The CH2M_Hill (2009) Report, page 2-4, states that the February 2009 investigation identified the 250 mg/L isochlor at an average depth of approximately 35 feet bls along the east side and 40 feet bls along the west side of the water management structure. A 10 foot vertical safety buffer is recommended to allow for seasonal variations. However, the May dry season 250 mg/L isochlor shown in Exhibit 2-6 appears at least 10 feet deeper than

indicated in the February, 2009 investigation (45 and 50 feet respectively). Please explain this discrepancy. How was a depth of 10 feet arrived at as a safety buffer to allow for seasonal variations? Did development of the safety buffer include other potential factors, such as salt water intrusion over the life of the project?

(82) A 10 foot vertical buffer is proposed between the bottom of the excavation and the documented location of the 250 mg/l chloride concentration as assurance that the rock extraction will not cause mixing of fresh and salt water. In the absence of more detailed site specific quantification of saline water dynamics at the site, the Ghyben Herzberg principle would suggest that a 0.25 foot rise in sea level would result in a 10 foot rise in saltwater within the aquifer beneath the excavation. Please provide all data and analysis that supports the conclusion that sea level will not rise 0.25 feet over the life of the excavation or provide other assurances that demonstrate that when saltwater intrudes into the excavation, the salt water will be contained and prevented from contaminating shallow groundwater and off-site water resources.

SFWMD-C-97

(83) The response does not address the uncertainties associated with the design of the proposed water management project. What measures will be undertaken to ensure long-term operability? Please include the page numbers in the CH2M_Hill report that identify and describe the criteria to be established.

SFWMD-C-98

(84) The response states: "Therefore water level will remain approximately the same and no flow through the aquifer will be induced." The removal of rock will create a void that must be filled with water if water levels are to remain unchanged. What is the source of this water? If it is groundwater, then flow towards the excavation will occur. If it is surface water, what is the impact to the source of the water and existing legal users of that source from diverting the flows?

SFWMD-C-102

(85) As stated in the response, the selected design includes a geo-membrane cut-off wall on the western, northern and southern shoreline of the water management feature to provide preferential movement of introduced water to the east. However, installation of the geo-membrane will alter and reduce pre-existing groundwater flow from west to the east. Please quantify the pre-existing flow to the east during the maximum dry and wet seasons. How much water will be

introduced to provide preferential movement to the east? How much water use will be reduced on a seasonal basis due to the elimination of irrigation demands?

SFWMD-C-104

(86) Please address the following for the previous subsections to this question listed below:

(d) The laboratory report provided does not include the error for sample MWNE 20'. Please provide.

(e) The response states that the freshwater thickness is calculated from the groundwater surface to the first sharp increase in specific conductance plus the thickness of the unsaturated zone. Please provide land surface and water level elevations during the February and August, 2009 sampling events. The freshwater thickness of 34 feet listed for the NE well does not appear consistent with the specific conductivity result of sample NE of 1892 µmohs/cm at a depth of 30 feet bls. What is the basis for the statement that "It is acknowledged that the accepted designation of freshwater is that with a specific conductance less that 1500 microSiemens per centimeter". This appears to be in conflict with the HIA (February, 2009) report (page iii) that states in South Miami-Dade County, a chloride concentration of 250 mg/L occurs when conductivity is approximately 1100 to 1400 micromhos/cm. Has a site specific analysis of chlorides verses specific conductivity been conducted?

(f) The response states that the dry season sampling represents a "bounding case" scenario in terms of water levels and salinity regime. The referenced dry season sampling (HAI, 2009) was conducted on February 17, 2009. However, the water levels reported in monitoring well G-3550, approximately one-third mile east, for the dates of February 17 and May 16th, 2009, were 1.48 and .45 feet (sea level reference), respectively, a drop of 1.03 feet. How would a lowering of water level elevation of one foot change the elevation of the 250-foot isochlor line?

SFWMD-D-119

(87) The reclaimed water pipeline corridor crosses the following SFWMD CERP Biscayne Bay Coastal Wetlands parcels: GZ100-001 (fee), GZ100-002 (fee), and TA500-130 (easement). Please narrow the proposed reclaimed water pipeline(s) corridor to exclude use of these parcels.

SFWMD-D-123

(88) How many lanes are proposed for the proposed bridge over the SFWMD's L-31E Canal at S.W. 359th Street? Will this be a permanent or temporary bridge? Please confirm that the bridge will be designed to meet SFWMD bridge crossing criteria for low member elevation. In addition, please confirm that the bridge will be designed to exclude any pilings in the canal. Are there alternative locations being considered for haul road access? Do any of these alternatives involve use of SFWMD right-of-way? If so, please identify the specific locations.

SFWMD-D-129

(89) The response to this question indicates that it addresses the transmission aspects of the proposed project and FPL responded on August 20, 2009. Please confirm that the response provided on August 20, 2009 applies to the non-electrical transmission line facilities (i.e., reclaimed and potable water pipelines).

SFWMD-E-131

(90) The response to this question is related to the responses to SFWMD-D-119, E-132 and E-136 with respect to issues associated with the proposed reclaimed water pipeline(s) corridor. A segment of the proposed reclaimed water pipeline(s) corridor north of Palm Drive includes the east side of the SFWMD's L-31E Canal right-of-way. As discussed with FPL staff in previous meetings, the SFWMD will be commencing construction on culverts on the east side of the L-31E as part of the CERP Biscayne Bay Coastal Wetlands project. Construction of the proposed pipeline in this area will conflict with implementation of the CERP Biscayne Bay Coastal Wetlands project and SFWMD operational and maintenance needs for the L-31E.

In this response, FPL states that they are "not seeking a variance from applicable SFWMD criteria". However, this response is contradicted in FPL's responses to SFWMD-E-132 and SFWMD-E-136, as FPL states: "It is anticipated that a portion of the reclaimed water pipeline could be installed parallel to and within the L-31E Canal right-of-way as it is contained within the reclaimed water pipelines preferred corridor". Whenever possible, FPL should make use of its own rights-of-way for linear facilities, including the proposed reclaimed water pipeline(s). The SFWMD believes that the width of the existing FPL electrical transmission line right-of-way is adequate to construct the proposed reclaimed water pipeline(s). SFWMD Rule 40E-6.091, F.A.C. states:

> *The use of the District's Works or Lands for the construction, operation, and maintenance of transmission lines has the potential to interfere with the District's operation, maintenance and allied purposes. Applicants*

should acquire their own right of way and should not look to the District to utilize District-controlled Works or Lands, which were acquired for water management and other allied purposes."

The proposed reclaimed water pipeline(s) cannot be placed in the SFWMD's right-of-way without the SFWMD granting a waiver of the above criteria. However, pursuant to FPL's responses to Section 4.5.5 of the SCA and SFWMD-E-131, FPL is not requesting a waiver of this criterion. Consequently, the proposed reclaimed water pipelines must be placed outside of the SFWMD's L-31E Canal right-of-way. Please narrow the proposed reclaimed water pipeline(s) corridor to exclude use of the SFWMD's L-31E Canal right-of-way.

If FPL is formally requesting a waiver of the above criteria, FPL needs to provide confirmation of this and needs to provide additional information for the SFWMD to evaluate this request. Please provide responses to items (6) and (7) on pages 2 and 3 of the SFWMD's Checklist of Required Information (see Attachment 1). Please note that the attached checklist is part of the package provided to an applicant for petition of a waiver/variance to SFWMD Right Of Way Occupancy permitting criteria.

SFWMD-F-136

(91) Please provide information on the location of any potential new bridge and potable water distribution line crossings that may be proposed over the L-31E Canal associated with the revised Miami-Dade County roadway text amendment application. It is our understanding that FPL has revised its original application and is also considering an alternative County staff recommendation that involves construction of a separate roadway parallel to Palm Drive north of the adjacent Florida City Canal.

SFWMD-F-145

(92) The response does not clarify whether the unnatural continuous downward flux of water, as might be produced by operation of the radial well system, would impact benthic organisms adapted to normal tidal oscillatory fluxes. Please address.

SFWMD-H-149

(93) The proposed Alternative 5 water management project (WMP) is based on a number of assumptions that constrain the design and are also the basis for accepting the hypothesized performance of the WMP to achieve certain

objectives. Please provide the following additional information to support the conclusions reached for each previous subsection of this question listed below:

(a) Additional modeling or other analytical data showing how the WMP will provide added regional storage when the east side will remain open, allowing interaction of ground/surface waters in a highly transmissive geologic zone. The hydraulic retention times for various volumes of water pumped to the storage area should be calculated.

(b) The storage volume of the WMP will be in equilibrium with the prevailing ground water levels of the region via the open east wall. It appears that the net storage volume will be small relative to the 80-120 cfs pumping capacity. What is the intended operating maximum water level anticipated for the WMP?

(c) The water to be diverted from the C-103 to the WMP is the same water source intended to be used for the Biscayne Bay Coastal Wetlands Project proposed under CERP. If first priority of water availability is reserved for the CERP project, what is the anticipated frequency and volume of water that is remaining from the C-103 Canal that would be diverted to the WMP? These volumes should be calculated on a seasonal basis.

(d) The open east wall of the WMP provides a direct avenue for inland migration of the saltwater wedge into the WMP. Upon reaching this area, vertical mixing of the salt water in the open reservoir/detention area is possible. Distribution of this salt enriched water over freshwater wetlands could alter the character of these freshwater wetlands. What is the operational intent with respect to preventing this salt water intrusion into the WMP? How will this salt enriched water be disposed of once this occurs?

(e) Recent sampling of the Turkey Point cooling canals indicates that the salinity of this water body is significantly higher than the salt content of Biscayne Bay. Please provide additional analysis demonstrating how the higher density and salinity of this water is being contained and will not impact surrounding freshwater resources.

(f) An approximate 10 foot separation/safety zone is proposed between the bottom of the WMP and the existing vertical height of the 250 mg/l isochlor level in May. This level was established based on current conditions and may not be representative of future conditions from sea level rise or other extreme drought conditions. Please submit additional modeling data or other analytical data that provides reasonable assurances this buffer will be maintained.

(g) How will the proposed curtain wall be maintained over time? How will a specific inspection of the integrity be determined?

(h) The proposed planting of Scirpus vegetation along some shorelines can lead to significant accumulation of detritus that may alter the soil elevations within the shallow zones of the WMP. This could provide new habitat for exotic species invasion or other native species to encroach. This will require maintenance in order to meet FAA guidelines to control attraction of wildlife considered hazardous to air traffic. Please provide information describing the intended maintenance schedule and techniques used to maintain the desired vegetation cover.

(i) The described WMP and water transfer concept to adjacent wetlands may potentially exceed the capacity of the wetlands to store the water. What is the operational intent of maintaining a specific maximum hydroperiod and depth for these wetlands? How will pumping operations be performed so that the maximum water depth will not be exceeded?

(j) The claimed benefits of the WMP compete with the CERP BBCW project by attempting to utilize the same finite water resource. The groundwater recharge and wetland benefits of the WMP would be significantly reduced by a lack of available water. The intended benefit of the project as a water resource or water management feature may not be sustainable over time. "Combination of the design features to optimize realization of these potential benefits of the WMP will be a goal of the detail design phases. During those phases, it will be critically important to define the frequency and rates of stormwater diversion that can be transferred to the WMP lake in a manner that supports WMP beneficial functions, while minimizing risks of inadvertent effects on the C-103 discharge zone in the Bay." How does FPL propose to balance these competing demands and produce benefits claimed by the construction of the WMP?

(k) The overall design criteria for the WMP is to make the water retention facility less attractive to wildlife in order to comply with FAA safety requirements at the Homestead Air Reserve Base. These requirements result in reduced benefits of the proposed WMP and impact the overall wildlife benefit of this project.

SFWMD-H-150

(94) Please address and/or provide additional information for the previous subsections to this question listed below:

(a) The land elevations supporting the assumed flow path of water to Biscayne Bay suggest that the remnant creeks near the L-31E Canal will allow water to move eastward toward the bay and consequently provide

mitigation for these wetland resources. Additional topography data is needed in the vicinity of these wetlands to determine how the water will be distributed and whether the mitigation lift can be justified. The existing creeks are intercepted by the cooling canal system. How will this water be conveyed to the bay? What is the seasonal distribution of the requested 525 acre feet of water from L-31E and the anticipated ET losses associated with this seasonal distribution? What will be the nature of the request to preserve this water from the regional system for these mitigation purposes? Is FPL requesting consumptive use approval through the Site Certification process, or is FPL going to request a Consumptive Use Permit?

(d) The proposal to set the dry season stage for inflow to the mitigation area at 0.1 ft lower than the current dry season canal maintenance level of the L-31E Canal will tend to lower the operating canal stage of the L-31E by providing a positive outfall for water flow. This will lower the adjoining wetland stages west of the L-31E and result in loss of wetland benefits. These operating criteria are inconsistent with CERP objectives for restoration and protection of wetland resources.

(e) Same concern here as in the response to (d) above. The operation of the proposed culverts at a water elevation 0.1 ft lower than the existing dry season maintenance level will cause a reduction in wetland hydroperiods for wetlands west of the L-31E Canal.

(f) FPL estimates that an average water budget of 525 acre feet is needed to achieve the restoration benefits proposed for the described mitigation plan. Please explain how this number was estimated and provide information concerning the frequency of meeting this demand with existing water supplies.

(95) Please describe how the hydrologic conditions created by this project relate to the gradient criteria required for the operation of the Interceptor Ditch pumping program. Please explain how the created hydrologic conditions will not cause a violation of the current monitoring agreement and require additional use of the Interceptor Ditch pumping system.

SFWMD-H-151

(96) The proposed weir is very similar to an existing weir currently under construction by Miami-Dade County. Consequently, it would appear this is no longer a viable mitigation option for Units 6 & 7. Is FPL going to continue to pursue this option?

If so, please explain how this added weir would operate and function with respect to the Miami-Dade weir under construction.

SFWMD-H-152

(97) Please address and/or provide additional information for the previous subsections to this question listed below:

(a) The described spreader canal is located downstream of the Florida City Canal and will potentially intercept sheet flow from the wetlands north of the spreader canal and interrupt the downstream flow of water to other wetlands. In addition, depending on the depth of the spreader canal, this canal could serve to accelerate drainage of wetlands north of the canal during the dry season by increasing the evaporation losses of standing water within the spreader canal when this water would normally be contained below ground surface.

(b)The requested water budget information is necessary to determine whether the anticipated environmental lift can be substantiated.

(c)The targeted hydroperiod for this area is significantly greater than the existing conditions and is considerably longer than the existing conditions (see Attachment 2). What is the approximate monthly water budget anticipated to achieve the target water levels?

(d) The proposed nutrient levels in reclaimed water exceed the ambient background nutrient levels of rainfall, which is the primary source of water for this area. The cost of lowering nutrient levels to the required levels before discharging to wetlands would seem to make this mitigation option very costly to maintain and operate. Is it the intent of FPL to bear these costs in perpetuity once these mitigation measures are transferred to a governmental entity? The response states that phosphorus concentrations in reclaimed water used to rehydrate wetlands in the Model Land basin will be less than 1 mg/L; however, the response does not explain how concentrations will be reduced to a suitable level closer to 0.010 mg/L.

(g) Same concerns as those raised in item (d).

SFWMD-H-153

(98) Please address and/or provide additional information for the previous subsections to this question listed below:

(a) The number and placement of culverts will either accelerate or retard drainage of wetlands upstream. Does FPL plan to use surface water models to determine how to strike a balance of providing sufficient water flow while maintaining wetland hydroperiods?
(d) Adding additional culverts as a mitigation option may not result in a net improvement to the hydrology of wetlands. The addition of the culverts only facilitates the movement of water. The presence of additional water actually provides the environmental lift by improving wetland hydroperiods.
(e) Same concerns as those raised in item (d).

SFWMD-H-154

(99) Please provide information describing the current status of available and already allocated Everglades Mitigation Bank credits. How does FPL plan to reserve and use the remaining credits to offset mitigation required for Unit 6 & 7 impacts?

SFWMD-H-155

(100) Does FPL plan to utilize the Hole in the Donut credits as a priority over utilizing FPL mitigation bank credits?

SFWMD-H-156

(101) Construction impacts will cause disturbance of existing plant communities and soils, providing a means for exotics to dominate. Some of this disturbance will occur on public lands and will require long term maintenance. Does FPL intend to fund the periodic maintenance activities on public lands as needed? What assurances will public agencies have that the required funding is maintained?

SFWMD-H-157

(102) The information requested is necessary to determine whether the proposed mitigation activities would substantially impact or alter the viability of CERP projects planned for this region. As this agency is not a party to negotiations between FPL and Everglades National Park, there is a significant potential the planned activities could be inconsistent with U.S. Army Corps of Engineers and SFWMD restoration efforts. Please provide.

SFWMD-H-158

(103) The information previously requested is necessary to determine the overall potential success of the proposed mitigation options to offset loss of wetlands

through construction and operation of Units 6 & 7. Since many of the proposed mitigation options have high uncertainty of success in delivering the estimated benefits, it is difficult to determine whether the mitigation strategy and mix of projects will ultimately succeed or fail. Reliance on the Compatibility Working Group (CWG) is not sufficient to provide adequate assurances that mitigation options will deliver as promised. The CWG may not have the required expertise to determine the potential success of certain mitigation options. Moreover, the opinions expressed by the CWG cannot supplant agency responsibility and accountability for requiring applicants to fulfill obligations to fully evaluate and independently determine whether the proposed mitigation options are consistent with requirements under state and federal law. Please provide.

SFWMD-H-159

(104) The SFWMD does not agree that the issue of sea level rise in the context of the proposed project is outside of the completeness review process. The response states: "consideration of sea level rise will be included in the final, detailed designs for the ancillary facilities, which will be available post-certification". The SFWMD believes the concerns of sea level rise and associated impacts should be addressed for all project features and facilities. FPL has used historical mean sea level trends from NOAA to project a sea level rise of 0.78 feet per 100 years. It appears that FPL did this because there is currently no accepted model that is used to accurately predict long-term sea level rise. Has FPL considered other information, such as the recent Engineering Circular released by the U.S. Army Corps of Engineers regarding sea level rise projections (see Attachment 3)? Regarding the potential impacts on water resources, operation of the cooling canal system could be significantly impacted by sea level rise in many ways. An increase in sea level and associated extreme storm surge events could flood the cooling canal system, contaminating other lands in the vicinity with highly saline water. The impacts of such flooding would be long lasting. In addition, sea level rise, regardless of its magnitude, could result in westward migration of the hyper-saline plume, potentially impacting wellfields, wetlands, and other water resource related features.

SFWMD-J-165

(105) Please provide the information previously requested. Please note that this information is necessary for the SFWMD's review in addition to the FDEP's review.

SFWMD-K-169

EXHIBIT 6

(106) Please provide the previously requested information.

SFWMD-K-179

(107) The requested information is not provided in the response to SFWMD B-29. Please provide.

Regarding the references to missing information in the MACTEC report, it appears that FPL submitted the missing information on December 22, 2009; however, due to the holidays and scheduled vacation time, not all of our staff has had the opportunity to review the additional information submitted. Consequently, we are retaining references to this missing information in our letter until all of our staff has had an opportunity to review it and determine whether or not it is complete.

If you have any questions concerning the above, please do not hesitate to contact me at (561) 682-6862.

Sincerely,

James J. Golden, AICP
Lead Planner
Intergovernmental Policy and Planning Division

/jjg

c: See Attached Distribution List

EXHIBIT 7

WETLANDS, Vol. 25, No. 4, December 2005, pp. 854–869

BISCAYNE BAY CONCEPTUAL ECOLOGICAL MODEL

Joan A. Browder[1], Richard Alleman[2], Susan Markley[3], Peter Ortner[4], and Patrick A. Pitts[5]

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[2] *South Florida Water Management District*
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West Palm Beach, Florida, USA 33406

[3] *Miami-Dade County Department of Environmental Resources Management*
33 SW 2nd Ave.
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[4] *National Oceanic and Atmospheric Administration*
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Abstract: Biscayne Bay is a naturally clear-water bay that spans the length of Miami-Dade County, Florida, USA. It is bordered on the east by barrier islands that include Miami Beach and is an almost completely urban bay in the north and a relatively natural bay in the south. Planned water management changes in the next few years may decrease freshwater flows to the bay from present sources, while offering reclaimed wastewater in return. In addition, a project is planned to restore the former diffuse freshwater flow to the bay through many small creeks crossing coastal wetlands by redistributing the water that now flows into the bay through several large canals. To guide a science-based, adaptive-management approach to water-management planning, a conceptual ecological model of Biscayne Bay was developed based upon a series of open workshops involving researchers familiar with Biscayne Bay. The CEM model relates ecological attributes of the bay to outside forcing functions, identified as water management, watershed development, and sea-level rise. The model depicts the effects of these forcing functions on the ecological attributes of the bay through four stressors. The hypothesized pathways of these effects include salinity patterns, water quality, sediment contaminant concentrations, and physical impacts. Major research questions were identified with regard to uncertainties explicit in the model. The issues addressed include, for example (1) the quantitative relationship between upstream water management, rainfall, and flow into Biscayne Bay; (2) the salinity gradient required to restore the historical estuarine fish community; (3) the potential effect of freshwater inputs on benthic habitats; (4) the effect of introduced nutrient and contaminant loads, including the effects of reclaimed wastewater.

Key Words: Biscayne Bay, seagrass, dolphins, manatees, fish, pink shrimp, water quality, coastal wetlands, freshwater inflow

BACKGROUND

Biscayne Bay (Figure 1) is a naturally clear-water bay with tropically enriched flora and fauna. Prior to the development of Miami-Dade County, Florida, USA, much of the bay was bordered by mangroves and, otherwise, with herbaceous wetlands. The bay was once connected to the Greater Everglades ecosystem hydrologically through tributaries, sloughs, and ground-water flow. It possessed not only a marine habitat and fauna but also a substantial area of estuarine habitat and associated fauna. Because of the bay's shallow depths and naturally clear waters, its productivity is largely benthic-based (Roessler and Beardsley

EXHIBIT 7

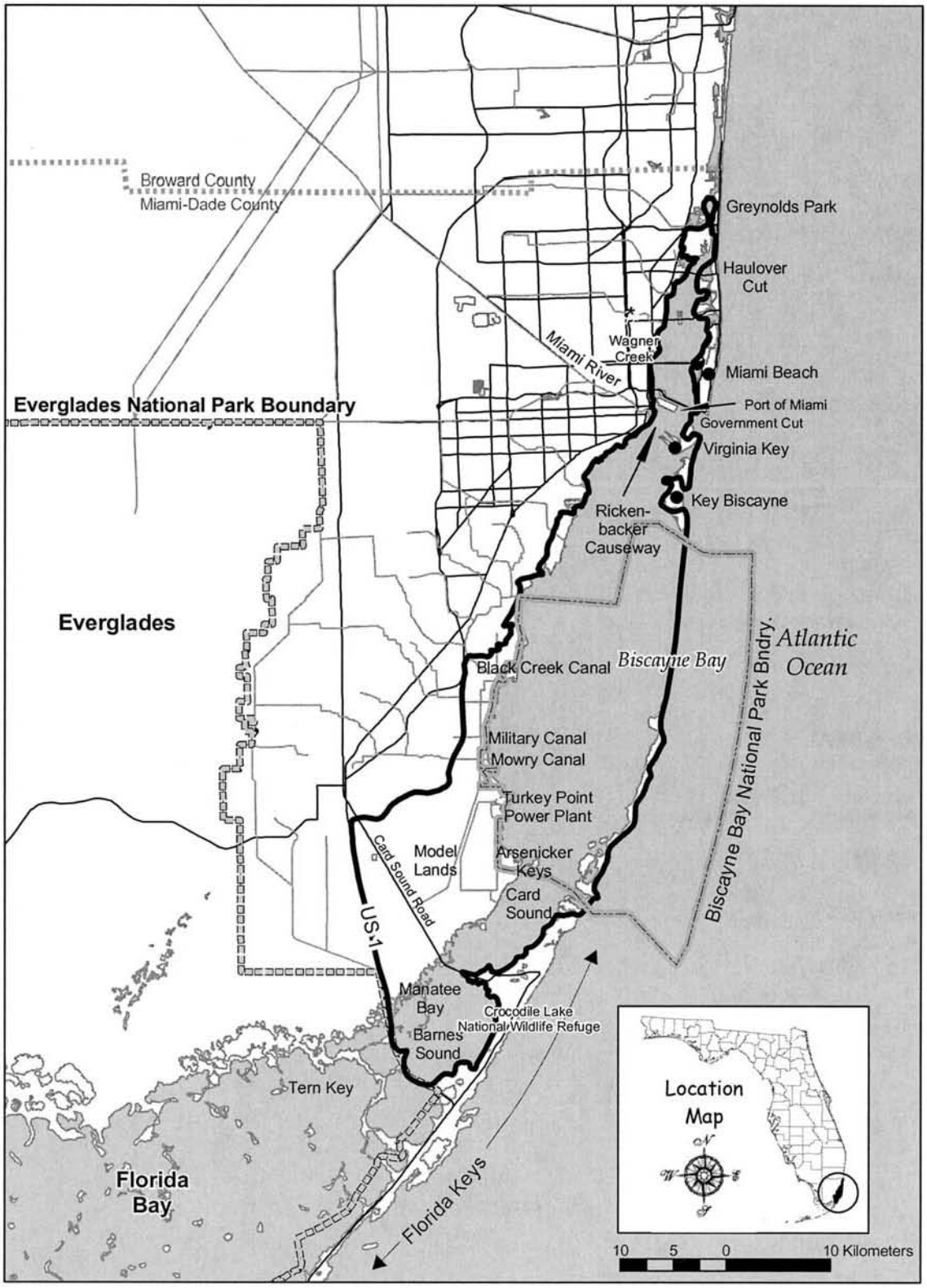

Figure 1. Boundary of the Biscayne Bay Conceptual Ecological Model.

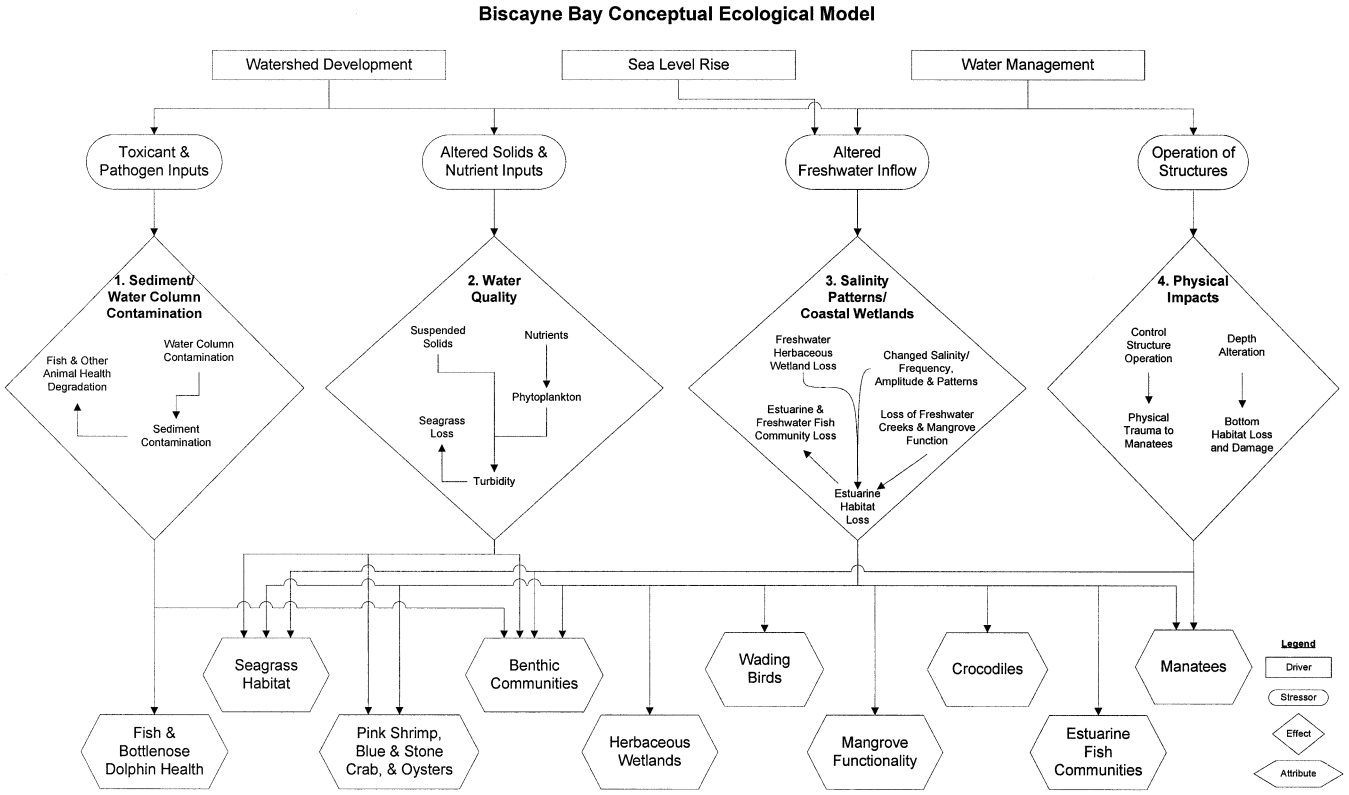

Figure 2. Biscayne Bay Conceptual Ecological Model Diagram.

1974). Benthic communities in the central and southern bay (i.e., south of the Rickenbacker Causeway) consist of several species of seagrasses, a mix of soft and hard corals, attached macroalgae and sponges, and coral-algal bank fringes that alternate in dominance in different areas. Benthic communities in northern Biscayne Bay are dominated by seagrasses intermixed in some cases with calcareous green algae. Parts of the bay are afforded various levels of state or federal protection, being designated or contained within Miami-Dade County Aquatic Park, Florida Aquatic Preserve, Outstanding Florida Water, Outstanding National Resource Water, Florida Surface Water Improvement and Management Priority Water Body, Biscayne National Park, Florida Keys National Marine Sanctuary, and Crocodile Lake National Wildlife Refuge.

Biscayne Bay is one of several south Florida estuaries that will be affected by the Comprehensive Everglades Restoration Plan (CERP) and its 68 individual projects. The selected plan, as described in the 1999 document (USACE and SFWMD 1999), contains provisions that will affect the sources, amount, and therefore quantity and quality of fresh water that Biscayne Bay receives, as well as the timing and location of flow. The specific projects likely to affect the bay most directly are the Biscayne Bay Coastal Wetlands Project, the C-111 Spreader Project, the South Dade Waste Water Reuse Project, the L31-N Seepage Management Project, and Lake Belt Storage Projects. The Coastal Wetlands Project has the objective of restoring the historic water supply patterns through wetlands to the southern Biscayne Bay. Wastewater reuse has the potential to affect bay water quality. The remaining projects listed all directly affect the amount of fresh water available to Biscayne Bay.

To guide a science-based, adaptive-management approach to water-management planning, a conceptual ecological model of Biscayne Bay was developed based upon a series of open workshops involving researchers familiar with Biscayne Bay. Since the adaptive management process for CERP is the context in which this conceptual model was developed and will be used, the emphasis of the Biscayne Bay CEM is on the relationship between the bay ecology and the mainland shoreline and freshwater sources.

EXTERNAL DRIVERS AND ECOLOGICAL STRESSORS

In the Biscayne Bay Conceptual Ecological Model (Figure 2), the two principal drivers applicable to the Comprehensive Everglades Restoration Plan (CERP) are watershed development and water management. They exert their effects through four principal stress-

ors: toxicant and pathogen inputs, altered solids and nutrient inputs, altered freshwater inflow, and operation of physical structures, particularly water-control structures and maintenance of infrastructure. Altered freshwater flow is the stressor that CERP will most directly affect and includes flow volume, velocity, timing and spatial distribution. CERP may indirectly affect the input of solids, nutrients, toxicants, and pathogens.

Construction of the major canals through the Everglades and dredging of natural tributaries and transverse glades that carried fresh water to Biscayne Bay resulted in lowered regional and coastal water tables (Parker et al. 1955), reduced water storage in the watershed, decreased ground-water flow to the bay, and the elimination of many tributaries. Drainage of the watershed greatly affected the natural salinity gradients and ecotones from the Everglades through coastal wetlands and tidal creeks into the bay, and reduced or eliminated critical estuarine habitat for bay species requiring low-to-moderate salinity waters. In addition, constructed drainage systems result in pulsed, point-source discharge degrading estuarine habitat near canal mouths by creating biologically damaging zones of bottom scouring and rapid salinity fluctuations. Departures from natural salinity patterns are ecologically damaging to many species because salt concentration affects growth, survival, reproduction, and other critical physiological processes in both plants and animals (see, for example, Kinne [1971]). The general lowering of the water table on the east-coast ridge and diversion of both surface and ground water into canals has degraded not only estuarine habitats within the bay, but also adjacent coastal wetland communities, including herbaceous freshwater marshes and coastal mangrove wetlands that were once functionally connected to the estuarine habitats. The few coastal tropical hammocks that remain have also been detrimentally affected by the lowered water table (M. Roessler, pers. comm.).

The bay has also been significantly affected by the watershed development made possible by water management (Alleman et al. 1995). Before drainage of the watershed, urban and agricultural development was restricted to the highest ground along the Atlantic Coastal Ridge, consisting of hammocks and pinelands (University of Miami and SFWMD 1995). As land was drained, development encroached into lower lands and former wetlands. Today, most new development is occurring in former wetlands.

Development has had many detrimental consequences. The continued loss of open, pervious land increases stormwater runoff velocity and pollutant loads and reduces the quantity of water storage in the watershed. Other dramatic changes occurred in northern Biscayne Bay as a result of dredging and filling. Bottom dredging resulted in the loss of seagrass beds in northern Biscayne Bay and has affected the stability of bay sediments and the capacity to assimilate nutrients and trap particulates. Stormwater runoff from urban development has increased the bay's exposure to contaminants and excessive nutrients. At the same time, the filling and destruction of coastal wetlands has eliminated natural filtering capacity. The dredging of inlets at Haulover and Government Cuts significantly increased salinity in northern Biscayne Bay (Wanless 1969, Wanless et al. 1984), changing much of it from an estuarine to a more marine system.

Biscayne Bay's water quality has improved substantially in the past 30 years because of the elimination of direct discharge of sewage into the bay and other pollutant-control measures (McNulty 1970, Alleman et al. 1995, DERM 2005a). Parts of North Biscayne Bay now support substantial seagrass beds. Extensive seagrass beds have always been characteristic of South Biscayne Bay. In recognition of its exceptional values, the State of Florida has designated the bay and its natural tributaries as Outstanding Florida Waters, and as such, they receive the highest level of state protection from degradation. Present water quality generally meets or exceeds federal, state, and local standards for recreational use and propagation of fish and wildlife. Nonetheless, the bay still receives dissolved nutrients, trace metals, organic chemicals, and suspended sediments via stormwater runoff, sewage overflows, discharges from industrial facilities or vessels, and canal discharges. Canal water typically has lower dissolved oxygen and clarity and higher concentrations of contaminants than receiving waters of the bay.

ECOLOGICAL ATTRIBUTES

Ecological attributes of the overall health of the Biscayne Bay ecosystem include four types of habitat: seagrass meadows, mangrove forests, herbaceous wetlands, and benthic faunal communities (both soft bottom and hard bottom). Ecological attributes that have been defined because of their special relevance and utility for monitoring and reporting the state of the bay include pink shrimp (*Farfantepenaeus duorarum* Burkenroad), blue crabs (*Callinectes sapidus* Rathbun), stone crabs (*Menippe mercenaria* Say), oysters, estuarine fish communities, fish and bottlenose dolphin (*Tursiops truncatus* Montagu) health, crocodiles (*Crocodylus acutus* Cuvier), West Indian manatees (*Trichechus manatus latirostris* Linnaeus), and wading birds.

Seagrass Habitat

Large areas of the bay bottom support seagrass communities because sediment depth and nutrients are sufficient, water depths are shallow, and water clarity is high. Seagrass has been documented to cover up to 64% of the bay bottom (DERM 1985). There is very little area of bare bottom with sufficient sediment to support seagrass except where there has been a physical disturbance such as dredging. Seagrass beds function as vital habitat to support critical life stages of a variety of ecologically important and commercially or recreationally valuable species. At least seven species of seagrasses occur in Biscayne Bay: turtle grass (*Thalassia testudinum* Banks & Soland. ex Koenig), shoal grass (*Halodule wrightii* Aschers.), manatee grass (*Syringodium filiforme* Kuetz.), three species of *Halophila*, including *H. johnsonii* (Eiseman), which is a federally-listed protected species, and *Ruppia maritime* (Linnaeus). Distribution of seagrass species is generally related to water clarity and quality, substrate, salinity levels, and variability. *Syringodium filiforme* and *H. wrightii* are common in the northern bay, where salinities are lower and water clarity is diminished due to high freshwater discharge combined with a low flushing rate. Significant mixed *Thalassia/Syringodium* beds also exist in North Biscayne Bay. *Thalassia* is most prominent in central and south Biscayne Bay where salinities are higher and more stable and nutrient levels are lower overall.

The distribution of seagrass species and other benthic flora and fauna in the western nearshore area of central and southern Biscayne Bay is influenced by both canal discharges and submarine ground-water seepage (Kohout and Kolipinski 1967, Meeder et al. 1997, 1999). Presence or absence of *Thalassia* often is an indication of distinct zones where ground-water influence is substantial (*Thalassia* absent) or insignificant (*Thalassia* present). Along a transect from 25 to 300 m from shore, Meeder et al. (1997, 1999) found the maximum ground-water seepage about 200 meters from shore. The amount of ground-water seepage and its influence has been diminished by the general lowering of the water table in Miami-Dade County (Parker et al. 1955) to facilitate development in wetlands. Sea-level rise also reduced ground-water seepage to Biscayne Bay by reducing the hydraulic gradient, or difference between the water table and sea level at the coast, which, according to Darcy's Law, drives ground-water flow in an unconfined aquifer (Chow 1964).

Where sediment depths and currents are appropriate, seagrass species generally follow a pattern of zonation from west to east (*Ruppia*, *Halodule*, *Thalassia*, *Syringodium*) correlated with general salinity gradients and salinity fluctuation (Lirman and Cropper 2003). The freshwater inflows (surface and ground) occurring along the shoreline are critical in maintaining this zonation and benthic diversity. The altered salinity patterns that resulted in concentration of surface-water inflows into canals and reduced ground-water seepage likely affected competition among seagrass species, changing this zonation and making it less defined. Results from a hydrodynamic simulation model comparing canal inflows versus distributed inflow indicate that the canal scenario produces higher overall salinity in the nearshore zone than the distributed inflows (i.e., to simulate flow through the historical creeks (Brown 2003). Channelization of the Miami River might have had a similar effect as construction of the South Miami-Dade canals that shortcircuited the historic creeks. Analysis of sediment cores from southern Biscayne Bay indicates that it has become more saline and less variable in the last 100–200 years (Wingard et al. 2003). Seagrass composition in these areas has been documented to vary between *Ruppia*, *Thalassia*, and *Halodule*, or mixtures of *Halodule* and *Ruppia* or *Halodule* and *Thalassia*, depending on salinity regime.

Mangrove Functionality and Herbaceous Wetlands

Coastal wetlands are highly productive habitats that provide nursery, foraging, and refuge areas for many bird, fish, and invertebrate species. In addition, these coastal wetlands help maintain water and habitat quality by filtering sediments and nutrients from inflowing waters. Biscayne Bay's remaining mangroves and associated herbaceous wetlands, including nearshore freshwater wetlands, have lost much of their ecological function because fresh water has been diverted away from coastal feeder streams and creeks into drainage canals. Restoration of both brackish and freshwater wetlands and coastal creeks on the western shore of Biscayne Bay is important to the success of bay restoration and, therefore, is defined as an indicator of success. In the southern part of the western bay, water management and watershed development activities to date have caused saltwater intrusion and led to an encroachment of scrub mangroves on former freshwater wetland. Freshwater wetlands are a vital component of the coastal wetland system, and their loss is undesirable, even when replaced by salt-tolerant species like mangroves. The presence of a system of coastal wetlands integrated by the inflow of freshwater from upstream and, to varying degrees, by tidal exchange, is essential to the restoration of a fully functional Biscayne Bay ecosystem.

Benthic Communities

Benthic organisms such as mollusks, attached fauna, and infauna provide essential ecological and biological functions in the bay and can influence the quality of the environment. The benthic community is the basis for development of high quality habitat that will support diverse fish and motile invertebrate populations. Degradation or loss of benthic communities will diminish the ability of the bay to maintain the mosaic of conditions that support high habitat diversity and productivity. Benthic communities are depauperate within the dredged canals and channels of the drainage system that empty into the bay. These channels provide poor habitat because of their depths, near vertical banks, low dissolved oxygen, and reduced water transparency (DERM 2005b). In addition, they are frequently redredged, disturbing the bottom sediments, and are regularly sprayed with herbicides. The present operation of water-control structures (opening and closing automatically according to upstream and downstream water level) causes discontinuous freshwater flows that result in localized extreme salinity variability that is unsuitable habitat even for estuarine organisms (Serafy et al. 1997).

Pink Shrimp, Blue Crabs, Stone Crabs, and Oysters

Juvenile pink shrimp immigrate to Biscayne Bay from offshore spawning grounds each year and settle in the seagrass beds close to the mainland shoreline near freshwater inputs. Pink shrimp seem to prefer a salinity range of 20–35 parts per thousand (ppt) (Pattillo et al. 1997), but survival and growth have been tied to temperature and salinity (Browder et al. 1999), with an optimal salinity for juvenile growth at 30 ppt (Browder et al. 2002). This species would be expected to benefit from an expansion in estuarine habitat in the western bay. Pink shrimp's ecological characteristics and economic value, together with the background of knowledge about this species in South Florida, make it an appropriate biological indicator of change in freshwater inflow quantity, timing, and distribution. Furthermore, pink shrimp constitute the most significant commercial fishery in Biscayne Bay (Berkeley 1984). A commercial pink shrimp live-bait fishery has operated in Biscayne Bay for many years, and a more recent commercial fishery harvesting pink shrimp from the bay for human consumption is expanding. The distribution of juvenile pink shrimp in Biscayne Bay has been measured and modeled (Campos and Berkley 1986, Ault et al. 1999a, b). Spotted pink shrimp (*Farfantepenaeus brasiliensis* Latreille) also is present in Biscayne Bay but in very low number compared to *F. duorarum*).

The blue crab resides in the south-central area of Biscayne Bay and also supports a commercial fishery. An average of 50,768 kilograms of blue crabs was taken annually from Biscayne Bay from 1996 to 2000 (Murphy et al. 2001). Optimum blue crab egg hatching occurs at salinity between 23 ppt and 28 ppt, and juveniles prefer a seagrass habitat with salinity between 2 and 21 ppt (Pattillo et al. 1997).

The eastern or American oyster is not currently harvested in south-central Biscayne Bay but is present nearshore in small numbers where conditions are suitable. The species was apparently more abundant in the past when surface water drained through a series of small creeks into the bay (Meeder et al. 2001, 2002) and provided a salinity regime more conducive to oyster growth and survival. Growth rates of oysters are reported to be best at 14–28 ppt (Shumway 1996); however, at the higher salinity range, mortality can increase as a result of infection by *Perkinsus marinus* (Mackin, Owen, and Collier), a parasite (Burreson and Ragone-Calvo 1996, Soniat 1996, Chu and Volety 1997). The oyster is important ecologically for several reasons. The accumulation of shells provides physical habitat structure for a variety of other species, their organic rich deposits are a food source for benthic feeders, and they filter particulates from the water, improving water quality (Pattillo et al. 1997). Other estuarine species have some dependence on oyster reefs; for example, 24 species were found associated with oyster reefs in the Caloosahatchee Estuary (Volety et al. 2003).

Estuarine Fish Communities

Several estuarine fish species known to have occurred in Biscayne Bay in the past (Smith 1896, Siebenaler 1953, Udey et al. 2002) contributed to the bay's commercial and recreational fisheries but appear to be scarce or absent in the bay today. The opportunity for anglers has changed and, according to longtime residents, has diminished, possibly as a result of the loss of the estuarine component of the fauna. The estuarine fish community could make an important contribution to the recreational fishing experience in the bay if its abundance and diversity were restored. An increase of the bay's estuarine habitat would be expected to lead to greater abundance and diversity of estuarine fishes, including those desired by anglers.

An increase in the distribution and abundance of fish in the fresh to brackish water wetlands adjacent to Biscayne Bay would be an indication of restored functionality of the coastal wetland-estuarine nearshore habitat that is important to the bay's diversity and productivity.

Freshwater fish communities that spread into oli-

gohaline (0–5 ppt salinity) environments seasonally can reach high densities and provide abundant prey to pisciverous estuarine fish, as well as to wading birds (Lorenz 2000).

Fish and Bottlenose Dolphin Health

The health of fish communities and the health of a resident bottlenose dolphin group are valuable attributes of the Biscayne Bay ecosystem. Externally visible abnormalities such as scale and skeletal deformities have been observed to occur in a number of Biscayne Bay fish (Browder et al. 1993) and are more prevalent in fish sampled from human-impacted sites (Gassman et al. 1994). This is consistent with Fournie et al. (1996) for Gulf of Mexico estuaries and Sanders et al. (1999) for Ohio rivers. The prevalence of abnormal fish is being used as part of a biological integrity index in a growing number of state and national monitoring programs (Simon 1999).

Bottlenose dolphins in Biscayne Bay include permanent residents and nearshore migrants. National Oceanic and Atmospheric Administration (NOAA) Fisheries conducts a photo identification program in Biscayne Bay that can potentially distinguish residents from migrants. Through the Southeast Fisheries Science Center, the NOAA Fisheries Miami Laboratory has been conducting health assessments of other bottlenose dolphin in the southeast to obttain baseline information on marine mammal contaminant levels, associated diseases and incidence, and impacts of human-related pollution on marine mammal populations. The program conducts current and retrospective evaluation for the accumulation of toxicants in various tissues of bottlenose dolphins and other marine mammal species in relation to their health, as reflected in histopathology, blood profiles, and other medical diagnostics (Sweeney 1992, Worthy 1992, Hansen and Wells 1996, Reddy et al. 2001, Schwacke et al. 2002). Biopsies of small amounts of subcutaneous blubber can be taken from living animals for contaminant analysis during low-level monitoring activities. Health assessment profiles of dolphin populations for comparison to regularly monitored and assessed ''reference'' populations can be developed in this manner. The bottlenose dolphin and other marine mammals are protected species under the Federal Marine Mammals Protection Act of 1972. Opportunistic biopsy sampling of the Biscayne Bay resident dolphin population began in February 2000 as a pilot study by the NOAA Fisheries Miami Laboratory.

Crocodile

The American crocodile is an endangered species that is known to range throughout southern Biscayne Bay. Historically, the range of the American crocodile extended north to at least Miami Beach (Kushlan and Mazzotti 1989). It nests primarily at the Florida Power and Light Turkey Point Power Plant cooling canals and Crocodile Lake National Wildlife Refuge. Recent studies indicate an increase in the number of nests occurring in the cooling canal area of the Turkey Point Power Plant since the early 1980s, while nest numbers at the Crocodile Lake National Wildlife Refuge have remained relatively stable (Mazzotti et al. 2002). Nesting success at the Turkey Point Power Plant may be responsible for an increase in the number of crocodile sightings occurring north of the plant and may indicate an expansion of the animal's range. Crocodiles have been sighted as far north as Key Biscayne and the Miami River (M. Cherkiss, University of Florida, pers. comm.). Although nest numbers have remained relatively stable at the Crocodile Lake National Wildlife Refuge, the population in this area may be increasing, based on an increase in the number of crocodile sightings throughout the Florida Keys and an increase in the number of road kills occurring along U.S. 1 and Card Sound Road over the past several years (S. Klett, Crocodile Lake National Wildlife Refuge, pers. comm.).

A habitat suitability model for crocodiles has been developed based on salinity levels (Mazzotti and Brandt 1995). The model targets juvenile crocodiles because studies indicate that this life stage requires lower salinities due to osmoregulatory limitations (Mazzotti and Dunson 1984). This model shows that salinity between 0 and 20 ppt provides the most suitable habitat, 20–40 ppt provides intermediate suitability, and 40 ppt is least suitable. Applying the model to Biscayne Bay suggests that restoring freshwater flow to the coastal wetlands would benefit crocodiles, especially along the western shore in the central and southern regions. Most of this area is currently unsuitable for juvenile crocodile habitat. Restoration efforts will include redirecting flow from conveyance canals through coastal mangrove wetlands and maintaining flow into the beginning of the dry season.

Manatee

Endangered West Indian manatees occur throughout Biscayne Bay but are most frequently observed in tributaries and nearshore seagrass beds. Manatees are present year-round and are most abundant in winter, when more than 130 have been counted on a single day (Mayo and Markley 1995). Biscayne Bay seagrass meadows provide important foraging habitat for manatees wintering at warm water discharges (power plants) in Broward County, and the bay is a significant seasonal migratory corridor. Thus, the total number of

animals using the Biscayne Bay area is likely to be greater than the maximum number observed on any given day.

Manatees utilizing the bay are part of the larger Atlantic region ''subpopulation,'' which includes those animals ranging along the Atlantic coast from southern Georgia to the Florida Keys and including the lower St. John's River. Atlantic coast manatees undertake seasonal, intraseasonal, and daily migrations or movements (Deutsch et al. 2003). Radio-telemetry studies and tracking or resighting of known scarred individuals have shown that manatees may travel hundreds of kilometers seasonally, moving to southeast Florida or unnatural sources of warmer water. Tracking studies of animals in the Biscayne Bay area also suggest a general diurnal pattern, with animals resting in canals and sheltered basins during the daytime and moving into bay areas to feed in late afternoon and evening (C. Beck, United States Geological Survey, pers. comm.). Although wide-ranging, manatees demonstrate a high degree of site fidelity, yet they also show individual patterns, flexibility, differential use of sites over time, and adaptation to changing conditions, moving among warm water refuges, freshwater sources, and feeding sites. The general distribution of manatees is strongly linked to fresh water; they more frequently occupy areas where freshwater sources are readily available (O'Shea and Kochman 1990, Mayo and Markley 1995, LeFebrve et al. 2001, Deutsch et al. 2003). Changes in timing and volume of freshwater delivery could affect manatee distribution, particularly in south Biscayne Bay.

Adult annual survival rates for manatees in the Atlantic subpopulation have been estimated at 88.7–92.6%, a lower rate than has been estimated for other regions (Langtimm et al. 1998). Due to uncertainty in population model estimations, it is not possible to determine with statistical confidence whether the Atlantic population has been stable, decreasing, or increasing in recent years; however, annual manatee mortality in the Atlantic region remains high and appears to be increasing at a greater rate than optimistic estimates of population growth (USFWS 2001). Although many manatees have been killed or injured in Biscayne Bay by vessel collisions, the leading known cause of manatee in death in Miami-Dade County is crushing or entrapment in water-control structures (Mayo and Markley 1995). Thus, changes in operation of these structures may directly affect survival of individuals using the Biscayne Bay area and stability of the Atlantic subpopulation.

Wading Birds

Wading birds are being used as biological indicators throughout the region because of their close association with hydropattern. The islands, tidal flats, and coastal wetlands of Biscayne Bay provide valuable habitat for wading birds. Frequently used nesting sites occur at Greynold's Park near the northern bay, in the Arsenicker Keys in the southern bay off Turkey Point, and on small islands off Key Biscayne and Virginia Key (Browder personal observation). Tidal flats and coastal wetlands of the bay provide important feeding habitat for wading birds that nest nearby. For example, roseate spoonbills (*Ajaia ajaja* Linnaeus) that nest in the Tern Keys of northeastern Florida Bay feed in mangrove creeks and herbaceous wetlands of southern Biscayne Bay (Card and Barnes Sound areas), as well as those of Florida Bay. Wood storks (*Mycteria americana* Linnaeus) that nest in the southern Everglades also feed in wetlands of southern Biscayne Bay. The natural pattern of seasonal variation in water stages alternately produces and concentrates forage fish for wading birds. A more natural seasonal variability in water stages in relation to the rainfall pattern will not only produce and concentrate fish for wading birds but also support favorable salinity conditions for estuarine fish and macroinvertebrates downstream in Biscayne Bay.

ECOLOGICAL EFFECTS: CRITICAL LINKAGES BETWEEN STRESSORS AND ATTRIBUTES/ WORKING HYPOTHESES

In the Biscayne Bay Conceptual Ecological Model (Figure 2), relationships between the five stressors and the ecological attributes discussed above are depicted in the four diamond-shaped modules representing pathways of effects. Most of the ecological attributes are directly affected by salinity patterns/coastal wetlands, water quality, or sediment/water column contamination. These are determined by the stressors according to the relationships depicted in the ''effects pathways'' modules (the diamonds in Figure 2). The discussion of these effects pathways is followed by a discussion of hypothesized linkages between the ecological attributes and these effects pathways, including physical impacts (depicted in its own ''effects pathways'' module, fourth diamond in Figure 2). Physical impacts include effects of dredging, water-management control structures, and fishing gear.

Salinity Patterns/Coastal Wetlands

The ecological effects and interrelationships associated with salinity patterns and coastal wetlands are depicted in the third diamond in Figure 2. Data and historic accounts document that, in the past, freshwater inflows to Biscayne Bay were more diffuse and continuous via surface sheet flow, ground water, and

freshwater 'springs' within the bay (Kohout 1967, Kohout and Kolipinski 1967). These conditions generated a diverse salinity regime, with general gradients near 0 ppt close to the mainland, to 35 ppt or greater in the open areas of the bay in the southeast. These conditions apparently extended to Manatee Bay off Barnes Sound at the extreme southern end of Biscayne Bay (Ishman et al. 1998). Prior to drainage, several small rivers that flowed into the semi-enclosed northern part of the bay made it brackish. Natural patterns of salinity distribution and fluctuation were major determinants of habitat development, composition of biological communities within these habitats, and their overall productivity. Therefore, restoration of more natural freshwater inflows and associated salinity patterns and coastal wetlands are necessary prerequisites to restoration of the bay's natural estuarine diversity and productivity.

Relationship between Salinity Patterns and Freshwater Inflows. Both flow rate and distribution of freshwater inputs to Biscayne Bay have been altered by construction and operation of the present water-management system (Buchanan and Klein 1976). The system of canals and water-control structures provides a means to manipulate and control virtually all inflow to the bay. Altering the historical distribution of freshwater inflow in time and space has had an effect on patterns of salinity distribution and salinity variability. Routing freshwater flow to the bay through canals and away from coastal creeks and wetlands has resulted in a loss of estuarine habitat. The salinity gradient resulting from large, point-source discharges is very different from that resulting from more diffuse flow through tidal creeks and wetlands and ground-water seepage resulting from higher overall water tables. Inflows distributed through coastal wetlands resulted in a positive salinity gradient from interior wetlands and a broader mesohaline zone along the shoreline prior to drainage. Diversion of freshwater runoff into canals (i.e., point sources) short-circuits coastal wetlands and does not create positive gradients from interior wetlands outward. Although the general relationship between freshwater inflow and salinity is well known in Biscayne Bay, this relationship has not been rigorously quantified within the critical western nearshore zone and associated wetlands, where the greatest effect of changes in freshwater inflow patterns can be expected.

Relationship between Freshwater Inflow and CERP. Changes in upstream water-management practices will cause changes in freshwater inflow to Biscayne Bay. Modeling results with the South Florida Water Management Model (SFWMM) indicate that CERP's proposed changes to water-management features and practices in Biscayne Bay's watershed will substantially affect freshwater delivery patterns. Exact relationships between rainfall in the watershed, freshwater delivery patterns, and planned changes to the water-management system are difficult to define quantitatively. For example, model estimates of daily discharge rates through coastal canal structures bear little relationship to daily rainfall, suggesting highly unnatural flow patterns. Furthermore, present methods of estimating discharge rates at structures can introduce significant error (Swain et al. 1997) and will need to be improved to fully investigate rainfall-runoff relationships.

Water Quality

Relationship of Biscayne Bay Water Quality to Water Quality in Ground Water, Storm Water, and Canal Discharge. The term ''water quality'' includes both abiotic and biotic characteristics; therefore, water quality both influences and embodies major aspects of the ecological functioning of Biscayne Bay. The processes that link ecological attributes in Biscayne Bay to stressors are depicted in diamond 2 of Figure 2. In general, water clarity in Biscayne Bay is high, except where and when bottom sediments are disturbed by wave action or boat traffic. Inorganic nutrient concentrations are naturally low, and phytoplankton in the water column is not an impediment to light penetration. Open waters of Biscayne Bay are generally characterized by high dissolved oxygen concentration, low nutrient and chlorophyll concentrations, and high clarity. Sewage-related bacteria, trace metals, and other toxicants typically occur at low concentrations in Biscayne Bay waters. A primary controlling factor of water quality in Biscayne Bay is the quality of water discharged into the bay. Water quality in a number of canals and rivers that discharge to the bay is poor in comparison to the open waters of the bay. Surface waters in some canals in south Miami-Dade County that discharge into Biscayne Bay contain high levels of inorganic nitrogen.

Water quality can also be affected by ground-water inputs. In some areas, ground water contains elevated levels of ammonia nitrogen from landfill leachate and nitrate-nitrogen from agriculture (DERM 1987, Alleman 1990, Markley et al. 1990, DERM 1993, Alleman et al. 1995, Lietz 1999, Meeder and Boyer 2001). Submarine ground-water discharge into shallow nearshore waters is a source of elevated nutrients (Meeder et al. 1997); nutrient concentrations in shallow ground water (beneath the nearshore bay between Mowry Canal and Military Canal) are higher than in bay or canal waters or deep ground water. The structure and operation of water-management systems, land uses and urban and agricultural practices, and sea-level rise all affect

ground-water input (and nutrient loading) to Biscayne Bay.

Biscayne Bay is vulnerable to nutrient loading, especially from phosphorus, the limiting nutrient to phytoplankton growth in Biscayne Bay (Brand 1988). Water-column inorganic and organic nutrient concentrations, turbidity, photosynthetically-active radiation (PAR), bacteria, plankton taxa, size, and composition of plankton, as well as phytoplankton biomass, as reflected in chlorophyll and other pigments, can all be influenced by solids and nutrients received via canal discharge, stormwater runoff, and ground water.

CERP's proposed changes in freshwater delivery, particularly in south Miami-Dade County, may affect nutrient concentrations and loading to Biscayne Bay. On the one hand, plans to reroute canal discharge through coastal wetlands could reduce nutrients reaching Biscayne Bay; on the other hand, wastewater reuse may increase nutrient or other contaminant loading. While water-quality targets for wastewater reuse have been proposed that would protect open waters of south Biscayne Bay from degradation, it is not yet clear that achieving these targets is technically and economically feasible. This will pose problems since the water from wastewater reuse is a substantial part of total inflow to the bay provided under CERP (USACE and SFWMD 1999).

Sediment/Water Column Contamination

Processes linking ecological attributes to stressors are depicted in the first diamond in Figure 2. Community composition, distribution, and health of macrobenthic, infaunal, and demersal organisms can be affected by the presence of toxic substances in sediments. Potentially toxic pollutants, such as metals and organic chemicals, usually have low water solubility and tend to bind to particulate material and accumulate in sediments (Seal et al. 1994, Long et al. 2000). Most contaminants in Biscayne Bay sediments occur in highest concentrations in conveyance canals, rivers, streams, and marinas, and the lowest concentrations are along the central north-south axis of the bay (Corcoran et al. 1983, Alleman et al. 1995). Trace metals and synthetic organic contaminants, such as some pesticides and polychlorinated biphenyls (PCBs), are found in higher concentrations in Miami River and Wagner Creek sediments than in any other area in the State of Florida (Schmale 1991, DERM 1993, Seal et al. 1994). Other canals that have high levels of sediment toxicity include Little River (C-7), Black Creek (C-1), and Military Canal (USEPA 1999, Miami-Dade County Department of Environmental Resource Management, pers. comm.).

Relationship of Sediment/Water Column Concentration to Toxicity. Recent studies (Long et al. 2000, 2002) showed that contaminant levels in Biscayne Bay sediments were slightly below the national average, but toxicity levels (based on biological assays) were slightly above. These studies supported earlier findings that contamination and toxicity were most severe in several conveyance canals and a few natural tributaries, and that sediments from the open basins were less toxic than those from the adjoining canals and tributaries. In more open waters of the bay, chemical concentrations and toxicity were generally higher north of Rickenbacker Causeway than south of it. However, a section of southern Biscayne Bay showed remarkably high toxicity that could not be attributed to any of the substances analyzed in sediments. Evidence suggests that mixtures of some metals and synthetic organic chemicals were likely contributors to toxicity observed in the lower Miami River. For example, an amphipod survival test showed a high degree of correspondence with a gradient of general chemical contamination in the river and adjoining reaches of the bay. Because contaminants are conveyed to the bay through tributaries and ground-water flux, changes in distribution or sources of fresh water or ground-water stages may affect the fate, amount, and pattern of contaminants introduced. This could increase water- column and sediment contaminant levels (or toxicity), increase ecological exposure, and ultimately affect sensitive species and, perhaps, overall secondary productivity or diversity.

Seagrass Habitat

Relationship of Seagrass Abundance and Distribution to Salinity Patterns and Water Quality. Processes linking the bay's ecological attributes to stressors are depicted in the second diamond in Figure 2. Seagrass and benthic communities require a consistent (both in range and variability) salinity regime and appropriate water quality (sufficient but not excessive nutrients and sufficient light for photosynthesis). Abundance, distribution, and composition of seagrasses will be determined, in part, by modifications of salinity patterns and water quality. Changes in composition and areal coverage of seagrasses will affect habitat quantity and quality with respect to breeding, refuge, and feeding areas available for dependant invertebrate and vertebrate species. Diversion of part of the canal flow from a 'point source' to more 'diffuse' delivery through coastal wetlands and creeks will approximate reconstruction of freshwater flow to the bay from the Everglades through historic pathways (i.e., the historic freshwater coastal creeks, as many as 40 of which interdigitated with tidal creeks prior to development).

This is expected to reduce sediment resuspension and nutrient concentrations in the water delivered to the bay and improve water clarity. This could lead to expansion of seagrass cover in the nearshore areas where sediment depths are adequate and may improve local water clarity by inhibiting sediment resuspension.

Mangrove Functionality and Herbaceous Wetlands

Relationship of Freshwater Inflow and the Boundary between Mangrove and Herbaceous Wetlands. The relationship of mangrove functionality to stressors is depicted in the third diamond of Figure 2. Diversion or reduction of freshwater inflow has caused a loss of the many small creeks that furnished freshwater to the bay and has diminished the degree to which mangroves support a healthy, diverse epiphytic community and provide habitat for both sport fish and their prey. Alteration of freshwater inflow has caused a shift in the boundary between the mangrove and herbaceous wetland and the inland migration of the landward boundary of the ''white zone'' (Ross et al. 2000). The white zone is a band of low productivity at the ecotone between brackish and freshwater wetlands. Recent studies in the wetlands of Barnes and Card Sounds (see Figure 1 for location) indicate that the boundary of the white zone has moved inland by an average of 1.5 km since 1940, and the white zone is expanding (Ross et al. 2000). The most significant changes to the white zone boundary and width occur in areas cut off from freshwater sources by canals or roads (especially east of U.S. Highway 1). Low productivity of the white zone may be primarily the result of wide seasonal fluctuations in soil salinity and moisture content due to reductions in freshwater inputs from upstream sources (Ross et al. 2002). CERP's restoration of a more natural freshwater flow across the coastal wetlands should reduce the areal extent of the white zone and shift its inland boundary seaward. Reestablishing flow across a broader front through re-created coastal freshwater creek systems should also restore full mangrove functionality. Exotic vegetation has replaced the white zone in some areas but is not a substitute for natural herbaceous wetland, and the exotics may have to be addressed with specific remedies to restore coastal wetlands.

Sea-level rise has to be considered in wetland restoration. For one, it influences the location of the ecotone between the mangrove and herbaceous wetland and the boundary of the white zone, and sea-level rise might shift them inland over coming decades. For another, hydrostatic pressure from increased sea level might further retard ground-water inflows already diminished by a lowered water table.

Benthic Communities

Relationship of Bottom Habitat to Freshwater Inflow Volume and Variation. Benthic communities are related to stressors as depicted in the third diamond of Figure 2. Benthic communities are directly impacted by the volume and intensity of freshwater inflow and the range and rapidity of its variation. Point-source discharges of fresh water into the bay via conveyance canals result in large, but ephemeral, salinity fluctuations that deleteriously affect benthic communities (Montague and Ley 1993, Irlandi et al. 1997). The bay bottom in the vicinity of canals often is devoid of benthic organisms. Miami-Dade Department of Environmental Resources Management documented destruction of established benthic sessile communities in Manatee Bay in the extreme south Biscayne Bay by sudden and prolonged high-volume releases of fresh water. Recovery is dependent upon the duration of appropriate salinity regimes between events. Benthic communities are also directly affected by trawling, which can significantly disturb bottom habitat and benthic organisms.

Pink Shrimp

Pink shrimp are related to stressors primarily through diamonds 2 and 3 in Figure 2. These relate suitability of habitat for pink shrimp to salinity pattern and water quality and catches in the fishery to abundance of juvenile pink shrimp.

Relationship of Suitable Pink Shrimp Habitat to Salinity Pattern and Water Quality. Changes in water management in relation to CERP are expected to expand the area of optimal habitat for juvenile pink shrimp both directly and indirectly. Salinity, which affects many physiological processes, is a major environmental factor directly influencing pink shrimp. Like many species, pink shrimp have an optimum salinity range (Browder et al. 2002). Although the species may be found outside of this range, survival, growth, and reproduction may not be as great. As for many species, optimum salinity for shrimp must occur in conjunction with suitable bottom habitat (e.g., seagrass) to be supportive, and salinity patterns and water quality will directly affect seagrass distribution, composition and density, thus affecting shrimp indirectly (Browder et al. 2005).

Relationship of Juvenile Pink Shrimp to Shrimp Harvests. High densities of juvenile pink shrimp can be expected to enable high catch rates in fisheries. A close link between juvenile densities and catch rates in bay shrimp fisheries would be expected because nursery and fishing grounds overlap or are in close proximity.

Fishing effort may affect juvenile density on fishing grounds, but trawls cannot operate in waters less than one meter deep, where the nursery grounds in Biscayne Bay are located (Diaz 2001). The relationship of pink shrimp juveniles in Biscayne Bay to offshore spawning or fishing grounds is unknown. The nearest known spawning and fishing grounds are near the Dry Tortugas, and the relationship between the spawning grounds and the Biscayne Bay nursery has not been determined.

Estuarine Fish Community

Relationship of Estuarine Fish Communities to Salinity Pattern. The estuarine fish community is related to stressors through diamonds 2 and 3 in Figure 2. Abundance and biomass of estuarine fishes has been reduced and species diversity has changed due to a loss of estuarine habitat along the bay's western shoreline (Serafy et al. 2001). Much of this habitat loss stems from changes in freshwater inflow that have disturbed the natural correspondence of favorable salinity with favorable bottom and shoreline habitat for estuarine species (Browder and Moore 1981). These species need a persistent positive salinity gradient extending from coastal wetlands, freshwater coastal creeks, and shallow nearshore waters into the bay. Flow from canals rather than through coastal wetlands prevents development of a positive gradient from interior wetlands into the bay. Unnaturally high salinity fluctuations caused by canal discharges further reduce suitable habitat for estuarine fish communities (Serafy et al. 1997). Presently, the rate of freshwater inflow fluctuates in a much more pronounced way than it did prior to the construction of the water-management system. Fluctuation is because of the shortage of storage for stormwater runoff in the watershed and manipulation of the little storage that exists. For example, at the end of wet season and during dry season (generally November to May), water may be discharged to artificially maintain low ground-water elevations in the watershed to promote agricultural activity, even though no rainfall has occurred; contrarily, sometimes no water is discharged after storm events because water stages are still below optimum. Spatial and temporal patterns of freshwater delivery that radically depart from the natural pattern of flow in relation to rainfall do not provide optimal habitat for estuarine species. Many species that can withstand gradual changes in salinity are vulnerable to the abrupt lowering of salinity caused by freshwater pulses (Serafy et al. 1997).

Fish and Bottlenose Dolphin Health

Contaminants present in Biscayne Bay's sediments and water column at various locations, including the Miami River mouth, may affect faunal health and development in the bay. Fish and bottlenose dolphin were selected to help monitor potential adverse effects of contaminants because a relatively high prevalence of morphological abnormalities has been found in fish from some locations in Biscayne Bay, and bottlenose dolphin are a long-lived species in which contaminants are known to accumulate, according to studies in other estuaries. Fish and dolphin health are related to stressors through diamond 1 in Figure 2.

Relationship of Fish Abnormalities to Human Influences. The relationship between exposure to anthropogenic inputs and morphological abnormalities observed in Biscayne Bay fishes needs evaluation in view of the higher prevalence of fish with abnormalities in areas of the bay directly exposed to human inputs. The most common abnormalities in Biscayne Bay fish are scale disorientation and deformed or missing dorsal fin spines, which are found in a number of species (Browder et al. 1993). Limited data from selected locations showed significant correlations between combined abnormalities and aliphatic hydrocarbons in sediments and between abnormalities in bluestriped grunt (*Haemulon sciurus* Shaw) and copper in sediments (although not with other sediment contaminants) (Gassman et al. 1994). Other factors can also influence fish health and development, including, according to some reports, previous encounters with fishing gear.

Relationship of Bottlenose Dolphin Toxicant Body Burden to Toxicants in the Sediments. The body burden of toxicants in the Biscayne Bay resident bottlenose dolphin population may reflect their degree of toxicant exposure. Body burdens could be correlated with various health-assessment indices that describe the status of population health. Through NOAA and its collaborators, a program is gradually evolving that characterizes toxicant body burdens and blood profiles of dolphin populations in various estuaries of the southeastern United States. Information from the resident Biscayne Bay dolphin population could therefore be used to compare toxicant exposures in Biscayne Bay to other estuaries. Such an effort would be facilitated by the ongoing NOAA project to identify and catalogue resident dolphins of the bay to distinguish them from members of coastal migrant populations and to determine local movements.

Manatees

The relationship of manatees to stressors is depicted in diamonds 3 and 4 of Figure 2. Manatees are directly

affected by floodgate closures, a documented cause of mortality. They may also be affected by the way that canals and levees have concentrated the availability of fresh water at a few sites, almost all near floodgates.

Relationship of Manatee Distribution to Timing, Location, and Volume of Freshwater Inflow. Changes in timing, location, and volume of freshwater inflow could affect manatee distribution within the bay and their use of canal habitat. For example, restoration of more natural and stable freshwater creeks and springs may enhance manatee habitat in areas more remote from human threats. However, complete elimination of existing canals (or access to them) or discharge structures may disrupt behavior of individual manatees that traditionally utilize such sites.

Relationship of Manatee Mortality to Water-Control Structure Operations. Water control floodgates are the leading cause of determinable manatee mortalities in Biscayne Bay (Mayo and Markley 1995, FWC 1999, USFWS 2001). Miami-Dade County leads the state in floodgate and other human-related causes of manatee mortality. Manatees are attracted to canals as a source of fresh water and cold-weather refuge. Over the last two decades, water-control-structure operations have been modified, and some gates have been retrofitted with pressure-sensitive devices that are supposed to prevent the gates from closing on an object. Although this has resulted in some improvement, mortalities have continued. Modification of gates or their operation may affect manatee mortality. For example, if water normally discharged through a coastal water-control gate were diverted into a series of creeks, as planned in the Biscayne Bay Coastal Wetlands Project of CERP, then the frequency that the gate opens and closes would be reduced, thereby reducing the risk to manatees. The number of manatees in Biscayne Bay increases during cold weather, increasing vulnerability to human related impacts (e.g., control structures and boats) during that time of year, so gate operations are particularly important then.

Wading Birds

Relationship of Wading Bird Nesting Activity, Nesting Success and Foraging Activity to Water-Management Structures and Their Management. The relationship of wading birds to stressors is primarily through effects expressed in diamond 3 of Figure 2. Lorenz (2001a,b) showed that nesting success of roseate spoonbills in one colony (Tern Key) was detrimentally affected by changes in water stages caused by water-management structures and operations near Florida Bay. Feeding opportunities for roseate spoonbills and other wading birds also have been diminished by the reduction in freshwater flow to Biscayne Bay wetlands resulting from road construction and diversion of water into canals. Modification of the structure and operation of the water-management system in relation to Biscayne Bay wetlands could affect nesting success at the Tern Key site in eastern Florida Bay. Improvements in water management might also affect activity and nesting success of colonies of wading birds that nest on islands within Biscayne Bay.

RESEARCH QUESTIONS

Science issues were identified based on the hypotheses encapsulated in the conceptual ecological model. Those considered most important to address before restoration construction plans are finalized were consolidated into a set of 14 research questions. The selection of the most important science issues was by informal concensus in the workshops organized to develop the model and was based primarily on the degree to which the topic was considered to be fundamental to the success of Biscayne Bay restoration and relative uncertainty. The following 14 research questions, roughly priorized by the authors, were identified.

1. What is the quantitative relationship between upstream water management, rainfall, and flow into Biscayne Bay? 2. How is estuarine habitat affected by quantity, timing, and distribution of freshwater inflow? 3. What salinity gradient from interior coastal wetlands through the nearshore zone would optimize diversity and abundance of oligotrophic and mesohaline fish species in the bay and its coastal wetlands? 4. What is the quantitative relationship between nutrient and contaminant loads and spatial and temporal patterns of water-quality and sediment-quality? 5. Will use of reclaimed wastewater as a significant component of freshwater inflow have ecological, water quality, or sediment quality effects? 6. How is juvenile pink shrimp abundance affected by changes in quantity, timing, and distribution of freshwater inflow, and is there a direct quantitative relationship between juvenile pink shrimp abundance and fishing success? Is the catch per unit of effort in these fisheries affected by freshwater inflow? 7. How might proposed changes in water management affect seagrass distribution, density, species composition, and dominance in the western nearshore area? 8. What are the effects of freshwater inflow change and sea-level rise on the white zone? 9. What is the functional relationship of toxicant concentrations and fish exposure to the types of abnormalities prevalent in Biscayne Bay fish? 10. What is the actual exposure to toxicants of the bottlenose dolphins in Biscayne Bay? 11. Will changes in freshwater volume and delivery affect manatee distribution, particularly in south Biscayne Bay? 12. What effects will changes in

water management and control structures have on manatee mortality in Biscayne Bay. 13. Will wading bird nesting activity, nesting success, and foraging activity be improved by the reestablishment of more natural hydropatterns in Biscayne Bay's coastal wetlands? 14. Will changes in water management affect the spread of exotic fish and macroinvertebrate species?

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EXHIBIT 8

Environmental Changes associated with a Florida Power Plant

Damage to the biota of Biscayne Bay by the heated effluent of a power plant is demonstrated quantitatively and qualitatively. Algae and grasses are found to be replaced by blue-green filamentous algal mats; seasonal recovery is slow and the affected areas contain fewer kinds and smaller numbers of animals. Increased temperature is the chief cause.

In June 1968, we began a study of the effects of the heated effluent from Florida Power and Light Company's Turkey Point power plant on the shallow water environment of Biscayne Bay and on the resident biota. The results, although preliminary, lead me to stress the importance of careful site selection in the planning of the new nuclear power plants at Puerto Rico, Colombia, Argentina, Mexico, Brazil and in other tropical regions. At least one of these, at Angra dos Reis in Baia Grande, Brazil, is likely to have similar consequences to that at Turkey Point, unless it is placed in an area of better circulation.

The Turkey Point power plant is located about 40 km south of Miami on the western shore of Biscayne Bay. This part of the bay has an area of about 26,000 ha and is separated from the central portion of the bay by Featherbed Bank, and from Card Sound by the Arsenicker Keys and Cutter Bank. The bay is about 2 m in depth. In the area between Turkey Point and Point (the site of the discharge canal) the water is mostly less than 1 m deep.

Along the mainland shore there is a shelf about a half mile wide composed of mud and peat sediments, normally covered by turtle grass (*Thalassia testudinum*) and algae. East of this, the bottom is mostly covered with a thin layer of coarse sediment composed of broken shell and calcareous algal fragments. The hard bottom is characterized by the attached algae, *Udotea* and *Penicillus*, and by the drifting algae *Laurencia*. Sponges, alcyonarians and corals are common in areas where salinities remain relatively high and stable. On the shoreline of the Florida Keys, to the east, there is again a sediment shelf which is dominated by *Thalassia*, but this region has more echinoderms and reef forms than the western shore of the bay.

Effects on Currents and Temperature

Before the construction of the power plant the water circulation adjacent at Turkey Point was to the NNE on the ebb tide and SSW on a flood tide, except when winds produced other patterns. A net northward transport is indicated by sediment ripples. Two fossil fuel units began operation on April 1967 and April 1968. These use bay water to cool their steam condensers, and discharge this water at the rate of 35 m^3sec^{-1} at Turtle Point. This discharge has changed the current pattern, and there is now a consistent NNE flow. This pattern persists, regardless of tide, except when strong NW winds cause the flow to go east-south-east (Figure 1).

Bay water temperature measured on Pelican Bank, a shallow grass flat beyond the influence of the effluent, varied from a minimum of 10°C in winter to 32°C in summer. The fossil fuel plants increased the water temperature 6-7°C, and the discharge was, on average, 5°C above normal. About 10-12 ha were subjected to a temperature elevation of 4-5°C, 60 ha to 3-4°C, 120 ha to 2-3°C, 250 ha to 1-2°C water and over 400 ha to 0.5-1°C (Fig. 2).

In addition to the heat carried by the effluent, there was increased turbidity due to an organic substance, and increased iron concentrations in the effluent. An additional pollutant was copper, probably arising from the use of shark repellents during Air Force rescue training operations. Copper was distributed unevenly in the bay near Turkey Point. The concentrations of nutrient chemicals seemed to be greater than usual for subtropical estuaries. Dissolved oxygen concentrations were usually saturated and the lowest values observed in early morning hours were between 3 and 4 ppm.

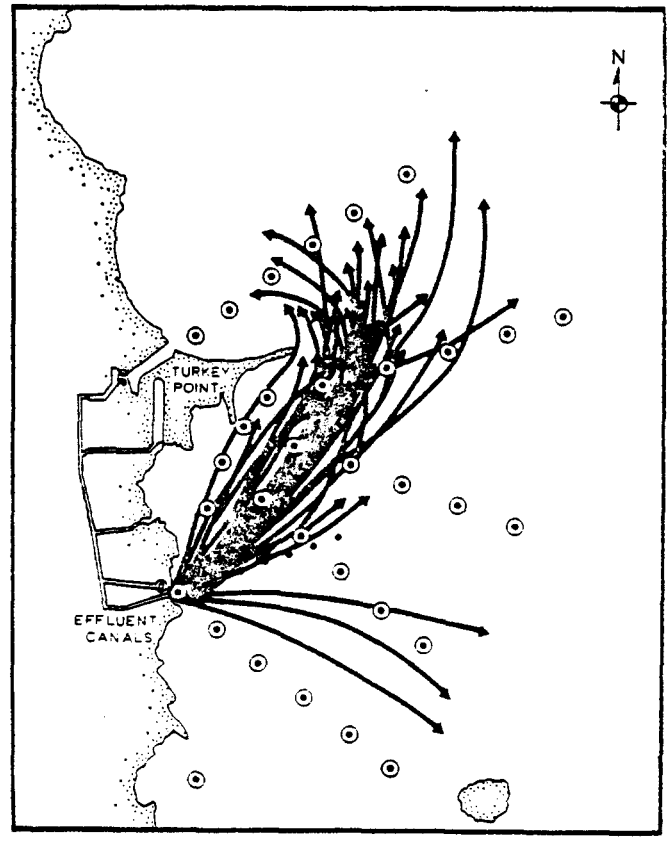

Fig. 1 Location of the axis of the thermal plume at Turkey Point.

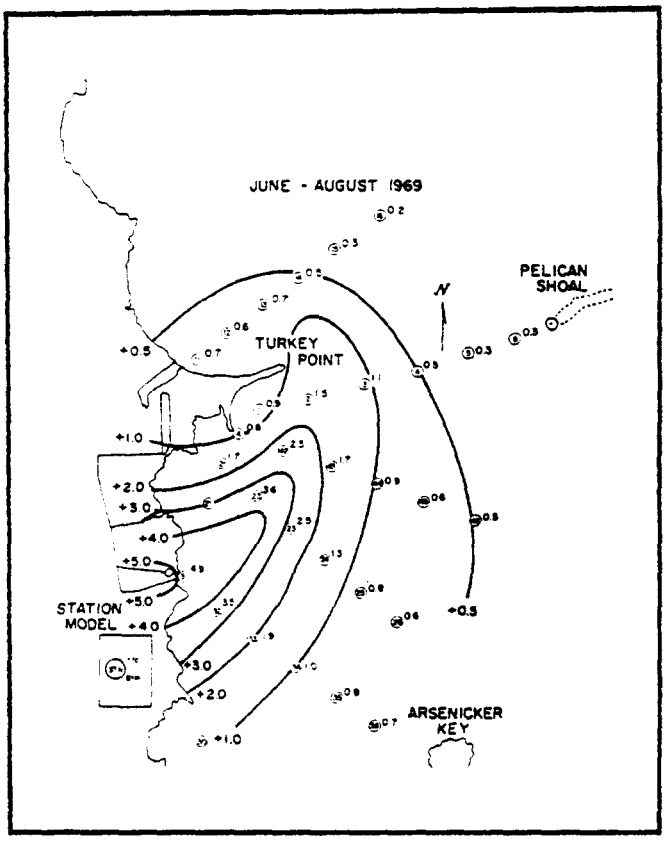

Fig. 2 Average summer increase in temperature (Sfc, surface; btm, bottom).

Effects on Plants

Plant abundance was studied by diving and counting the numbers of algae and *Thalassia* blades inside permanently marked grids at fourteen stations. After the power plant began operating, all the normal green, red and brown algae disappeared in an area of 12-20 ha and were replaced by a blue-green algal mat. In an area of 8-10 ha outside this, most of the macro-algae disappeared; *Thalassia* survived in sparse stands. In winter this area was colonized by *Diplanthera* which died in June when the temperature rose and salinity fell. A reduced number of species and abundance of algae, and a lowered production of *Thalassia* were noted in an area of about 120 ha, which corresponds closely with the location of the +3°C isotherm (Roessler and Zieman, 1970; Zieman 1970).

Effects on Animals

Animals were sampled monthly by otter trawls lined with 13 mm mesh. Seven replicate hauls were made at each station. A total of twenty-eight stations have been studied (Fig. 3). During the first 18 months of the study, station G located within the +4°C isotherm produced almost no animals (2.5/drag). Two stations (SEI and SI) located within the +3°C isotherm produced fewer species and fewer individuals (41 and 13/drag) than similar areas in the bay which were outside the heated area. Two stations (S2 and F) located within the +2°C isotherm had greater numbers of animals (116 and 234/drag) comprising mostly molluscs (75 and 147/drag) and crustaceans (37 and 79/drag). These are apparently using the dying vegetation as a food source (Table 1). Stations located outside the +2°C isotherm were not noticeably affected, but detailed analysis may indicate some seasonal changes in numbers of species, abundance and species dominance, particularly in the summer.

Laboratory studies on algae, shrimp larvae and crab larvae indicate that prolonged exposure to temperatures between 33 and 34°C are lethal to *Penicillus*, *Valonia*, pink shrimp, stone crabs and carideans. This is in agreement with the field observations that suggest that an increase of +3°C over the summer ambient of 31°C causes death to algae, reduced production in *Thalassia* and changes in the animal communities.

Nugent (1970) reported the results of studies on the effects of the heated effluent on some of the larger fishes and other animals in the effluent canal and a control canal. He made collections by means of gill nets, traps, hoop nets and slate panels. Gill net catches of white mullet, striped mullet, fantail mullet, snook and blue crabs were similar in the heated and control canals during winter months, but were significantly smaller in the heated canal in summer. Catches of grey snappers and tarpon at the heated and control stations were similar. The lemon shark was the only fish species taken in greater numbers in the heated canal compared to the control station. Catches of pinfish in traps at different stations seemed to vary according to temperature. They were driven from the heated canal in summer when the temperature reached 40°C and did not return until autumn when the temperature reached 21°C. Juvenile blue crabs were caught in greater numbers in the heated canal except in July and August.

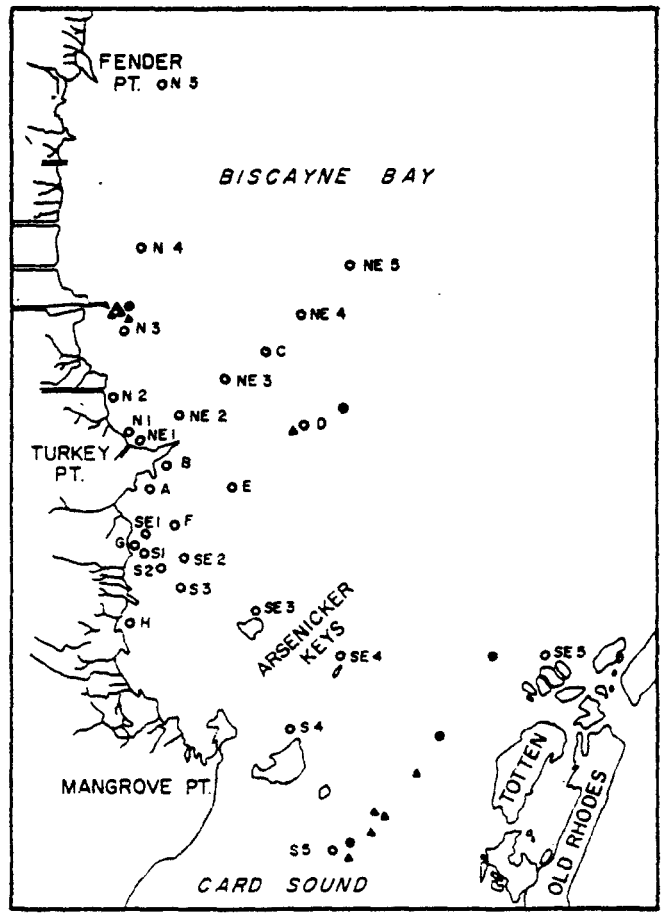

Fig. 3 Location of trawl sampling stations.

EXHIBIT 8

Table 1 Catch per drag of Algae and Animals and Average Annual Deviation from Ambient Temperature at Trawl Stations

Station	± Ambient Temp.(°C.)	Effort	Catch/effort Weed (kgs)	Fish	Mollusks	Crustaceans	Sponges	Coelenterates	Echinoderms	Misc.	Total
N1	+ 0.30	128	4.6	1.8	20.5	40.6	1.7	0.16	0.00	0.00	64.7
N2	+ 0.34	128	3.2	4.8	43.9	14.1	0.1	0.04	0.01	0.01	62.9
N3	+ 0.27	128	6.4	4.4	129.5	51.3	0.7	0.02	0.07	0.00	186.0
N4	− 0.16	54	3.1	2.6	89.1	81.9	2.1	0.06	7.48	0.00	183.3
N5	+ 0.07	54	8.9	23.1	361.2	47.1	0.0	0.02	0.00	0.00	431.5
NE1	+ 0.33	128	3.4	1.9	32.1	39.2	1.4	0.02	0.52	0.00	75.1
NE2	+ 0.23	128	5.0	2.1	28.7	60.2	1.7	0.03	1.03	0.00	93.8
NE3	+ 0.01	128	4.0	2.3	38.2	65.3	0.7	0.08	4.98	0.00	111.5
NE4	− 0.13	54	1.0	1.3	8.9	12.6	2.1	0.43	6.33	0.01	31.7
NE5	− 0.32	54	0.1	0.8	1.9	3.6	0.9	0.22	1.61	0.00	9.1
SE1	+ 3.25	128	1.4	0.9	28.4	11.4	0.2	0.02	0.02	0.00	40.8
SE2	+ 0.86	128	3.2	1.6	54.9	62.1	1.5	0.02	7.03	0.02	127.1
SE3	+ 0.34	128	2.7	2.2	40.1	61.4	1.9	0.00	3.73	0.00	109.2
SE4	− 0.02	54	1.0	1.5	16.6	6.8	1.0	0.24	1.39	0.00	27.6
SE5	+ 0.25	54	0.1	2.4	1.6	1.0	0.5	0.56	6.57	0.00	12.7
S1	+ 3.42	128	0.7	0.6	5.7	7.0	0.1	0.00	0.04	0.00	13.4
S2	+ 1.99	128	3.5	1.6	75.4	36.6	0.4	0.00	2.22	0.00	116.1
S3	+ 0.86	128	1.7	0.9	23.2	29.6	0.7	0.02	5.78	0.00	60.3
S4	+ 0.75	52	0.5	1.2	10.7	4.5	7.6	0.04	8.23	0.00	32.3
S5	+ 0.52	54	0.1	1.4	2.6	1.3	4.4	1.65	6.24	0.00	17.7
A	+ 1.39	114	2.3	1.3	41.4	14.8	1.0	0.00	0.05	0.00	58.6
B	+ 0.84	86	2.4	1.1	16.6	17.8	0.3	0.01	0.21	0.02	36.1
C	+ 0.08	86	1.5	1.6	17.0	24.2	0.9	0.05	5.29	0.00	49.1
D	20.45[1]	86	0.8	0.9	15.5	8.1	20.3	0.17	0.70	0.03	45.8
E	+ 0.28	86	1.7	1.0	24.4	15.1	0.6	0.03	5.27	0.01	46.5
F	+ 1.81	86	7.0	1.9	146.6	78.9	6.6	0.05	0.03	0.00	234.1
G	+ 4.20	86	0.0	0.2	0.5	1.7	0.0	0.00	0.00	0.00	2.5
H	+ 1.39	86	3.5	1.7	45.2	24.0	0.7	0.08	0.23	0.00	71.8

[1] Station D was considered the temperature control station.

Hoop net catches indicated that most mobile animals leave the effluent canals in summer. Mangrove snapper are one of the last fishes to leave the heated canal, and tarpon remain throughout the summer. The other fishes return in autumn when the temperature is lower. Barnacle settlement on slate panels indicated that settlement was inhibited at the station closest to the plant effluent during June and July. Growth rates were similar in control and affected areas in summer, but in winter growth was greater in the heated areas.

Future Effects

It is not yet possible to predict what will happen when the nuclear reactors begin to operate and the cooling water requirements increase by a factor of 3.5. The 120 ha area of damage may increase to 400 ha, or by a square function. Furthermore, the effluent may be discharged in a different area, some 8 km south of the present location, since the Florida Power and Light Company is constructing a canal to Card Sound for this purpose; prediction is thus made even more difficult. Card Sound is a smaller body of water 5 km wide by 8 km long, with an average depth of 3 m. It has a slow flushing period (Dean 1969, 1970; Michel 1970). The rim of sediments and *Thalassia* is extremely narrow and the deep water comes close to shore (Wanless, 1969). The shoreline flora and fauna are similar to those in Biscayne Bay (Iversen & Roessler, 1969) and temperatures of 3°C above ambient will damage animals and plants. The effects on the sponge-alcyonarian community are unknown since this community was not subjected to temperature stress in Biscayne Bay.

An additional problem which will probably be encountered with the nuclear reactors is damage to planktonic organisms and larval forms of the benthic communities. Zooplankton and the larval forms of many species of fishes and invertebrates are present in Biscayne Bay and Card Sound in all seasons. With the present fossil fuel plants, 35 m^3sec^{1-} of water are being passed through the plant. When the nuclear generators are operating the total water requirements will be 120 m^3sec^{-1}. The consequent temperature rise of 8°C and mechanical damage will undoubtedly kill some of the plankton passing through the plant.

An additional 110-170 m^3sec^{-1} of bay water will be added to the effluent from the plant to provide cooling. The plankton in this water will be subjected to a rise in temperature of from 2-4°C for a period of 4.5h or more. In laboratory studies it has been shown that the copepod (*Acartia tonsa*) dies when temperature exceeds 36°C despite adaption to high temperature (Reeve and Cosper, 1970).

Damage to the biota of Biscayne Bay from the heated effluent of the Florida Power and Light Company's Turkey Point power plant has been demonstrated on a qualitative and quantitative basis. Algae and sea grasses have been killed and replaced by blue-green filamentous algal mats. There has been partial recovery of plants seasonally, but *Thalassia* was replaced by *Diplanthera*. Areas in which the normal algae and sea grass communities have been damaged or destroyed have fewer kinds and smaller quantities of animals. Areas in which the *Thalassia* and algae die off seasonally and recolonize in winter provide a source of detritis which causes increased abundance of a few species of molluscs and crustaceans. The area in which these changes occurred are closely associated with the temperature changes.

Since there was a partial recovery of the biota in winter when the effects of water currents and chemical

pollutants are still present, it is believed that increased temperature is the major cause of damage. Sustained temperatures above 33°C are apparently dangerous to the biota. This temperature also appears to be critical for algae, shrimp larvae, crab larvae and fish eggs examined in the laboratory.

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Ecological Implications of Breakwater Construction in Monterey Harbour

An attempt is being made to assess the effects of the construction of a breakwater complex on the shallow water marine environment of Monterey Bay. Many species may be driven away by temperature and salinity fluctuations and by the accumulation of silt and pollutants.

Monterey is situated at the southern end of Monterey Bay which is broadly open to the Pacific to the west. It has been a port since 1602 when it was established as a centre for Spanish California, but it is not a natural harbour and it is particularly exposed to waves and swell from the northwest. The first wharf to be built on the Pacific coast was nevertheless constructed at Monterey in 1845. With the establishment of a permanent fishing fleet just before World War I, it became essential to provide some protection for the vessels. Thus a permeable breakwater consisting of granite rock quarried locally was constructed by the US Army Corps of Engineers between 1931 and 1934. This breakwater runs in an easterly direction from the shore north of the harbour area. It is approximately 570 m long and has proved effective in damping waves and swell coming from the north, but surge in the harbour is still a problem. In 1926 a major wharf (called Municipal Wharf No. 2) was constructed to the east of the harbour area and extended from the shore for approximately 575 m in a northerly direction. This wharf was built primarily on concrete pilings and is still in good condition. The harbour structures existing today are shown in Fig. 1.

Need for Breakwater

For many years the City of Monterey and the local fishing industry lobbied unsuccessfully to have the Corps of Engineers build a so-called companion breakwater which would be constructed to the east of Wharf No. 2 and run from the shore toward the north and northwest to near the end of the present breakwater leaving only a narrow channel for passage between the two. At first the rationale for building the new breakwater was to give additional safe moorage for the large fishing fleet, particularly by reducing surge, but with the decline of the fishing vessels due to the disappearance of the sardines along the coast the emphasis has shifted more recently to giving protection and berthing for an ever expanding fleet of pleasure craft and to afford pier space in a protected harbour for oceanographic research vessels.

Plans for Construction

In September, 1970, it was officially announced that a new breakwater complex would be built by the Army Corps of Engineers and some Federal funds were appropriated. Although there are some remaining problems regarding funding, the project is now in the advanced planning stage and there is every indication that within a year or two construction will begin (Fig. 2). Since its inception many years ago this project has become expanded many times. The new east break-

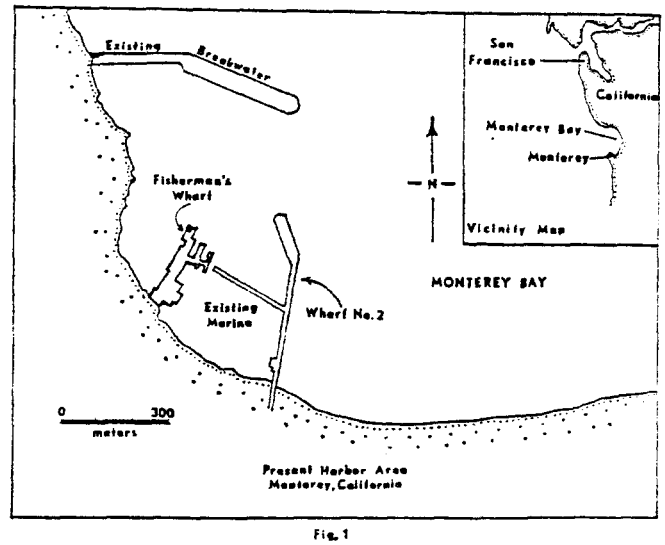

Fig. 1

EXHIBIT 9

Revised Final Draft **July 2007**

CENTRAL AND SOUTHERN FLORIDA PROJECT

COMPREHENSIVE EVERGLADES RESTORATION PLAN

Programmatic Regulations

Six Program-Wide Guidance Memoranda

U.S. Army Corps of Engineers
Jacksonville District

South Florida Water
Management District

EXHIBIT 9

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INTRODUCTION

COMPREHENSIVE EVERGLADES RESTORATION PLAN

First authorized by Congress in 1948, the Central and Southern Florida (C&SF) Project provides the South Florida ecosystem with flood control, regional water supply, prevention of saltwater intrusion, preservation of fish and wildlife, recreation, and navigation. In fulfilling these objectives, the project has had unintended adverse effects on the natural environment that constitutes the Everglades and South Florida ecosystem. As a result, in 2000 Congress authorized the Comprehensive Everglades Restoration Plan (CERP) or "the Plan" to restore, preserve, and protect the South Florida ecosystem while providing for other water-related needs of the region. CERP consists of structural and operational modifications to the C&SF Project and will be implemented over the next 35 years. Together these components are expected to deliver benefits to improve the ecological functioning of over 2.4 million acres of the South Florida ecosystem, improve urban and agricultural water supply, improve deliveries to coastal estuaries, and improve regional water quality conditions, while maintaining the existing levels of flood protection.

GOALS AND PURPOSES OF THE PLAN

The Water Resources Development Act of 2000 (section 601 of WRDA 2000) approved the Plan contained in the "Final Integrated Feasibility Report and Programmatic Environmental Impact Statement" dated April 1, 1999. As stated in section 601(h) of WRDA 2000, "the overarching objective of the Plan is the restoration, preservation, and protection of the South Florida ecosystem while providing for other water-related needs of the region, including flood protection and water supply." As approved by Congress, the Plan contains 68 major components that anticipate the creation of approximately 217,000 acres of reservoirs and wetland-based water treatment areas, wastewater reuse plants, seepage management, and the removal of levees and canals in natural areas. These components increase storage and water supply for the natural system, as well as for urban and agricultural needs, while continuing to fulfill the original objectives of the existing CS&F Project. The Plan will restore more natural flows of water, including sheetflow; improve water quality; and establish more natural hydroperiods in the South Florida ecosystem. Improvements to fish and wildlife habitat, including those that benefit threatened and endangered species, are expected to occur as a result of the restoration of hydrologic conditions. This will promote the recovery of native flora and fauna, including threatened and endangered species.

Section 601 of WRDA 2000 requires that:

> "The Plan shall be implemented to ensure the protection of water quality in, the reduction of the loss of fresh water from, and the improvement of the environment of the South Florida ecosystem and to achieve and maintain the benefits to the natural system and human environment described in the Plan, and required pursuant to this section, for as long as the project is authorized."

THE PROGRAMMATIC REGULATIONS

Section 601 of WRDA 2000 required the Secretary of the Army, with the concurrence of the Secretary of the Interior and the Governor of Florida, and after notice and opportunity for public comment, to promulgate Programmatic Regulations to ensure that the goals and purposes of the Plan are achieved and to establish the processes necessary for implementing the Plan. The final Programmatic Regulations became effective on December 12, 2003 as Title 33, Part 385 of the Code of Federal Regulations (CFR).

INTEGRATED FRAMEWORK FOR ASSURING THE GOALS AND PURPOSES OF THE PLAN ARE ACHIEVED

Section 601(h) of WRDA 2000 and the Programmatic Regulations establish an integrated framework of tools, processes, and an enforcement mechanism for ensuring that the goals and purposes of the Plan are achieved. This framework includes tools for planning, implementation, and evaluation; a process for developing these tools in an open public process, with input from other Federal, Tribal, State, and local agencies; and an enforcement mechanism to ensure that the requirements of the statute are carried out.

Tools

Section 601 of WRDA 2000 establishes the following tools for ensuring that the goals and purposes of the Plan are achieved:

- The specific planning tool established by section 601(h) of WRDA 2000 is the Project Implementation Report (PIR).
- The specific implementation tools established by section 601(h) f WRDA 2000 are Project Cooperation Agreements (PCAs) and Operating Manuals.
- The specific evaluation tool established by section 601(h) of WRDA 2000 is the interim goals for evaluating the restoration success of the Plan.
- In addition to the specific planning, implementation, and evaluation tools established by section 601(h) of WRDA 2000, the Programmatic Regulations establish additional tools, including but not limited to, Project Management Plans, Program Management Plans, Comprehensive Plan Modification Reports, the Master Implementation Sequencing Plan (MISP), and interim targets for evaluating progress towards achieving the other water-related needs of the region.

Processes

The Programmatic Regulations establish the processes for developing these tools. Consistent with section 601(h) of WRDA 2000, the Programmatic Regulations were developed after notice and opportunity for public comment, with the concurrence of the Secretary of the Interior and the Governor, and in consultation with the Seminole Tribe of Florida, the Miccosukee Tribe of Indians of Florida, the Administrator of the Environmental Protection Agency, the Secretary of Commerce, the Florida Department of Environmental Protection, and other Federal, Tribal, State, and local agencies.

Enforcement Mechanism

The specific enforcement mechanism established by section 601(h) of WRDA 2000 is the "Comprehensive Everglades Restoration Plan Assurance of Project Benefits Agreement," dated January 9, 2002, between the President of the United States and the Governor, under which the State will ensure by regulation or other appropriate means, that water made available by each project in the Plan will not be permitted for a consumptive use or otherwise made unavailable by the State until such time as sufficient reservations of water for the restoration of the natural system are made under State law in accordance with the PIR and consistent with the Plan.

GUIDANCE MEMORANDA

Section 385.5 of the Programmatic Regulations specifically requires the development of six program-wide Guidance Memoranda that are consistent with the Programmatic Regulations and applicable law, and establish additional procedures to achieve the goals and purposes of the Plan. The Guidance Memoranda are fundamental to the integrated framework; provide direction for using the tools for planning, implementation, and evaluation; and provide assurances that the goals and purposes of the Plan will be achieved. Figure A illustrates the interrelationship between the tools and technical guidance used to implement the tools. Figure A also illustrates the interrelationship between each of the Guidance Memoranda as well as with the integrated framework of tools, processes, and enforcement mechanisms. Presenting the six Guidance Memoranda as one complete package also demonstrates how the Guidance Memoranda work in concert to ensure the goals and purposes of the Plan are achieved. The Guidance Memoranda address numerous topics including common methods, general procedures, and guidance to implement the Plan. The six program-wide subjects for the Guidance Memoranda as set forth in the Programmatic Regulations are:

- Guidance Memorandum #1: Project Implementation Reports
- Guidance Memorandum #2: Formulation and Evaluation of Alternatives for Project Implementation Reports
- Guidance Memorandum #3: Savings Clause Requirements
- Guidance Memorandum #4: Identifying Water Made Available for the Natural System and for Other Water-Related Needs
- Guidance Memorandum #5: Operating Manuals
- Guidance Memorandum #6: Assessment Activities for Adaptive Management

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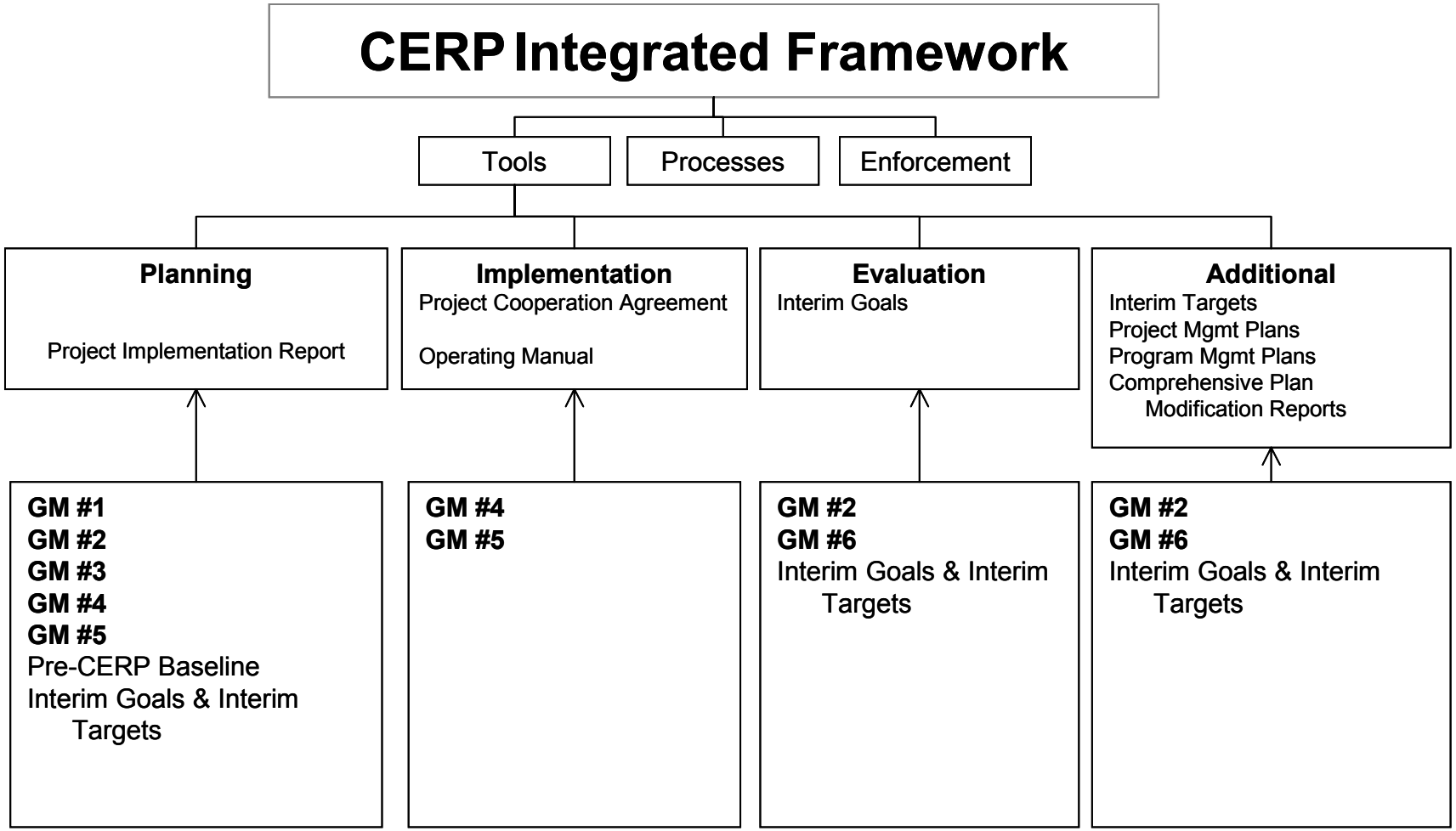

Figure A: Framework for Assuring Goals and Purposes of the Plan are Achieved

GUIDANCE MEMORANDA DEVELOPMENT AND APPROVAL PROCESS

Section 385.1 of the Programmatic Regulations requires the Secretary of the Army to ensure that the public understands the linkage among the processes, tools, and enforcement mechanism and to ensure that the Secretary can monitor the effectiveness of this integrated framework in assuring that the goals and purposes of the Plan are achieved by:

- Providing for public notice and comment in the development of planning, implementation, and evaluation tools;
- Providing notice of final action on planning, evaluation, and implementation tools;
- Making available to the public on a web site or by other appropriate means final, and where appropriate, draft copies of all planning, evaluation, and implementation tools; and
- Explaining through the Programmatic Regulations and by other appropriate means the process for developing the tools, the linkage between the process, tools, and enforcement mechanism, and the means by which these elements constitute an integrated framework for assuring that the goals and purposes of the Plan are achieved.

Section 385.5(b) of the Programmatic Regulations describes the special processes for the development of the six program-wide Guidance Memoranda. The development process for these Guidance Memoranda was initiated prior to the effective date of the Programmatic Regulations in order to layout a strategy for effectively and efficiently developing the technical work products and to elevate issues for resolution within the prescribed time frame. The Programmatic Regulations require that the US Army Corps of Engineers (USACE) and the South Florida Water Management District (SFWMD) develop, in consultation with the Department of the Interior, the Environmental Protection Agency, the Department of Commerce, the Miccosukee Tribe of Indians of Florida, the Seminole Tribe of Florida, the Florida Department of Environmental Protection, and other Federal, Tribal, State, and local agencies, the six Guidance Memoranda for approval by the Secretary of the Army. Figure B illustrates the Guidance Memoranda development and approval process as required by section 385.5 of the Programmatic Regulations.

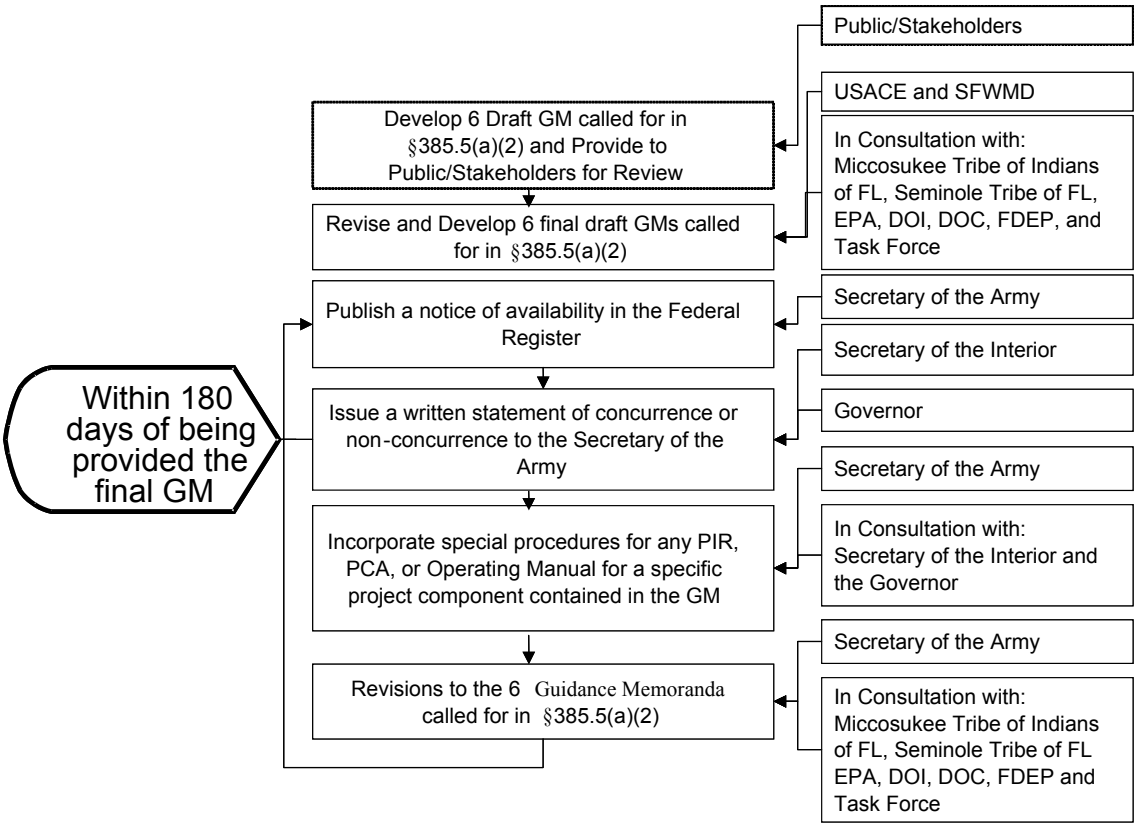

Figure B: Guidance Memoranda Approval Process

The USACE and the SFWMD began the development process by inviting all of the governmental entities that would be consulting on the documents to participate on a team responsible for developing the Guidance Memoranda. This interagency team was then further divided into sub-teams responsible for preparing initial outlines and drafting the documents. This process was designed to be open and inclusive. An initial public meeting was held at SFWMD in West Palm Beach, Florida to invite the public to participate in the process and present the strategy for developing the guidance. Information about the work of the teams (meeting summaries and initial work products) was posted on the CERP website (www.evergladesplan.org). Throughout the yearlong development process briefings were conducted for the SFWMD Water Resources Advisory Commission and the South Florida Ecosystem Restoration Task Force. In October 2004, an In-Progress Review meeting was held with USACE South Atlantic Division and USACEHQ and the Office to the Assistant Secretary of the Army for Civil Works to review the draft work products, resolve issues, and request direction from USACE management.

As part of the consultation process required by the Programmatic Regulations, a draft of this document containing the six Guidance Memoranda was made available for review by agencies and the public in November 2004. The review period for the agencies and the public remained open until January 2005. Meetings were held with stakeholder groups during this period. Consultation meetings were held with the Seminole Tribe of Florida and the Miccosukee Tribe of Indians of Florida. The USACE and the SFWMD also

consulted with the South Florida Ecosystem Restoration Task Force at their meetings in December 2004 and January 2005. Comments were received from a number of agencies, stakeholder groups, and individuals. These comments were posted on the CERP web site. The USACE and SFWMD then prepared a final draft of this document containing the Guidance Memoranda.

In accordance with the Programmatic Regulations, a final draft containing the Guidance Memoranda was submitted to the Secretary of the Army for approval and concurrence by the Secretary of the Interior and the Governor. On May 6, 2005, the Department of the Army placed a Notice of Availability in the Federal Register to indicate the availability of the final draft of the Guidance Memoranda and that public comments would be accepted until June 6, 2005. Following the close of the public comment period, the comments were reviewed and considered. Due to the extensive comments that were received and the concerns that were raised by the public, the May 2005 draft was revised and this revised final draft was prepared for public comment.

ORGANIZATION OF THIS DOCUMENT

The Guidance Memoranda are fundamental to the integrated framework; provide direction for using the tools for planning, implementation, and evaluation; and provide assurances that the goals and purposes of the Plan will be achieved.

This document contains the six Guidance Memoranda and is divided into six main sections, one for each of the Guidance Memoranda. Where necessary, technical details that will assist Project Delivery Teams with using the guidance are included at the end of that section as an attachment. This document also contains appendices that include a glossary of terms, a list of acronyms, and a list of references.

REVISIONS TO THE GUIDANCE MEMORANDA

These Guidance Memoranda are based on the best information available during their development. In accordance with the Programmatic Regulations, the Secretary of the Army may, whenever the Secretary believes it is necessary, and in consultation with the Department of the Interior, the Environmental Protection Agency, the Department of Commerce, the Miccosukee Tribe of Indians of Florida, the Seminole Tribe of Florida, the SFWMD, the Florida Department of Environmental Protection, other Federal, Tribal, State, and local agencies, and the public, revise the Guidance Memoranda. Such revisions will be developed and approved consistent with the process used to develop the Guidance Memoranda document and will require the same concurrence process.

RELATIONSHIP WITH OTHER FEDERAL OR STATE GUIDANCE

These Guidance Memoranda are intended to supplement existing Federal and State policy guidance. For example, the USACE has numerous Engineering Regulations (ERs) that set forth the requirements for planning and implementation of Federal water resources

projects and will be used in conjunction with these Guidance Memoranda to plan and implement projects.

FLEXIBILITY IN IMPLEMENTING GUIDANCE MEMORANDA

In accordance with section 385.5(b)(1) of the Programmatic Regulations, the Guidance Memoranda should be consistent with applicable law in accordance with the goals and purposes of the Plan. Should a situation arise in development of a PIR where the procedures set forth in the Guidance Memoranda are in conflict with achieving the goals and purposes of the Plan or applicable law, the Secretary of the Army, Secretary of the Interior and the Governor, or their designees, shall determine whether a special procedure should be utilized in the PIR to address the issue.

SECTION 1: GUIDANCE MEMORANDUM #1 PROJECT IMPLEMENTATION REPORTS

1.1 PURPOSE

The Programmatic Regulations (33 CFR Part 385) for the Comprehensive Everglades Restoration Plan (CERP) require that a Guidance Memorandum be developed "that describes the major tasks that are generally needed to prepare a Project Implementation Report (PIR) and the format and content of a PIR." This Guidance Memorandum provides information about the purpose and requirements of a PIR and presents an outline for the content of a PIR.

1.2 APPLICABILITY

This Guidance Memorandum applies to all CERP projects. Section 601 of WRDA 2000 requires that a PIR be prepared for each CERP project (except for pilot projects) prior to implementation. The major tasks, PIR format, and PIR content should be similar for all PIRs. There may be differences in the level of detail included in each PIR and in the time necessary for completion based on specific situations. For example, the amount of detail necessary to complete each section of the PIR, the extent of previous formulation, the planning research activities, and/or the design detail may differ from project to project.

1.3 ROLE OF THE PROJECT DELIVERY TEAM

As defined in the Programmatic Regulations, Project Delivery Team (PDT) means the inter-agency, interdisciplinary team led by the US Army Corps of Engineers (USACE) and the non-Federal sponsor that develops the technical products necessary to implement a project. The USACE and the non-Federal sponsor, in consultation with other agencies, the tribes, and the public, are responsible for plan selection and preparation of the PIR for review and approval in accordance with applicable law.

1.4 PROJECT IMPLEMENTATION REPORTS

As required by section 601 of WRDA 2000 and the Programmatic Regulations (section 385.26), a PIR is required to be completed prior to implementing any component of CERP, with the exception of pilot projects. The PIR is intended to bridge the gap between the conceptual level of detail contained in the April 1999 "Final Integrated Feasibility Report and Programmatic Environmental Impact Statement," and the detailed design necessary to prepare plans and specifications required to proceed to construction. The PIR should provide to decision-makers and the public a well-organized, clear and concise documentation of the process the PDT followed during the planning effort. Additionally, the PIR provides environmental compliance information, such as Endangered Species Act coordination and section 404(b)(1) of the Clean Water Act evaluations, and includes an integrated National Environmental Policy Act (NEPA) document that will fully disclose anticipated effects

associated with the implementation of the alternative plans being evaluated, including the "no action" alternative.

The PIR documents the planning process and all relevant assumptions and rationale for project decision-making. All planning analyses, including economic, environmental, water quality, flood protection, real estate, and plan formulation, conducted during the planning phase are documented and included in the PIR. The PIR includes a full description and analysis of the benefits expected for each alternative plan. The PIR also identifies and quantifies uncertainties regarding the cost or performance of alternative plans or project components as well as impacts to formulation, operations, and performance. These uncertainties are not limited to hydrologic performance of the specific structure component, but also include uncertainties about the expected ecosystem response to the component. In addition, the PIR documents design activities for the selected alternative plan such as modeling, hydraulic design, and real estate.

In accordance with section 601 of WRDA 2000, all PIRs must accomplish the following:

- Provide the level of information, documentation, and analysis in addition to that in the "Final Integrated Feasibility Report and Programmatic Environmental Impact Statement" dated April 1, 1999, necessary for the Federal government and the State of Florida to approve CERP projects for authorization.
- Present the formulation, evaluation, selection, justification, and description of the selected alternative plan.
- Document the project cost and cost-sharing requirements of the non-Federal sponsor and the USACE, along with their responsibilities for implementation and operation of the project.
- Link the actions proposed in the subject PIR to the overall system-wide CERP Plan.
- Fulfill the assurances requirements of section 601 of WRDA 2000 and the Programmatic Regulations.

While the PIR has many aspects of a USACE feasibility study, the primary difference in these two reports is in the steps taken to complete formulation and evaluation of the project. Unlike a feasibility study, the PIR is based on components that have previously been formulated to a certain level in developing the Plan and are expected to accomplish specific Plan goals. As such, the PIR always begins with the formulation already completed in developing the Plan. In many cases, it is envisioned that the PIR effort will focus on optimization of the project described in the Plan. However, in some cases, formulation of additional alternatives will be needed. Additionally, unlike a feasibility study, the PIR must contain the additional analyses required by section 601 of WRDA 2000 and the Programmatic Regulations.

1.4.1 Programmatic Regulations Requirements

The Programmatic Regulations (section 385.26) require that each PIR:

- Be consistent with the Plan and applicable law, policy, and regulation, including the Federal government's Principles and Guidelines of the Water Resources Council, as modified by section 601(f)(2)(A) of WRDA 2000;

- Be based on the best available science;
- Comply with all applicable Federal, State, and Tribal laws;
- Contain sufficient information for proceeding to final design of the project, such as: additional plan formulation and evaluation, environmental and/or economic benefits, engineering and design, costs, environmental impacts, real estate requirements, and the preparation of the appropriate NEPA documentation;
- Contain the information necessary to determine that the activity is justified by the environmental benefits derived by the South Florida ecosystem in accordance with section 601(f)(2)(A) of WRDA 2000 and/or that the benefits of the project are commensurate with costs, and that the project is cost-effective;
- Comply, in accordance with section 601(b)(2)(A)(ii) of WRDA 2000, with applicable water quality standards and applicable water quality permitting requirements;
- Identify the appropriate quantity, timing, and distribution of water dedicated and managed for the natural system taking into account the availability of Pre-CERP Baseline water and previously reserved or allocated water as well as the estimated total quantity of water that is necessary for restoration of the natural system and the quantity of water anticipated to be made available from future projects;
- Identify the amount of water to be reserved or allocated for the natural system under State law necessary to implement the provisions of sections 601(h)(4)(A)(iv) and (vi) of WRDA 2000;
- Identify the quantity, timing, and distribution of water made available for other water-related needs of the region;
- Determine if existing legal sources of water are to be eliminated or transferred;
- Determine that implementation of the selected alternative will not reduce levels of service for flood protection that: (1) were in existence on the date of enactment of WRDA 2000; and (2) are in accordance with applicable law; and, as appropriate, consider opportunities to provide additional flood protection;
- Include an assessment of the monetary and non-monetary benefits and costs, optimization and justification, cost-effectiveness, and engineering feasibility of the project;
- Include a discussion of any significant changes in cost or scope of the project from that presented in the "Final Integrated Feasibility Report and Programmatic Environmental Impact Statement," dated April 1, 1999;
- Include an analysis, prepared by Restoration Coordination and Verification (RECOVER) of the project's contributions towards achieving the goals and purposes of the Plan, including, as appropriate, suggestions for improving the performance of the alternative plans;
- Describe how the project contributes to the achievement of interim goals and interim targets;
- Include a Draft Project Operating Manual (POM) as an appendix; and
- Include, as appropriate, information necessary for the non-Federal sponsor to address the requirements of Chapter 373 of the Florida Statutes (F.S.), and other applicable planning and reporting requirements of Florida law.

1.4.2 Level of Detail for Project Implementation Reports

The level of detail contained in a PIR should be commensurate with the complexity and cost of the project while including the information necessary to meet the specific content requirements of section 601 of WRDA 2000 and NEPA. A specific opportunity to reduce the level of detail are the programmatic authority projects described in section 601(c) of section 601 of WRDA 2000 that allows the Secretary of the Army to approve certain projects in the Plan that meet the criteria specified in section 601(c) of WRDA 2000.

1.5 SEEKING IMPROVEMENTS TO THE COMPREHENSIVE PLAN

The Plan as approved by section 601 of WRDA 2000 was not intended as an artificial constraint on innovation in its implementation. Rather, the Programmatic Regulations direct the USACE to seek continuous improvements to the Plan, by using new information to enhance the restoration benefits of the Plan while providing for other water-related needs (section 385.9 [c]). Several approaches provide opportunities to improve on the benefits of the Plan. At the project level, projects can enhance performance of the Plan by including features of operations that maximize system-wide benefits within the range of options defined by the project's goals and objectives. Minor adjustments to the Plan may therefore be accomplished through PIRs. For the Plan as a whole, the Programmatic Regulations provide for a process to update the plan no less frequently than every five years, and to make improvements to the Plan as needed. This is accomplished through the assessment and planning activities of RECOVER (section 385.20 [e], the adaptive management program [section 385.31]), the development of Comprehensive Plan Modification Reports (CPMR) (section 385.32), and revisions to the Master Implementation Sequencing Plan (MISP) (section 385.30).

1.6 ELEVATION OF ISSUES

Issues, in general, should be resolved at the lowest level possible; however, technical issues that can't be resolved by the PDT, issues that affect completion schedules, and policy issues should be elevated by the PDT to the appropriate authority level for resolution. Issues should be coordinated through the Design Coordination Team (DCT) and the Quality Review Board (QRB), as appropriate. Finally, In-Progress Review (IPR) meetings, the Feasibility Scoping Meeting, and the Alternative Formulation Briefing provide an opportunity to resolve issues and to document their resolution.

1.7 IN-PROGRESS REVIEWS AND OTHER MEETINGS

As required by applicable USACE regulations, policies, and procedures, In-Progress Review (IPR) meetings with USACE vertical team and the Office of the Assistant Secretary of the Army for Civil Works (OASA(CW)) will be held periodically during the development of the PIR. The primary objective of IPR meetings is to discuss and resolve policy issues to ensure that the PIR progresses in an orderly manner and that preparation of the final PIR is not delayed. An IPR may be held at any time during the PIR process to provide an update of findings and progress, identify potential problems (technical/policy), and document

decisions. In addition, in accordance with USACE policy and procedures, checkpoint meetings such as the Feasibility Scoping Meeting (FSM) and the Alternative Formulation Briefing (AFB) will be held during the development of the PIR. Senior managers from the USACE vertical team, the non-Federal sponsor, and resource agencies should participate in the FSM and AFB meetings to ensure that decisions are made and that appropriate guidance is given to the PDT.

The Feasibility Scoping Meeting is held to bring the USACE vertical team, the OASA(CW), the non-Federal sponsor, and resource agencies together to reach agreement on the problems and solutions to be investigated during the PIR phase of the project and the scope of analysis required. The FSM will be held after preliminary formulation and evaluation has been completed and will include discussion of the following items:

- Existing and future without project conditions
- Problem and opportunities, planning objectives and constraints
- Identification and evaluation of management measures (preliminary screening)
- Determining whether plan formulation should focus on optimization or formulation of additional alternatives and plans to be studied further
- System-wide and project-level performance measures
- Regional modeling assumptions and constraints including scope of analyses for reviewing existing operations
- NEPA scoping results
- Regulatory coordination and regulatory issues
- Independent technical review and external peer review (if conducted)
- Policy issues or questions
- Future milestones and completion dates

The Alternative Formulation Briefing is held to bring the USACE vertical team, the OASA(CW), the non-Federal sponsor, and resource agencies together to confirm that the plan formulation and selection process, the tentatively selected plan, and the division of Federal and non-Federal responsibilities are consistent with applicable laws, statutes, Executive Orders, regulations and current policy guidance. The goal is to identify and resolve any legal or policy concerns that would otherwise delay or preclude Washington-level approval of the draft PIR, and to allow for the release the draft PIR to the public concurrent with the Headquarters policy compliance review of the draft report. The AFB will be held after identification of the tentatively selected plan and will include discussion of the following items:

- Current description of future without project condition, problems and opportunities, and planning objectives and constraints
- Formulation and evaluation of alternative plans
- The tentatively selected plan
- Status of WRDA assurances activities including Initial Operating Regime assumptions, identification of water made available, and Savings Clause analyses and potential issues
- Status of environmental compliance actions, coordination, and NEPA documentation
- Status of engineering activities

- Identification of any LERRD issues and status of real estate activities
- Status of M-CACES cost estimate
- Mitigation and monitoring requirements
- Regulatory coordination and regulatory issues
- Independent technical review and external peer review (if conducted)
- Policy issues or questions
- Status of non-Federal sponsor support
- Future milestones and completion dates

1.8 COORDINATION WITH RECOVER

RECOVER provides assistance to the PDT in accomplishing specific activities for the PIR. These activities ensure that projects are analyzed from a system-wide perspective and include planning level opportunities for adaptive management. The PDT will coordinate with RECOVER on the following activities:

- **Future Without CERP Baseline**–RECOVER maintains and periodically updates the system-wide Future Without CERP Baseline. RECOVER will provide the PDT with the latest description, assumptions, and model version of the Future Without CERP Baseline for the PIR.
- **Future With CERP Condition**–RECOVER maintains and periodically updates the system-wide Future With CERP Condition. RECOVER will provide the PDT with the latest description, assumptions, and model version of the Future With CERP Condition for the PIR.
- **Performance Measures**–RECOVER has developed a set of system-wide hydrologic and ecologic performance measures for CERP that are to be used for the evaluation of alternative plans from a system-wide perspective. In addition, PDTs will have RECOVER review project-level performance measures developed by the PDT to ensure that the project-level performance measures are consistent with the system-wide performance measures developed by RECOVER.
- **Evaluation of Alternatives**–RECOVER will evaluate alternative plans developed by the PDT from a system-wide perspective using the system-wide performance measures during the plan formulation and evaluation process. RECOVER will also review alternatives for robustness in keeping with adaptive management opportunities at the planning level. RECOVER will prepare a report to be included in the PIR, in accordance with the Programmatic Regulations.
- **Project Monitoring Plans**–RECOVER has developed a system-wide Monitoring and Assessment Plan (MAP) as part of the adaptive management program for CERP (refer to Guidance Memorandum #6 for more information on adaptive management). The MAP provides a systematic way to monitor and assess how well CERP as a whole is achieving the benefits of the Plan. RECOVER will review the project monitoring plan developed by the PDT to ensure that the monitoring plan is consistent with the MAP, does not duplicate system-wide monitoring activities, and supports application of the principles of adaptive management in implementing CERP. As appropriate, RECOVER may need to consider modifications to the MAP to incorporate additional system-level monitoring that is identified by the PDT.

1.9 PLAN SELECTION

Following the formulation and evaluation of alternative plans for the PIR (see Guidance Memorandum #2), a tentatively selected plan will be identified. The tentatively selected plan will be the plan that reasonably optimizes net benefits, monetary and non-monetary, consistent with the objectives of the Plan. The PDT should refer to Engineer Regulation (ER) 1105-2-100 (Planning Guidance Notebook) for the criteria for determining the National Ecosystem Restoration (NER) Plan. In accordance with ER 1105-2-100, an AFB will be held to obtain approval of the tentatively selected plan as the selected alternative plan for the PIR. The selected alternative plan is synonymous with the "Preferred Alternative" or the "Preferred Plan" in the NEPA regulations (40 Code of Federal Regulations [CFR] 1500-1508).

1.10 REAL ESTATE CONSIDERATIONS

1.10.1 Lands Already Acquired for the Project

The South Florida Water Management District (SFWMD) and others have been acquiring lands needed for CERP implementation in advance of completion of a PIR, based on the April 1999 "Final Integrated Feasibility Report and Programmatic Environmental Impact Statement." Under current USACE policy, the fair market value of lands, regardless of when the lands are acquired, is used in plan formulation, in determining project costs, and for crediting local sponsors. Due to extremely high rate of appreciation of real estate values in south Florida, application of this policy for lands already acquired by the SFWMD and others would result in higher project costs. As a result, the PIR will use the actual cost of the land bought for the project instead of the estimated value of the land. Consequently, the PDT should use actual acquisition costs in plan formulation and cost estimating, subject to those costs being reasonable, allocable, and allowable. The actual amount to be credited for lands acquired by the non-Federal sponsor will be determined on a case-by-case basis by the Secretary of the Army and as authorized by Congress.

1.10.2 Cost of Real Estate As Percentage of Project Cost: Individual Projects

Current USACE policy for environmental restoration projects has a guideline that real estate costs for ecosystem restoration projects should not exceed 25 percent of total project costs in order to ensure that individual projects do not focus on achieving restoration or enhancement solely through land purchase. The Plan presented in the April 1999 "Final Integrated Feasibility Report and Programmatic Environmental Impact Statement" as a whole meets this policy, with real estate costs of approximately $2 billion for the $8 billion plan presented in 1999. However, individual CERP projects can vary widely in land costs as a percentage of total project costs. Individual CERP projects are exempted from the USACE guideline stipulating that real estate costs for ecosystem restoration projects should not exceed 25 percent of total project costs; however, the CERP program as a whole will conform to the 25 percent of total cost policy.

1.10.3 Estates Required for CERP Projects

For all lands determined to be required for CERP projects, the interests required for implementation generally will be fee simple, based on assumptions that all or a significant portion of the rights in the land will be required for project purposes. Although fee acquisition should be the standard estate for CERP projects, lesser estates such as flowage or conservation easements should be considered, as appropriate, if the benefits of the project can still be achieved with the lesser estate. The PIR should provide the rationale for such lesser estates.

To verify the appropriateness of fee simple acquisition or less than fee acquisition, the PIR must include the following analysis and the conclusions must be reflected in the appropriate report sections. The level of detail required for the analysis will vary depending on the project feature involved:

1. Determine the Rights that Are Required to Construct and Perform Operation, Maintenance, Repair, Rehabilitation, And Replacement (OMRR&R) for the Project:

- Identify the affirmative rights on the land that are required to implement the project.
- In addition to affirmative rights that may be required, identify restrictions on use (restrictive covenants) by the fee owner that are required so as not to interfere with project purposes and outputs.
- Identify the length of time that the affirmative rights or restrictive covenants are needed for the project.
- Determine whether constructed project features may need to be modified over time due to uncertainties in science, formulation, or design (adaptive management).
- Determine whether project land, or portions thereof, will be open for public use (either active or passive uses).

2. Other Factors to be Considered:

- Compare the cost/value of specific types of easements to fee value.
- Assess potential for severance damages from fee acquisition.
- Determine whether public owners have legal capability to convey fee.
- Assess stewardship/OMRR&R considerations regarding the risk and consequences of encroachment on project land by adjacent owners; the risk and consequences of violation of easement terms by fee owners; and monitoring and enforcement capabilities of Sponsor.
- Assess negative perception by public of private benefits or gain due to landowner reservations where easements are selected.
- Assess whether State Marketable Title Act requires re-recording of easement instruments.

1.11 INFORMATION TO ADDRESS REQUIREMENTS OF FLORIDA LAW

The State of Florida has established procedures, requirements, and approvals under Chapter 373 of the Florida Statutes (F.S.) that are needed before the State or the South Florida Water Management District can participate as the non-Federal sponsor for CERP projects. The specific requirements are found in sections 373.026, 373.470, 373.1501. and 373.1502. Project Implementation Reports will include information necessary for the non-Federal sponsor to address the requirements of these sections, and other applicable planning and reporting requirements of Florida law.

1.12 CREDITING OF NON-FEDERAL SPONSOR CONSTRUCTION

Section 601(e)(5)(B) of WRDA 2000 authorizes the Secretary of the Army to provide credit to the non-Federal sponsor for construction work that the non-Federal sponsor accomplishes during the period of construction pursuant to the Project Cooperation Agreement (PCA) for the project and a determination by the Secretary that the work is integral to CERP. However, section 601(e)(5)(B) of WRDA 2000 makes no provision for a credit for any work the non-Federal sponsor constructs in advance of project authorization or the execution of a PCA. Therefore, credit for construction accomplished by the SFWMD or other non-Federal sponsor prior to project authorization or PCA execution requires Congressional authorization. Accordingly, any PIR that includes project features constructed or expected to be constructed in advance of project authorization should include a recommendation that the non-Federal sponsor be credited for construction work completed prior to PCA execution, subject to the Secretary of the Army determining that the work is necessary and integral to the recommended project, that the costs are reasonable, allowable, necessary, auditable and allocable, and that the work has been completed consistent with the USACE design and construction standards and applicable Federal and State laws.

1.13 EXTERNAL PEER REVIEW

As required by section 601 of WRDA 2000, an independent scientific review panel has been established to review the Plan's progress toward achieving the natural system restoration goals of the Plan and to report to Congress on a biennial report to Congress. The Programmatic Regulations require that draft pilot project technical data reports and draft assessment reports for the adaptive management program be externally peer reviewed. For some PIRs, external peer review may be beneficial due to technical complexity or public concerns (e.g. aquifer storage and recovery [ASR]). In those cases, external peer review will be considered during the preparation of the Project Management Plan in accordance with USACE regulations and policy and a final decision made at the Feasibility Scoping Meeting (FSM), so that external peer review can be accomplished in a timely manner and appropriate adjustment to planning activities may be made as appropriate. Regardless of whether external peer review is conducted, each PIR will undergo independent technical review, in accordance with USACE regulations and policy.

1.14 FEATURES TO IMPROVE WATER QUALITY

Section 528(e)(2) of WRDA 1996 (Public Law [P.L] 104-303) provides that the non-Federal share of the costs of features for water quality improvement will be 100 percent unless: the Secretary of the Army determines that a project feature to improve water quality is essential to Everglades restoration, then the cost share for the feature will be 50 percent, provided the feature is not part of the Everglades Construction Project. Subsequent to the passage of WRDA 1996, the USACE adopted guidance for implementing section 528(e)(2) of WRDA 1996 (Water Quality Policy for South Florida Ecosystem Restoration, 7 November 1997, CECW-AG by the Director of Civil Works). This policy states that in order to qualify for Federal cost sharing, CERP features providing water quality improvement must be designated as (1) water reclamation or (2) water reuse projects. For the purpose of this USACE policy, water reclamation is defined as diverting water formerly discharged to tide or otherwise disposed to increase the volume of water available for the Everglades ecosystem restoration and water reuse is defined as modifying the use of water from the water's present function (e.g., flood control) in a current location to a preferred function (e.g., hydrologic restoration) in a preferred location. The April 1999 "Final Integrated Feasibility Report and Programmatic Environmental Impact Statement" describes how this policy was applied to the projects in the Plan.

For the purpose of analyzing Federal participation in water quality features of a project, the Future Without Project Condition must be developed based on the assumption that non-Federal interests will meet the requirements of the Clean Water Act and applicable State water quality standards. The PDT should identify any features necessary to improve water quality in the PIR in a manner consistent with the cost sharing provisions of section 528 of WRDA 1996 and section 601 of WRDA 2000 so that the Secretary of the Army may determine whether the project feature is essential to Everglades restoration.

1.15 PROJECT MONITORING PLAN

RECOVER has developed a system-wide MAP that is an integral part of the adaptive management program for CERP. The MAP provides a systematic way to monitor key indicators throughout the South Florida ecosystem to assess how well implemented CERP projects are performing and how well the benefits of the Plan are being achieved, including the achievement of the interim goals and interim targets. The MAP provides information for periodic assessment reports that are required by the Programmatic Regulations as part of the adaptive management program. Consequently, project monitoring plans should not duplicate system-wide monitoring activities that are being conducted for the MAP or duplicate elements of the adaptive management program. In addition, there may be other on-going monitoring programs that the PDT should consider when designing the project monitoring plan. Accordingly, the project monitoring plan for the PIR should include only activities that are necessary to:

- comply with necessary regulatory requirements (e.g. water quality standards, Endangered Species Act, etc.); and/or
- verify that the project is functioning as designed.

Project monitoring plans must comply with USACE guidance for monitoring, such as cost caps and length of program, unless a deviation has been approved by the vertical team. As appropriate, RECOVER may need to consider modifications to the MAP to incorporate additional system-level monitoring that is identified by the PDT.

1.16 COMPLIANCE WITH FISH AND WILDLIFE COORDINATION ACT (FWCA)

The US Fish and Wildlife Service (FWS) is the lead Federal stewardship agency for freshwater fish and wildlife resources and its advice, as well as that of the Florida Fish and Wildlife Conservation Commission (FWC), will be sought by the USACE for planning individual CERP projects. The FWS participates on every CERP PDT, with emphasis on technical assistance to the ecosystem sub-team and evaluation of project benefits and effects. The FWS provides the report of the Secretary of the Interior as required under section 2(b) of the Fish and Wildlife Coordination Act (FWCA). Additionally, the FWS provides "Planning Aid Letters" or PALs during PIR development, approximately every 6 months. These PALs contain information on fish and wildlife resources, issues and opportunities. PALs should be collated and included in early review submittals to the USACE vertical team. After the TSP has been identified and verified by USACE policy review, a draft Fish and Wildlife Coordination Act [draft CAR] (or section 2(b)) Report should be received from FWS.

A draft CAR should be submitted after the AFB and within 90 days of approval of the TSP. It will be included in the draft PIR and integrated environmental document as an Annex. The PIR should summarize and respond to FWS recommendations. After public and agency coordination of the draft PIR and after revisions to the main PIR text are made and coordinated with FWS, FWS will submit a final CAR, for inclusion as an Annex to the final PIR and integrated environmental document. The final PIR and integrated environmental document should include enough information in its paragraphs on fish and wildlife resources to show responsiveness to the CAR recommendations. If the PDT disagrees with the FWS recommendations, the PIR must explain why the FWS recommendations cannot be implemented.

Under the FWCA, the FWC can submit a separate CAR. This document or any letter from FWC describing its coordination with FWS in developing the FWS CAR must also be included in the FWCA Report and Endangered Species Act Annex of the PIR (Annex A). The National Marine Fisheries Service (NMFS) may also submit separate recommendations for projects involving marine habitats or species.

1.17 COMPLIANCE WITH ENDANGERED SPECIES ACT (ESA)

The USACE is required to make a determination of effect on each and every Federally listed threatened and endangered species or candidate species within the action area of each CERP project. FWS manages freshwater and terrestrial listed species and their habitats, as well as nesting marine turtles. NMFS manages marine species and sea turtles in the water. Because evaluation of Endangered Species Act (ESA) effects may be complex and require considerable time, consultation under ESA should begin as early as possible in the PIR

planning process. Information necessary for consultation will be provided in a timely manner to allow ESA consultation to be completed prior to the finalization of the NEPA documentation.

During scoping, the project environmental lead should provide a list of potentially affected species in the project action area via letter to the FWS and NMFS. As alternatives are formulated and evaluated, FWS and NMFS should assist the PDT to make a preliminary and informal "determination of effect." Options are: no effect (no further coordination is necessary), "may affect, not likely to adversely affect" and "may affect, likely to adversely affect". The formal vehicle to coordinate with FWS and NMFS is called a Biological Assessment (BA). Except in the case of "no effect" determinations, this preliminary assessment should be developed by the project environmental lead and provided to the FWS as soon as a TSP is identified. If the project may adversely affect one or more species or their designated habitat, such that a Biological Opinion (BO) from FWS/NMFS is required, formal consultation should be initiated as soon as possible, following ESA regulations, prior to compilation of the draft PIR and integrated environmental document. The BA should be coordinated with FWS/NMFS prior to publication of the draft PIR if possible, and included in the FWCA Report and Endangered Species Act Annex to the PIR (Annex A). FWS may require additional information, but once all information at the PDT's disposal is provided, FWS has up to 135 days to issue the BO. If the formal consultation is initiated at TSP and all required information is submitted as required, it should be possible for FWS to issue the BO prior to publication of the final PIR and integrated environmental document.

1.18 CONSULTATION WITH TRIBES

Section 601 of WRDA 2000 requires that the Secretary of the Army and the Secretary of the Interior fulfill their obligations under the Indian trust doctrine as well as other applicable legal obligations to the Indian tribes in south Florida. The Programmatic Regulations require that the Corps of Engineers and non-Federal sponsors consult with and seek advice from the Miccosukee Tribe of Indians of Florida and the Seminole Tribe of Florida throughout the implementation process for CERP projects to ensure meaningful and timely input by tribal officials. Consultation with the tribes is to be conducted on a government-to-government basis.

1.19 CONSIDERATION OF RECREATION OPPORTUNITIES

Recreation is an authorized purpose of the C&SF Project and the C&SF Project includes a number of recreation features. A Master Recreation Plan (MRP) for CERP is currently under development. The primary goal of the CERP MRP is to develop a comprehensive plan for addressing recreational needs within the C&SF Project consistent with the C&SF Project authorized purpose.

The PDT may consider recreation opportunities in the development of the PIR. The PDT should determine whether the selected alternative plan affects existing recreation features and the appropriateness of mitigating adverse effects on existing recreation facilities. Additional recreation features may be considered and any recreation features will be formulated in

conjunction with the tentatively selected plan and included with the selected plan. Recreation features will be consistent with USACE regulation and policy. USACE regulations and policy require that recreation at ecosystem restoration projects be compatible with these types of projects and enhance the visitation experience by taking advantage of natural values (see ER 1105-2-100). USACE regulations and policy also provide guidance on the types of facilities that may be included and limitations on the total cost of the recreational facilities that may be included with the recommended plan and the cost-sharing for such features. Recreation features must be analyzed and justified in accordance with USACE regulations and policy. The formulation and evaluation of the recreation features should be included in the plan formulation section of the PIR. The Recreation Appendix (Appendix H) of the PIR will include the recreation analyses conducted for the PIR.

1.20 REGIONAL MODELING ANALYSES

There are a number of system-wide baselines and with project conditions needed for the formulation and evaluation process and for other analyses described in the Guidance Memoranda. Table 1-1 describes the various baseline conditions that are needed for the PIR while Table 1-2 describes the various with-project conditions for the PIR. Table 1-3 summarizes the various analyses for the PIR.

If the baseline conditions need to be updated, information is available from Federal, Tribal, State, and local agencies (including county planning departments) and tribal governments. Federal and State environmental and health standards and regulations, including requirements outlined in Chapter 373 F.S., should be considered, as appropriate.

Any updating of the existing conditions inventory will be focused by the goals, planning objectives and constraints, and approved performance measures. The existing conditions include compiling information on significant environmental resource attributes (ecological, cultural, and aesthetic), land use, population, water demand, and operations of the Central and Southern Florida (C&SF) Project system. The information collected serves two broad purposes: 1) to adequately describe the problems and opportunities at the project and system level; and 2) to provide enough information to characterize the significant effects and differences between the alternative plans.

The PDT should consider including, as appropriate, changes to operations in other areas of the system in order to optimize the delivery of system benefits for the project being formulated. Such changes should be considered only where there are direct beneficial impacts to a project. For example, changes to the WCA regulation schedules should be considered for projects, such as the Everglades Agricultural Area Storage Project, which are designed to improve the natural hydrology in the Water Conservation Areas and Everglades National Park. Changes to operations should be considered if there would be a direct beneficial impact to the natural system. Whenever possible, the PDT should incorporate Everglades Rainfall Driven Operations (ERDO) in the project being formulated to the greatest extent possible without creating harm elsewhere. PDT recommendations regarding the scope of possible operational changes will be presented at the FSM.

EXHIBIT 9

Information concerning the modeling conducted for a PIR should be included in the Engineering Appendix (Appendix A) to the PIR. The same model runs that are used to support plan formulation and evaluation will also be used for Savings Clause analyses (Guidance Memorandum #3), identification of water (Guidance Memorandum #4), and development of the Project Operating Manual (Guidance Memorandum #5). Consequently, the PDT needs to fully document all of the assumptions of each model run.

Table 1-1: Baseline Conditions for PIRs

Condition	*Modeling Assumptions*	*Applications*
Pre-CERP Baseline	• Conditions on date of enactment of WRDA 2000	• Savings Clause analyses (see GM #3)
Future Without CERP Baseline	• 2050[1] conditions and demands • 2050[1] non-CERP activities • No CERP projects	• "Without condition" for formulation and evaluation of alternatives (see GM #2)
Existing Conditions Baseline[2]	• Actual conditions at the time that the TSP is identified • Estimated permitted demands at the time that the TSP is identified • Existing operations of the C&SF Project system at the time that the TSP is identified • Non-CERP activities with approved Operating Manuals at the time that the TSP is identified • Authorized CERP projects[3] with approved Operating Manuals at the time that the tentatively selected plan is identified	• Baseline for NEPA analysis (40 CFR1500-1508) • Determining baseline water availability (see GM #2) • Identify State 373.1501 requirements • Savings Clause analyses (See GM #3)
Next-Added Increment (NAI) Baseline[2]	• 2050[1] conditions and demands • 2050[1] non-CERP activities • Authorized CERP projects[3] with approved Operating Manuals at the time that the tentatively selected plan is identified	• "Without condition" for NAI analysis (see GM #2) • "No action" alternative under NEPA • "Without condition" for identification of water made available (see GM #4)

1. Or last year of the period of analysis, whichever is greater (refer to GM #2 for a discussion of the period of analysis)
2. This model condition must be operationally "optimized"
3. Approved either through specific authorization of Congress or approved by the Secretary of the Army under the programmatic authority of section 601(c) of WRDA 2000

Table 1-2: With Project Conditions for PIRs

Condition	*Modeling Assumptions*	*Applications*
Future With CERP Condition	• 2050[1] conditions and demands • 2050[1] non-CERP activities • All of CERP (the Plan)	• Expected benefits of the Plan • Water expected to be made available by the Plan (see GM #4)
Future With Project Condition[2]	• 2050[1] conditions and demands • 2050[1] non-CERP activities • Each alternative plan being evaluated • Rest of CERP (the Plan)	• Formulation and evaluation of alternative plans • Savings Clause screening of Alternative Plans for existing legal sources of water and levels of service for flood protection
Next-Added Increment (NAI) Condition [2]	• 2050[1] conditions and demands • 2050[1] non-CERP activities • Authorized CERP projects[3] with approved Operating Manuals at the time that the tentatively selected plan is identified • Tentatively selected plan	• "With condition" for NAI analysis (see GM #2) • "With condition" for identification of water (see GM #4)
Initial Operating Regime[5]	• Estimated conditions at the time that the TSP is identified • 20xx[4] demands or estimated permitted demands[6] at the time that the TSP is identified, whichever is greater. Calculation of the 20xx demands and the estimated permitted demands will be made by summing the Lower East Coast Service Area demands as a whole and summing the Lake Okeechobee Service Area demands as a whole. • Existing operations of the C&SF Project system at the time that the TSP is identified • Non-CERP activities with approved Operating Manuals at the time that the TSP is identified • Authorized CERP projects[3] with approved Operating Manuals at the time that the tentatively selected plan is identified • Tentatively Selected Plan	• Identify State 373.1501 requirements • "With condition" for Savings Clause analysis (see GM #3) • "With condition" for identification of water and water to be reserved or allocated for the natural system (see GM #4) • Project Operating Manual (see GM #5)

1. Or last year of period of analysis, whichever is greater (refer to GM #2 for a discussion of the period of analysis).
2. This model condition must be operationally "optimized"
3. Approved either through specific authorization of Congress or approved by the Secretary of the Army under the programmatic authority of section 601(c) of WRDA 2000
4. Where 20xx: For PIRs completed up to January 2010 will utilize 2010 demand projections; beginning January 2010 through December 2015 will utilize 2015 demand projections; etc. Demands will be estimated via straight-line interpolation of demands for end-point years (i.e., 1995 and 2050) used

during formulation of the Final C&SF Comprehensive Review Study, April 1999; or updated demand projections incorporated into an approved Comprehensive Plan Modification Report. These projections may be modified as a result of application of the SFWMD Basis of Review requirements.

5. The Project Development Team should develop the Initial Operating Regime using the operational intent and proportionality of benefits of the Next-Added Increment. The Initial Operating Regime should maximize the achievement of benefits to the extent possible given existing infrastructure and constraints.
6. Updates to these demands will occur as a result of application of the SFWMD Basis of Review requirements.

1 **Table1-3: Summary of Analyses for PIRs**
2
3

Analysis	*"Without Condition"*	*"With Condition"*
Base Conditions Analysis		
Determining if Pre-CERP Baseline Water is Still Available	Pre-CERP Baseline	Existing Conditions Baseline
Formulation and Evaluation		
Formulation and Evaluation of Alternative Plans	Future Without CERP Baseline	Future Without CERP Baseline + alternative plan + rest of the Plan
Next-Added Increment Analysis	NAI Baseline	NAI Condition
Savings Clause Analyses		
Intervening Non-CERP Activities	Existing Conditions Baseline	Initial Operating Regime
No Intervening Non-CERP Activities	Pre-CERP Baseline	Initial Operating Regime
Project Operating Manual		
Project Operating Manual	N/A	Initial Operating Regime
Identification of Water Made Available		
Identification of Water Made Available	1. Existing Conditions Baseline 2. NAI Baseline	1. Initial Operating Regime 2. NAI Condition
Identification of Water to be Reserved or Allocated		
Identification of Water to be Reserved or Allocated	Existing Conditions Baseline	Initial Operating Regime

4

1.21 DETERMINING HYDROLOGIC CONNECTIONS AND SPATIAL EXTENT OF PROJECT EFFECTS

Attachment 1-A provides a guide for the PDT to use in: determining whether a project is hydrologically separate from the regional water management system; selecting the model used to perform evaluations; and identifying the spatial extent of the effects of a project.

1.22 UPDATING THE COMPREHENSIVE PLAN

As necessary, reformulation of the Plan will be accomplished through preparation of a Comprehensive Plan Modification Report (CPMR). This is a system-wide reevaluation that considers program and project-level considerations and should not be confused with formulation of individual CERP projects. Project level formulation activities during the PIRs are intended to address optimization of the project's contribution to the system-wide goals and objectives in general, and project goals and objectives more specifically. While a PIR may result in project modifications that impact or modify system output, these modifications are not intended to address system-wide issues within the comprehensive plan.

1.23 MAJOR PIR ACTIVITIES

Preparation of the PIR involves three major groups of activities: develop base conditions and models; plan formulation and evaluation; and design of the selected plan. In general, developing base conditions and models is similar to Steps 1 through 3 in the USACE planning process; plan formulation and evaluation is similar to Steps 3 through 6 and the final group provides more detailed information on the selected plan including the analyses required by section 601 of WRDA 2000, the Programmatic Regulations, and the other requirements that are set forth in these Guidance Memoranda. Attachment 1-B provides more detailed information on all these activities.

1.23.1 Develop Base Conditions and Models

1. Review the information provided in the Plan regarding the project's purpose, cost, benefits, and contributions to achieving the goals and purposes of the Plan.
2. Conduct NEPA scoping to identify problems and opportunities, constraints, and other issues related to the project. Scoping should explore the problems and opportunities (at the local, regional, and system level), as well as describing any agency or public workshops that were held to gather additional information on the problems and opportunities. RECOVER should be consulted as part of the scoping process for assistance in identifying problems and opportunities. Scoping will reveal any new issues or opportunities or lead to gathering new data and information.
3. Revise the above information if needed, by developing additional problems and opportunities, project goals, and planning objectives and constraints. Confirm that all additional goals, objectives, opportunities and constraints contribute to achieving the Plan's goals and purposes.

4. Obtain the Pre-CERP Baseline, the Future Without CERP Baseline, and the Future with CERP Condition which are provided by RECOVER. Also, develop the Existing Conditions Baseline.
5. Determine the availability of Pre-CERP Baseline water and identify existing water reservations or allocations.
6. Update the cost of the project described in the Plan based on updated information.
7. Develop project performance measures and targets, including the tools to measure differences between the performance of alternative plans. The conceptual ecological models developed for the South Florida ecosystem should guide the selection of the ecological performance measures; other ecological and hydrologic performance measures should be applied as needed. RECOVER should be consulted for assistance in developing project level performance measures and selection and development of tools to measure differences in alternative plan performances.
8. Conduct an initial screening effort to determine if the project as described in the Plan will still achieve the benefits as described in the Plan in a cost-effective manner. Rough order of magnitude costs should be presented for the alternatives. RECOVER should be consulted in evaluating the project's contributions towards meeting the goals and purposes of CERP.
9. Hold a FSM to determine whether plan formulation should focus on optimization and detailed design of the project described in the Plan, or if additional alternative plans should be formulated. The extent of additional plan formulation will be based on whether the project will still achieve the benefits of the project as described in the Plan in a cost-effective manner.

1.23.2 Plan Formulation and Evaluation

1. If it is determined that the PIR effort should continue with optimization and detailed design of the project described in the Plan, then the PDT should develop alternative design configurations to optimize the project described in the Plan. Optimization is conducted to enhance design, size and/or configuration of the project components and to achieve outputs required for the system in a cost-effective manner, and includes the following activities:
    a. Develop alternative design configurations.
    b. Evaluate and compare alternatives using approved hydrologic and ecologic performance measures and screen for potential Savings Clause concerns using appropriate indicators.
    c. Determine which of the alternative plans are considered cost-effective, based on a comparison of the selected hydrologic and ecologic outputs and their costs.
    d. Retain only cost-effective alternatives for further analysis by eliminating alternative plans that are not cost-effective.
    e. Conduct NEPA evaluation of the no-action alternative (i.e. NAI Baseline) and all alternative plans developed. Conduct other environmental analyses including the Endangered Species Act and cultural resources assessments.
2. If additional alternative plans need to be developed, formulate additional alternatives by developing management measures at different scales or sites to meet the project's goals and purposes and includes the following activities:

a. Develop the plan formulation strategy
b. Formulate alternative plans
c. Evaluate and compare alternatives using approved hydrologic and ecologic performance measures and screen for potential Savings Clause concerns using appropriate indicators.
d. Determine which of the alternative plans are considered cost-effective, based on a comparison of the selected hydrologic and ecologic outputs and alternative plans costs.
e. Retain only cost-effective plans for further analysis to demonstrate the efficiency (cost per unit of output) for successively larger (greater output) cost-effective plans. Based on this analysis, describe why some alternative plans were eliminated and identify the alternative plans retained.
f. Conduct NEPA evaluation of the no-action alternative (i.e. NAI Baseline) and all alternative plans developed. Conduct other environmental analyses including the Endangered Species Act and cultural resources assessments.

3. Identify a tentatively selected plan based on the evaluation and comparison analyses that identifies the plan with the greatest net system-wide benefits produced by a project (as measured by appropriate outputs and consistent with ER-1105-2-100 plan selection criteria).
4. Conduct NAI analyses on the tentatively selected plan to determine the level of output or benefits that can be achieved in absence of unauthorized or unapproved CERP projects (Guidance Memorandum #2).
5. As appropriate, incorporate justified recreation components into the tentatively selected plan.
6. Hold an AFB to obtain approval of the tentatively selected plan as the selected alternative plan and permission to simultaneously release the draft PIR to the public, USACE vertical team and OASA(CW)) for review.

1.23.3 Design Selected Plan

1. Develop the Initial Operating Regime (IOR).
2. Complete design analyses on the selected alternative plan including:
   a. Engineering design
   b. Real estate information, including takings analysis
   c. Micro-Computer Aided Cost Engineering System (M-CACES) cost estimate
3. Complete additional analyses on the selected alternative plan to comply with Federal and State laws concerning CERP projects. These include:
   a. Determining if there has been an elimination or transfer of existing legal sources of water (Guidance Memorandum #3).
   b. Confirming that the level of service for flood protection in existence on the date of enactment of WRDA 2000 and in accordance with applicable law will not be reduced by implementation of the project (Guidance Memorandum #3).
   c. Identifying the total water necessary to achieve the benefits of the project and the water made available by the project, and the amount of water to be reserved or allocated for the natural system (Guidance Memorandum #4).

d. Describing the project's contribution to the achievement of the interim goals and interim targets.
e. Determining compliance with applicable water quality standards and permitting requirements.
f. Providing, as appropriate, information necessary for the non-Federal sponsor to address the requirements of Chapter 373 of the Florida Statutes (F.S.), and other applicable planning and reporting requirements of Florida law.

4. Compare the selected alternative plan's costs to the component's cost described in the Plan (or section 902 of WRDA 1986 cost limit for the initially authorized projects in section 601 of WRDA 2000) to determine if there are any issues related to increases in cost, excluding inflation. If a cost issue exists, an IPR meeting will be held to resolve the issue.
5. Develop the Draft POM (Guidance Memorandum #5).
6. Develop the project monitoring plan.
7. Develop an implementation schedule for the project. Compare the project's schedule and costs to the MISP. Based on this comparison, adjustments to the project's scheduling or the MISP may be necessary.
8. Determine the allocation of costs between the USACE and the non-Federal sponsor.

After these three major groups of activities are completed, the draft PIR will be prepared for coordination with agencies and the public. After the draft PIR has been coordinated with agencies and the public, the final PIR will be prepared for review and approval in accordance with USACE regulations and policy.

1.23.4 Relationship Among PIR Tasks

Figure 1-3 shows the relationships and sequencing of major tasks which are described in these Guidance Memoranda. Plan formulation and evaluation activities to identify the tentatively selected plan (TSP) are conducted as described in Guidance Memorandum #2. After the TSP is identified, the Initial Operating Regime (IOR) can be developed and modeled, as described in this Guidance Memorandum. After the IOR modeling is completed, the Savings Clause analyses (see Guidance Memorandum #3) are conducted. That is followed by the identification of water made available and the identification of water to be reserved or allocated for the natural system, as described in Guidance Memorandum #4, as well as the development of the Draft Project Operating Manual, as described in Guidance Memorandum #5.

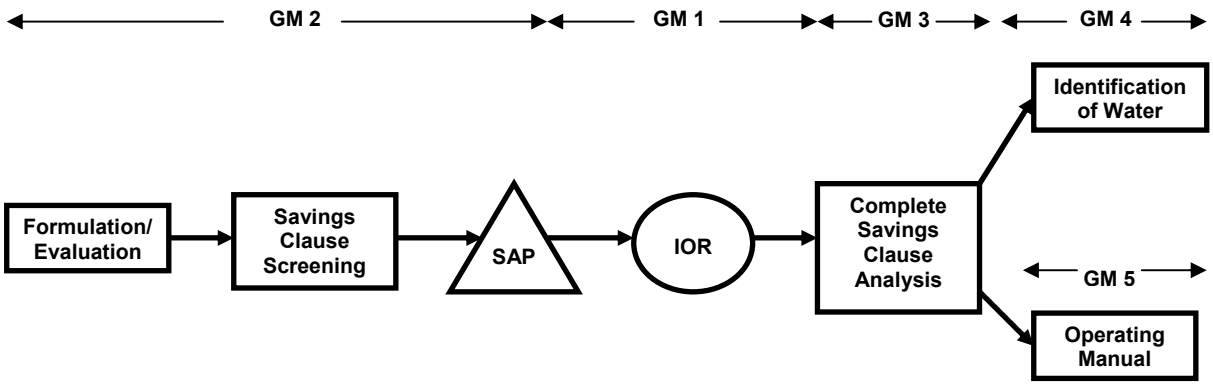

Figure 1-3: Relationship among PIR Tasks

1.24 FORMAT AND CONTENT OF PIRS

The activities conducted for the PIR and the results of those activities will be documented in the PIR. Attachment 1-C provides an outline for the content of the PIR. The PIR must contain the detail necessary to satisfy Federal statutory requirements (e.g., NEPA), USACE regulations (e.g., ER 1105-2-100 Planning Guidance Notebook), CERP specific guidance (e.g., Programmatic Regulations), and State Laws (e.g. F.S. section 373.1501). The information pertaining to these requirements should be included in the body of the main report or within the appropriate Annex. The Annexes of the PIR are considered an integral part of the main report and should always accompany the main report as the Annexes contain detailed information necessary to satisfy these requirements. The Appendices include detailed technical information that may not be required by all readers and is not considered part of the main report.

The format for a PIR is standard for all CERP projects. The format is designed to facilitate the documentation of information, processes and decisions that occur in the planning process, and includes guidelines that are specific to formulating and evaluating CERP projects (e.g., performance measures, system benefits, and NAI). Since the PIR is an integrated document, the format also provides technical information necessary to fulfill NEPA requirements.

The PIR should be prepared using the fonts, margins and spacing designated in the approved CERP Master Program Management Plan (MPMP) and USACE standards. If the MPMP is revised during development of the PIR, the MPMP standards in place at the initiation of the planning process should be used. The use of pictures, maps and graphics is encouraged throughout the document to provide visual depictions of pertinent information. In addition, to facilitate clear and concise explanation of data, information should be displayed in tabular format whenever possible.

ATTACHMENT 1-A
DETERMINING HYDROLOGIC CONNECTIONS AND SPATIAL EXTENT OF PROJECT EFFECTS

This attachment provides a guide for Project Delivery Teams to use in: determining whether a project is hydrologically separate from the regional water management system and; selecting the appropriate models to perform evaluations; and identifying the spatial extent of the effects of a project.

DETERMINE WHETHER THE PROJECT IS HYDROLOGICALLY SEPARATE

During plan formulation and evaluation, the PDT should determine whether the project is hydrologically connected to, or separate from, the regional water management system. Most of the components that comprise the Plan are hydrologically connected. For these projects, a hydrologic connection (i.e., surface water flow via canal discharges, sheet flow, and groundwater flow) exists between the components through the regional water management system (i.e., the C&SF Project and associated secondary and tertiary water conveyance structures). Hydrologic connections between projects and the regional water management system may also be created by seepage or groundwater flow. The synergistic effect of the components due to hydrologic connectedness was recognized during the initial formulation of Plan alternatives.

However, some components of the Plan are hydrologically separate from the regional water management system. Projects may be hydrologically separate for several reasons, including:

- The project does not have hydrologic connections to the regional water management system;
- The project, though hydrologically connected, is too small in scope to meaningfully affect the quantity of water available in the regional water management system, with the result that project effects can not be discerned with the regional modeling tools; and,
- The project does not involve substantial hydrologic alterations.

While a project may be hydrologically separate from the regional water management system, the project may have effects outside of the intended footprint or basin. Guidance for determining the spatial extent of project effects is found later in this attachment. That section also provides guidance to the PDT if the discovery is made that the project results in a change to the boundary condition in the sub-regional model. When this occurs, the project can no longer be considered to be hydrologically separate. If the PDT determines that a project is hydrologically separate, this analysis should be presented at the FSM.

SELECT THE MODEL TO USE TO PERFORM THE EVALUATIONS

The type of model used is dependent upon the expected effects of the project. For those projects that will result in system-wide effects and benefits, a regional-scale computer model, such as the South Florida Water Management Model (SFWMM), should be used. However, if the project area is not covered by a regional-scale model, or if a project component is too small to be modeled by a regional scale model or is hydrologically separate from the regional water management system, sub-regional models can be used.

Identification of potential regional system effects from projects that fall outside the domain of the current system-wide hydrologic model or from projects that use only local project-scale models is important. If the project-scale modeling predicts changes to hydrology components used as boundary conditions in the system-wide model (inflows, outflow or stages), the system-wide model should be applied with the updated boundary conditions to determine the upstream or downstream effects on the water management system and natural areas. Examples include: a project in the Kissimmee Chain of Lakes area outside the boundary of the system-wide hydrologic model that increases or decreases inflows to Lake Okeechobee, or a project in the Caloosahatchee Basin that reduces the amount of outflow that can be sent from Lake Okeechobee to the Caloosahatchee River. These changes in Lake Okeechobee flows should be analyzed with the system-wide model to determine potential system-wide effects. In the event that boundary conditions in the system-wide model are modified as a result of project-scale modeling, RECOVER should be consulted to determine the potential effects to other projects.

Typically, hydrologic data (e.g., rainfall, surface and groundwater elevations, and flow) are used in a numerical model to simulate the project's hydrologic, hydraulic, environmental and economic effects. Other statistical tools may also be used to evaluate project effects.

The PDT should use the same model, including model version, to evaluate alternative plans, calculate benefits, quantify water, and develop operating criteria that are used in the preparation of Operating Manuals. If multiple models are required such as a site-specific model and regional model, the PDT should use consistent boundary conditions and assumptions. Selected models should also meet the following criteria:

- Simulate major components of the hydrologic cycle in South Florida including rainfall, evapotranspiration, infiltration, overland and ground water flow and their interactions, canal flow, canal-ground water seepage, levee seepage, and ground water pumping.
- Incorporate current or proposed water management operational procedures, regulation schedules, and control structures, consumptive use demands, land use, and current or proposed operational rules, consistent with the existing conditions baseline.
- Simulate effects of implementing water shortage policies on urban and agricultural water uses, and natural systems.
- Utilize a spatial resolution that is appropriate for the size of the project and expected effects.

- Reflect potential hydrologic and ecologic effects resulting from the project consistent with the approved performance measures for the project.
- Utilize time steps that permit the evaluation of changes in quantity, timing, and distribution which is particularly important for analyses required in Guidance Memorandum #3 and Guidance Memorandum #4.
- Affirm the State and Federal assurance requirements pertaining to existing legal sources of water, level of service for flood protection, and existing legal users.
- Incorporate boundary conditions from the regional scale model.
- The time series of data (beginning with the date of the first data point through the date of the last data point) that comprises the full range of known conditions constitutes the period-of-record for undertaking this analysis. The longest time period of hydrologic or meteorological data that is available is recommended for this analysis. If a shorter period is used, the full range of hydrologic conditions should be represented including inter- and intra- annual variations due to droughts, periods of high and low water levels and natural fluctuations. An appropriate period-of-record will include natural fluctuations in rainfall and water levels, including droughts and periods of high water levels. Uncertainty about the adequacy of the data for compiling an appropriate climatic period-of-record should be reflected in project documents. All simulations considered should use the same period of climatic record.
- Where appropriate, a spatially explicit hydrologic simulation model should be utilized in this analysis. The grid-scale of these models should be capable of resolving the spatial variability of landscape features in the project area.

IDENTIFY AND DESCRIBE THE SPATIAL EXTENT OF THE HYDROLOGIC EFFECTS OF THE PROJECT

The PDT is responsible for identifying the spatial extent of project effects for quantifying benefits of the project, performing Savings Clause evaluations, and quantifying water made available by the project within that geographical boundary. This should be done for all projects regardless of whether the project is hydrologically separate from the regional water management system. Even though hydrologically separate projects may not affect the regional system, these projects may have effects outside the intended footprint or basin in which these projects reside.

Projects may result in changes in water availability for the natural system and other water-related needs in two general ways:

1. System-wide effects

   Hydrologic effects that occur outside of the watershed or basin in which the project is located through the storage, management, treatment, and delivery of water via the regional water management system.

2. Project-level effects

   Hydrologic effects that occur within the watershed or basin in which the project is located (e.g., natural areas, wetlands, salinity control) or within the features of project components (e.g., reservoirs, storm water treatment areas, wellfield recharge distribution canal).

Determining the spatial extent of project effects is done by first identifying the basins or watershed where the project is located and where other structural or operational changes occur. These are the basins in which the PDT should look for project-level effects. Next, the boundary conditions for those basins or watersheds are compared against the without project simulation. If the boundary conditions did not change, the PDT can assume that areas or regions outside of the basin in which the project resides are not affected and do not need to be analyzed for plan formulation purposes. However, if changes in the boundary conditions are observed, the PDT must then progressively evaluate the boundary conditions for the adjacent basins or watersheds until the team reaches a boundary where the conditions remain constant. Modeling results should be evaluated to look for project effects in each basin or watershed in which the PDT identified boundary condition changes. These are potential areas in which the CERP project may produce effects.

If the PDT uses a sub-regional model, the same boundary condition method should be employed with one additional step. If the boundary conditions change, these changes should be fed back into the regional model to determine how far the changes propagate throughout the regional system. This is also an indication that the project is hydrologically connected to the regional water management system and has system-wide effects.

ATTACHMENT 1-B
OVERVIEW OF MAJOR PIR ACTIVITIES

This attachment provides more detailed information about the major activities that are to be conducted and documentation that is needed to complete a PIR. The three major categories of activities are: develop base conditions and models; plan formulation and evaluation; and design selected plan. These activities will be documented within the PIR as outlined in Attachment 1-C.

I. Develop Base Conditions and Models

Each component or project of the Plan has previously been formulated to a certain level and the component or project has been developed to accomplish specific CERP goals. As such, formulation in the PIR always begins with the formulation already completed in developing the Plan. The PDT should extract the information from the Plan documents and continue the formulation and evaluation necessary to complete the PIR. In most cases, it is envisioned that this process will entail optimization of the component detailed in the Plan. However, in some cases, additional formulation may be needed.

A. Project Purpose and Need

> *Review the purpose, background, and contextual setting of the project as described in the Plan, and describe how this individual project is linked to the system by providing system-wide, regional and project area and benefit descriptions. This information will be found in the Plan or other previous studies and will be compiled, summarized and updated, if necessary.*

1. Purpose and Background

Project Purpose-Determine the CERP goals and purposes that apply to this project and the project-specific objectives as described in the **"**Final Integrated Feasibility Report and Programmatic Environment Impact Statement" dated April 1, 1999, or subsequent Plan documents, incorporating changes in the project's scope since the completion of the Plan.

CERP Partnership and Cooperating Agencies-Document the USACE and non-Federal sponsor partnership for this project. Document the roles of cooperating agencies and the roles of any other agency or stakeholder involvement.

Relationship to Other USACE/Non-Federal Sponsor Efforts, Studies, Documents, and Projects-Document other ongoing and completed efforts or research that pertains to this project or the CERP component.

2. Project Need and Setting

Pre-CERP Conditions-Document the conditions in the South Florida ecosystem that existed prior to implementation of CERP. This information should be available in the Plan documents.

Project Area-Determine the location and boundaries of the project area, and the resource concerns in the project area.

Prior Studies-Document prior studies and projects in the project area, both CERP and non-CERP.

B. Identify Problems and Opportunities, Objectives and Constraints, and Evaluation Criteria

Identify the issues and concerns of the area and prepare documentation of the coordination and involvement that was included to accomplish the scoping of problems and opportunities; identify the objectives and constraints, and performance measures for the project.

Note: Problems and opportunities, as well as planning objectives and constraints, should already be defined in the Plan. PIRs should only address those objectives and constraints, plus additional issues that emerge from scoping with public, agency, and stakeholder involvement. Use of a table to depict this information is advised. Document the development of additional objectives beyond those described in the Plan.

1. Identification of Problems and Opportunities

Existing Information from the Plan-Document the problems and opportunities as described in the Plan documents.

Scoping Problems and Opportunities-Conduct a scoping process to explore problems and opportunities (at the local, regional, and system level). Document the range of problems and opportunities that were explored for the PIR including an explanation of why problems were either eliminated or retained for consideration in this PIR.

Problem and Opportunity Statements-Develop problem and opportunity statements for the PIR based on the review of information from the Plan and on information received during the scoping of problems and opportunities.

2. Identification of Planning Goals, Objectives, and Constraints

Identify the Project Goals- Determine the project goal(s) to be achieved, based on the Plan's goals and problem and opportunity statements.

Planning Objectives and Constraints-Develop the planning objectives and constraints for the project. Determine how the objectives and constraints link to resolution of a problem or achievement of an opportunity. Show how objectives lead to achievement of project goals. Show how the project planning objectives and constraints relate to approved system-wide performance measures. Explain why issues were either eliminated or retained for consideration in the PIR.

3. Development of Project Evaluation Criteria

Description of Evaluation Criteria Selection Process-Develop project performance measures, including the tools to be used to calculate the results. Differentiate between quantitative, measurable performance measures and targets, and qualitative evaluation criteria.

Relationship to Planning Objectives and Constraints-Develop a display (e.g., table or chart) that shows the relationship between each performance measure and evaluation criterion, and the planning objectives and constraints for this project. Graphics should be utilized to show progress towards meeting more natural hydrology and flow in the natural system.

Relationship to CERP System-Wide Performance Measures-Develop a display (e.g., table) that shows the relationship between system-wide performance measures developed by RECOVER and any project performance measures developed by the PDT.

4. Choosing Evaluation Methods and Models

Investigation of Evaluation Methods and Models-Research and investigate viable methods and models to evaluate alternative plan benefits.

Overview of Selected Methods/Models-Determine the evaluation methodology to be selected for the PIR, and reasons for selecting that methodology. Determine the benefits that will be measured for this PIR including how the benefits relate back to the planning objectives, and problems and opportunities.

C. Existing and Future Without Conditions of the Area

The Project Delivery Team will develop or document: 1) the Existing Conditions Baseline; 2) forecasted conditions in the future if CERP is not implemented at all (Future Without CERP Baseline); 3) the forecasted conditions in the future if all of the Plan is implemented; and 4) the forecasted conditions in the future, if no further CERP projects are approved (NAI Baseline).

Existing Conditions Baseline-Determine the general existing conditions of the project area, region, and system. Include resource usage and demands. Describe the CERP projects that have been authorized with approved Operating Manuals and the non-CERP activities with approved operating plans. Effective use of maps, tables, graphs, charts, and pictures is important.

Future Without CERP Baseline-Document the system-wide conditions at the end of the period of analysis without implementation of any of the projects of the Plan. This information is available from RECOVER.

Future With CERP Condition-Document the system-wide conditions at the end of the period of analysis assuming implementation of all of the projects of the Plan. This information is available from RECOVER.

Next-Added Increment Baseline-Determine the local, regional, and system-wide conditions at the end of the period of analysis (and several points along the way), assuming CERP projects already approved are in place, but no other CERP projects are implemented. Forecast and summarize resources. This summary should depict the general state of resource conditions, usage, and demand. Use maps and graphics to help whenever possible.

Availability of Baseline Water-Determine the availability of Pre-CERP Baseline water for the natural system.

Consideration of Existing Water Reservations or Allocations–Determine if there are any existing reservations or allocations of water made under State law either for CERP or for non-CERP activities that need to be considered.

Comparison of Significant Resources in the Existing and Future Without Conditions-Determine and quantify, as appropriate, the current and future resources without the proposed project in place. Show how the existing state of significant resources compares to the state of significant resources at several points throughout and at the end of the period of analysis. A table is recommended to compare resources (which may include hydrology; water management; physical landscape; water resources; water supply; flooding; navigation; water quality; natural environmental; threatened and endangered species; essential fish habitat (EFH); socio-economic setting; land uses; cultural/historical resources; climate/weather; air quality; noise; recreation; aesthetics; hazardous, toxic and radioactive wastes; and transportation and other infrastructure).

II. PLAN FORMULATION AND EVALUATION

A. Plan Formulation

Determine whether plan formulation should focus on continuing with optimization and detailed design of the alternative described in the Plan or if additional plans should be formulated. Formulation and evaluation procedures are discussed in Guidance Memorandum #2.

1. Optimizing the Alternative Defined in the Plan

If the project described in the Plan will still achieve the benefits of the project as described in the Plan in a cost-effective manner, then the PDT will develop design alternatives to optimize the project described in the Plan. Such optimization alternatives might include incremental changes in component size, configuration, or specific location.

2. Formulation of Additional Plans

> *When additional alternatives need to be formulated to meet the planning objectives, develop alternatives for achieving the planning objectives and performance measure targets that were established earlier in the planning process. Identify the screening criteria used in order to eliminate management measures and alternative plans at this point in the planning process. Describe how the screening criteria were applied and clearly describe why those screening criteria were appropriate to use at this point in the process. A flowchart may be useful.*

Alternative Plan Described in Comprehensive Plan-Document how well the project that was included in the Plan does (or does not) achieve the benefits of the project as described in the Plan based on current conditions. Document any new or changed circumstances; conditions or other considerations that may affect project performance. For example: project conditions and objectives may have changed since the Plan was approved; new scientific research may have provided new information regarding project goals, objectives or feasibility; or adaptive management activities may indicate new or changed needs.

Develop Plan Formulation Strategy-Develop a strategy for formulating alternative plans. The PDT should consider questions such as: how will measures be developed and how will measures be used to develop alternative plans in developing the strategy.

Development of Management Measures-Develop operational, structural, and non-structural measures to meet the planning objectives and constraints and CERP goals and purposes. Describe the information used, and who was involved (e.g. stakeholder/team involvement, public input).

Development of Screening Criteria-Develop screening criteria based on approved performance measures and project objectives and constraints, and include what information was used, how values were set for each screening criteria and who was involved (e.g., stakeholder/team involvement, public input). Document how system-wide performance measure targets were considered in screening criteria development. Document the application of the screening criteria and provide lists of management measures or features eliminated and management measures or features retained for further consideration.

Organizing Measures into Alternative Plans-Document the process of organizing, linking, and combining management measures to create alternative plans. List the alternative plans formulated and show how each alternative plan performs with respect to the screening criteria applied at this point. Identify the screening criteria applied and explain how the PDT used the criteria to determine which alternatives would be eliminated and which would be retained for further consideration. A table format may be useful. Be sure to document the relationship of each alternative plan to the planning objectives and constraints, and consideration of CERP system-wide performance measure targets.

Screening of Alternative Plans-Screen alternative plans using the developed screening criteria. Determine the alternative plans to be eliminated from further evaluation and the alternative plans to be retained for further evaluation. Document the reasoning for elimination using screening criteria results.

B. Evaluation of Alternative Plans

Evaluate the changes each alternative plan would make when compared to the Future Without CERP Baseline. It is this difference between the Future Without CERP Baseline and the future with each alternative plan that defines the outputs or benefits of the alternative plan. Refer to Guidance Memorandum #2 for specific information about the evaluation process.

Determine how the changes in future with conditions are related to project objectives. This is not an absolute comparison. Each alternative plan will likely have differing levels of success for each objective and performance measure. It is important to reflect those differences, since that will aid the selection of the final alternative plan from the group of likely candidates.

Document the process by which alternative plans were evaluated, making sure to discuss any and all iterations. A table may be an effective way to display this information.

Overview of Future Conditions with Each Alternative Plan-Determine the general conditions of the project area, region, and system in the future with each alternative plan in place. This should depict the overall state of the resource conditions, usage and demands that are predicted and likely for the period of analysis for this project. Use of maps and pictures is encouraged to assist in describing the future with conditions for each alternative.

Comparison of Significant Resources (Alternative Plans vs. Future-Without CERP Baseline)-Quantify, as appropriate, the different future with and without conditions for significant resources. Furthermore, show how the state of significant resources in each alternative plan compares to the state of significant resources in the future without condition. Table format is recommended for reflecting this comparison across resources (e.g., hydrology; water management; physical landscape; water resources; water supply;

flooding; navigation; water quality; natural environmental; threatened and endangered species; EFH; socio-economic setting; land uses; cultural/historical resources; climate/weather; air quality; noise; recreation; aesthetics; hazardous; toxic and radioactive wastes; transportation and other infrastructure; cumulative impacts; unavoidable adverse effects; relationship between short term uses and long term productivity; irreversible or irretrievable commitments of resources; incomplete or unavailable information; and benefits associated with alternative plans). RECOVER will prepare an evaluation of the alternative's contribution towards achieving the system-wide goals and purposes of CERP, including, as appropriate, suggestions for improving the performance of he selected alternative plan. The RECOVER evaluation will be included in the PIR as required by the Programmatic Regulations.

Savings Clause Considerations-While the required Savings Clause analysis will be conducted on the selected alternative plan, the PDT should consider any major potential Savings Clause issues that have been identified for each alternative plan evaluated at this point. Guidance Memorandum #3 provides details on the Savings Clause analyses.

C. Comparison of Alternative Plans

Document the outcome of comparing all alternative plans to identify the differences among the alternative plans. Describe the relationships between outputs and the alternative plan costs. Conduct cost-effectiveness (CE) and incremental cost analysis (ICA), as appropriate.

1. Alternative Plan Comparison

Alternative Plan Achievement of Objectives-Document each alternative plan's degree of achievement of planning objectives and performance targets (table is recommended). Include sufficient detail to show differences in performance between alternative plans. If performance measures are too coarse to show differences, the PDT should document this and describe other potential performance measures or methods of determining differences between plans.

Alternative Plan Effects-Compare and evaluate benefits, both monetary and non-monetary, based on approved performance measures for alternative plans. Identify the resources (if any) that may be adversely affected. Explain how various benefits relate to the quality of the intended project outcome. Document if trade-offs occur in the attainment of one or more planning objectives. Discuss the consequences of trade-offs and relative importance of each objective affected.

Significance of Ecosystem Outputs-Determine the significance, from a planning perspective, of ecosystem outputs each alternative plan would produce. Along with other evaluation techniques, this information will help determine whether the proposed project is worth the cost, and whether a particular alternative should be recommended. Significance should be described in terms of institutional, public and/or technical importance. Basis for such significance includes: (1) acknowledgment of output

importance in laws, policies, and adopted plans; (2) volunteer or financial support or cultural veneration of a resource by a segment of the general population; (3) scarcity, limiting nature to survival/recovery of species, connectivity, recoverability, declining status or downward trend, and biodiversity of the ecosystem outputs.

Alternative Plan Comparison-Document the process for elimination of certain alternative plans (if any) from further comparison and list the alternative plans retained for further consideration. Include a discussion of the four Principles and Guidelines criteria (completeness, effectiveness, efficiency, and acceptability) and the degree to which each alternative plan satisfied them. A table may be useful for this purpose. Discuss alternative plans that were eliminated based on this analysis.

Costs of Alternative Plans-Determine the construction cost estimates of each plan feature, as well as other costs associated with implementation, operation, and maintenance of each alternative plan.

2. Cost-Effectiveness/Incremental Cost Analyses of Alternative Plans

Overview of Cost-Effectiveness Analysis-Determine which of the alternative plans are considered cost-effective, based on a comparison of the ecological outputs (or surrogates, if necessary) provided and their costs. Only cost-effective alternative plans should be retained for further analysis. Based on this analysis, document why some alternative plans were eliminated and identify the alternative plans retained.

I**ncremental Cost Analyses of Alternative Plans-**In cases where additional alternative plans other than the optimized component from the Plan have been developed, an ICA is necessary to evaluate each alternative plan. Calculate incremental costs and incremental outputs for the cost-effective alternative plans to determine which are "best buy" alternatives (e.g., greatest return of ecological outputs or surrogates if necessary for a given level of investment). The ICA will be necessary to demonstrate the efficiency (cost per each additional unit of output) for successively larger (greater output) cost-effective plans. If all of the alternative plans yield identical outputs, cost-effectiveness analysis (which identifies the least cost alternative plan) will be the critical procedure.

3. Trade-Off Analysis

Describe any trade-offs that are being evaluated among the benefits, monetary and non-monetary, associated with the planning objectives (and approved performance measures).

4. Risk and Uncertainty Analysis

Level of Risk and Uncertainty-Determine the level of risk or uncertainty that is associated with any factor of an alternative plan (e.g., structural integrity, land suitability, and ecological return). In addition, identify any uncertainties associated with assumptions made during the planning process, predictions of future conditions, models and methodologies employed, and cost estimates. The uncertainty analysis should be as quantitative as feasible. A tabular format may be helpful. Knowing where the sources of greatest uncertainty lie is important. Describe any risks foreseeable to the achievement of

project goals if assumptions or predictions are inaccurate, or if structural or operational problems arise.

Sensitivity Analysis-If the findings of the risk and uncertainty analysis indicate a significant level of risk or uncertainty associated with parameters of certain alternative plans, a sensitivity analysis should be performed. A sensitivity analysis will help to estimate the magnitude of the effect on plan performance that a change of a given parameter would make. If, for example, a slight change in ecological relationships would result in a huge difference in project performance, the PDT should document this fact.

4. Recreation Analysis

Determine effects of the selected alternative plan on existing recreation facilities and consider additional recreation opportunities in the study area. As appropriate, formulate and evaluate additional recreation features in accordance with USACE regulations and policy.

D. Plan Selection Process

> Document how the selected alternative plan was selected from the final array of alternative plans. Document the results of cost effectiveness/incremental cost analyses (CE/ICA) and other significant conclusions resulting from comparison of the final array of alternative plans. Describe selection criteria used and how the criteria reflect the planning objectives and performance measure targets. Explain how selection criteria were applied. The tentatively selected plan will be the plan that reasonably optimizes net benefits, both monetary and non-monetary, consistent with the objectives of the Plan.

Integration of Planning Objectives and Performance Measures-Establish and set values for selection criteria for selection of the plan from the final array of alternative plans. Criteria may include such things as achievement of planning objectives, the degree of risk or uncertainty that is acceptable, achievement of performance measure targets and the necessity of undesirable trade-offs. Explain how the criteria were applied and how each alternative plan was rated. Tables or charts may be helpful to display information to aid this analysis.

Other Criteria Considered for Plan Selection-Document any other criteria used to choose the selected alternative plan. Such criteria will be unique to each project but may include such things as achievement of Principles and Guidelines criteria, Environmental Operating Principles, land availability, public preference, achievement of interim goals and interim targets, incidental benefits, mitigation requirements, or compatibility with other CERP or C&SF Project system features.

Justification-In addition to USACE requirements for project justification, the PIR must demonstrate that each project is justified on a NAI basis. Document benefits if this increment were the last one implemented, in addition to those already authorized. Include

an analysis of NAI (Guidance Memorandum #2 provides additional information on the NAI), system-wide benefits, and achievement of approved system-wide performance measures and targets.

III. DESIGN SELECTED PLAN

A. Selected Alternative Plan Description

Selected Alternative Plan Features and Actions-Document in technical detail the specific features of the selected alternative plan. Develop a clearly labeled project drawing and map showing the project location and context. Develop other graphics, charts or photographs necessary to provide a clear and accurate understanding of the selected alternative plan's features.

Selected Alternative Plan's Contribution Towards Achieving CERP Goals and Purposes-Show how the selected alternative plan is an integral part of the Plan and document the selected alternative plan's contribution to achievement of the goals and purposes of the Plan.

Selected Alternative Plan's Contribution to Achievement of Interim Goals and Interim Targets-Document how the selected alternative plan contributes to the achievement of interim goals and the interim targets established according to the Programmatic Regulations.

Relationship to Problems and Opportunities Statements-Demonstrate that the selected alternative plan effectively addresses the problem and opportunity statements developed earlier in the planning process.

Relationship to Planning Objectives and Constraints-Show the relationship of selected alternative plan to the planning objectives and constraints.

Develop Initial Operating Regime (IOR)-Document the assumptions concerning the initial operating regime and how those assumptions were used in development of the Project Operating Manual.

Project Operating Manual-Provide summary information from the Draft POM that is included as an annex to the PIR. The Draft POM should be based on the Initial Operating Regime and will include conceptual discussion of the operational intent and transitioning from the Initial Operating Regime to subsequent operations as system conditions change or as constraints are removed. The Draft POM should include appropriate operating parameters, (e.g. special guidance or constraints) that are necessary to achieve the performance of the project, particularly natural system performance. Refer to Guidance Memorandum #5 for additional guidance on Operating Manuals.

Project Monitoring Plan-Determine the monitoring activities that will be conducted for the selected alternative plan.

Selected Alternative Plan Costs-Provide a general breakdown of all the costs associated with the selected alternative plan. Include costs for: construction; lands, easements, relocations, rights-of-way and disposals (LERRDs)**;** Operation, Maintenance, Repair, Rehabilitation, And Replacement (OMRR&R); and project monitoring.

Permits, Entitlements, and Certifications-Determine the necessary permits, certifications, and entitlements that are required to construct and implement the selected alternative plan. Determine any actions taken to begin the procurement or application processes for such permits and certifications. Determine actions still to be taken.

Mitigation and Environmental Commitments-Document any commitments that have been made by any agency in order to implement the selected alternative plan. Describe the specific mitigation actions that may be required to implement the selected alternative plan. Show that the mitigation is justified. The resources for which mitigation is required should also be described clearly.

Compliance with Environmental Laws, Statutes, Executive Orders-Identify how each applicable law, statute and executive order is being complied with and or the status of the compliance.

B. Project Assurances

Address Federal and State requirements unique to CERP PIRs as required by section 601 of WRDA 2000, the Programmatic Regulations, and State Statutes.

Elimination or Transfer of Existing Legal Sources of Water-Determine if implementation of the selected alternative plan would result in the elimination or transfer of an existing legal source of water (section 385.36[a] of the Programmatic Regulations). Guidance Memorandum #3 provides further guidance on how to conduct these analyses.

Project Effects on Level of Service for Flood Protection-As required by the Savings Clause of section 601(h)(5) of WRDA 2000, appropriate analyses must be conducted to demonstrate that the levels of service for flood protection that: (1) were in existence on the date of enactment of WRDA 2000; and (2) are in accordance with applicable law, will not be reduced by implementation of the project. Guidance Memorandum #3 provides details on how to conduct this evaluation.

Identification of the Water Made Available by the Project and the Water to Be Reserved or Allocated-Guidance Memorandum #4 provides a detailed discussion of: 1) the total water necessary to achieve the benefits of the project; 2) the identification of the water made available by the project; and 3) identification of the amount of water to be reserved or allocated for the natural system.

Compliance with Applicable Water Quality Standards and Permitting Requirements-The FDEP is responsible for issuing Water Quality Certification (WQC) and/or State permits for CERP Projects. The PDT should work to provide as much detail as possible about the construction and operation of the selected alternative plan to facilitate timely issuance of the WQC and/or State permits.

Compliance with Florida Statutes Section 373.026(8)(b), F.S., requires that prior to submitting a PIR to Congress for authorization or receipt of an appropriation of State funds for construction of a CERP project, the FDEP must first approve the project component. Section 373.470, F.S., requires that, prior to executing a PCA with the USACE, a PIR must contain sufficient information to receive FDEP approval under section 373.026(8)(b), F.S. In order to receive approval of the project component by the FDEP, the SFWMD must provide documentation to demonstrate compliance with the criteria set forth in section 373.1501(5), F.S.

C. Implementation of the Selected Plan

Schedule-Determine the timeline for implementing the features of the selected alternative plan, explain any relationship between the implementation of the different components (e.g., dependencies) and describe any specific time-of-year requirements associated with any features of the selected alternative plan.

Costs: Engineering and Design, Construction, LERRDS, OMRR&R-Determine all the costs associated with implementation of the selected alternative plan.

Cost-Sharing-Determine the cost allocation for the selected alternative plan over the duration of the implementation period between the USACE and non-Federal sponsor(s). If cost-sharing of water quality features is recommended, then cost-sharing should be explicitly stated here. Such statements must also show that any features to improve water quality are implemented in a manner consistent with the cost-sharing provisions in section 528 of WRDA 1996 and section 601 of WRDA 2000.

Summary of Federal/Non-Federal Implementation Responsibilities-Based on the schedule and costs reflected for the selected alternative plan, determine each party's responsibilities for implementation. This will include the Federal and non-Federal sponsors, and will sometimes also include other agencies.

Unresolved External Issues-Document the unresolved external constraints and factors, if any, that may affect project implementation (e.g., land use, land ownership and management issues) as well as other risk factors for the project. Present any issues that are outside the purview of the USACE or non-Federal sponsor's authority, including issues discussed but determined to not be relevant to the project purpose.

ATTACHMENT 1-C
PROJECT IMPLEMENTATION REPORT OUTLINE

*COVER PAGE AND ABSTRACT

*EXECUTIVE SUMMARY
- PIR Summary
- Major Conclusions and Findings
- Areas of Controversy
- Unresolved Issues

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* Elements marked with an asterisk (*) are required for NEPA compliance according to CEQ Regulations.

SECTION 2: GUIDANCE MEMORANDUM #2 FORMULATION AND EVALUATION OF ALTERNATIVES FOR PROJECT IMPLEMENTATION REPORTS

2.1 PURPOSE

The Programmatic Regulations require that a Guidance Memorandum be developed to "describe the processes to be used to formulate and evaluate alternative plans and their associated monetary and non-monetary benefits and costs, determine cost-effectiveness and optimize the project's contributions towards achieving the goals and purposes of the Plan, and the basis for justifying and selecting an alternative plan to be recommended for implementation…" and "… provide a process for evaluating projects that are outside the boundary of regional computer models or projects whose effects cannot be captured in regional computer models."

In addition, the Programmatic Regulations include other provisions related to formulation and evaluation that need to be addressed in this Guidance Memorandum. These areas include:

- Describing a process for including each alternative plan with all the other components of the plan;
- Evaluating the total monetary and non-monetary benefits and costs of the resulting comprehensive plan when compared to the without CERP condition; and
- Describing the process for identifying the tentatively selected plan, as well as evaluating the tentatively selected plan as the NAI.

This Guidance Memorandum provides information about the formulation and evaluation of alternatives for PIRs.

2.2 APPLICABILITY

This Guidance Memorandum applies to PIRs for all CERP projects and provides additional information on the plan formulation and evaluation activities described in Guidance Memorandum #1. There may be differences in the level of detail included in each PIR based on specific situations. For example, the amount of detail necessary to complete the formulation and evaluation for the PIR, the extent of previous formulation, the planning research activities, and/or the design detail may differ from project to project.

2.3 UPDATING GOALS, PROBLEMS AND OPPORTUNITIES, AND PLANNING OBJECTIVES AND CONSTRAINTS

As described in Guidance Memorandum #1, the initial step in the PIR process, developing base conditions and models, involves reviewing and collecting the project information from the contextual setting of CERP. Goals, problems and opportunities, and planning objectives and constraints should be directly taken from the Plan. Upon completion of scoping with

agencies and the public on the previously developed criteria, the PDT should identify any new issues and conditions that may require additional goals, problem and opportunity statements, or planning objectives and constraints for the project. RECOVER should be consulted regarding any additional problems and opportunities that may have been identified related to the project on a system-wide basis. In developing any new evaluation criteria, it is incumbent on the PDT to ensure that the new evaluation criteria still meet the intent of the Plan.

2.4 PERFORMANCE MEASURES

The basic goal of CERP is to restore the South Florida ecosystem by providing more natural timing, flows, depths, and distribution within the natural system, while providing for other water-related needs of the region. Evaluation criteria and ecological performance measures that are used in the PIR process should promote more natural hydrology and optimize ecological benefits, consistent with the specific goals and planning objectives of the projects. To evaluate system-wide effects of projects, the system-wide performance measures developed by RECOVER should be used to the greatest extent possible.

Depending on the scale of the project and the scope of formulation, project-level evaluation criteria and performance that are consistent with the RECOVER system-wide performance measures should be identified and developed as necessary. Project-level performance measures developed by the PDT will be reviewed by RECOVER for consistency with the system-wide performance measures. Any disagreements between RECOVER and the PDT on performance measures will be elevated to appropriate agency management. The set of performance measures (system-level and project-level) that are proposed to be used will be discussed and approved at the FSM meeting.

Alternative plans will be evaluated and compared by calculating each alternative's outputs or benefits, both monetary and non-monetary, using appropriate NER outputs. A complete discussion of NER evaluation may be found in USACE guidance such as ER 1105-2-100. Benefits should be based on metrics that can be assessed as well as predicted, and that are consistent with RECOVER performance measures used in evaluation, assessment and development of the interim goals and interim targets. Performance measures are a subset of the broader set of evaluation criteria. Those performance measures can be used to formulate and evaluate alternative plans and are quantifiable measures of how well a project meets defined hydrological or ecological targets. Performance measures are used in both the planning phase and in post-construction monitoring and assessment of a project. Displays of alternative plans showing the key performance measures and evaluation criteria that are used in the plan formulation and evaluation process should be included in the Plan Formulation and Evaluation Appendix of the PIR.

Because CERP projects are required to be selected and justified based on their system-wide benefits, the evaluation process should be based on the system-wide performance measures developed by RECOVER. In addition to system-wide performance measures, the PDT may develop project-specific performance measures, if necessary, to capture localized alternative effects.

Performance measures should be linked to project goals and planning objectives and to the overall goals and purposes of CERP. A good set of performance measures will have the following attributes:

- For the natural system, they should be based on the conceptual ecological models
- For other water-related needs, they should be related to defined project objectives;
- Should include effects of hydrology and flow;
- Cover the full range of potential effects of a plan on the project's planning objectives;
- Include only measures that are necessary;
- Be supported by best-available scientific and technical information; and
- Be specific and sensitive enough to differentiate between alternative plans.

If project-level performance measures are developed, RECOVER will conduct a review of the project-level performance measures for consistency with the system-wide performance measures. The PDT and RECOVER need to ensure that the targets are generally supported by the scientific literature or legal requirements.

Further, information from the U.S. Fish and Wildlife Service's Planning Aid Letters (PALs) and Fish and Wildlife Coordination Act reports (CARs), the scientific literature, and scientific peer review will be used to assist in defining project benefits. Collaboration with appropriate agency partners will also be maintained in the process of developing such metrics.

2.4.1 Performance Measures for the Natural System

Performance measures for the natural system should be based on restoring more natural timing, flows, depths, and distribution as described in the conceptual ecological models that have been developed for the south Florida ecosystem. The use of conceptual ecological models is a key element of the Applied Science Strategy, as described in Guidance Memorandum #6, and a primary foundation for the development of CERP performance measures. Conceptual ecological models illustrate the links among societal actions, environmental stressors and ecological responses; describe the major causal hypotheses that explain why the natural systems in south Florida have been altered; and document the scientific rationale for the management actions undertaken to restore these systems (Gentile et al., 2001). Conceptual ecological models have guided the development of RECOVER's system-wide performance measures, the interim goals for the natural system, and the CERP MAP. The MAP provides documentation for the conceptual ecological models developed to date as well as additional information about their application in CERP.

The Plan was formulated to improve the quantity, quality, timing, and distribution of water to the natural system – in short, "getting the water right." Performance measures for the natural system should be linked to hydrologic changes that are necessary to "get the water right." The set of performance measures for the natural system should include such measures as monthly, seasonal, and inter-annual changes in flow. Consistent with conceptual ecological models and best available science, durations and frequencies of extreme events (too much or too little water) should also be included in the set of performance measures. It is particularly

important to have performance measures that show the frequency and duration of too much water in natural areas since the Savings Clause analyses concerning reductions in the level of service for flood protection are not applicable to natural areas. Graphic displays, such as Figure 5-D-9, should be developed to show progress toward meeting a more natural hydrology and flow, on a monthly, seasonally and interannual basis.[1]. Additionally, other project specific graphics may be necessary for some projects to fully evaluate whether the project is redistributing water as intended.

In addition to the system-wide performance measures, additional ecological and hydrologic performance measures for the natural system may be developed and applied as needed. All performance measures should be reviewed by RECOVER prior to use in the formulation and evaluation process. To support project assessment and adaptive management, a single integrated set of performance measures with both predictive (evaluation) and assessment elements should be used for system-wide tasks including project alternative evaluation, assessments, and interim goals and interim targets.

2.4.2 Performance Measures for Urban and Agricultural Water Supply and Flood Protection

The CERP system-wide performance measures integrate multiple performance measures to evaluate the effects of projects on urban and agricultural water supply, flood protection, and resource protection. The PDT should use these performance measures as appropriate or develop additional measures to gauge the effects of the project on the ability to supply water for urban and agricultural users or continue providing flood protection. If project performance measures are developed, then those performance measures should be linked to State and Federal laws and policies (e.g. the State level of certainty planning goal for water supply is based on meeting needs in a 1 in 10 drought event) and be consistent with the natural system performance measures developed for the project. All performance measures should be reviewed by RECOVER prior to use in the formulation and evaluation process.

2.5 PERIOD OF ANALYSIS

The Plan was based on a 50-year period of analysis and a planning horizon to the year 2050. The period of analysis for calculating the benefits and associated costs for a project will begin the year in which the project will be functional (base year). The end-point for the period of analysis used in a PIR will coincide with the period of analysis end-point used in the most current version of the Plan (i.e., the April 1999 "Final Integrated Feasibility Report and Programmatic Environmental Impact Statement" used 2050). This end-point consistency is necessary for the proper calculation of system-wide benefits. The PDT should note that this could result in a period of analysis shorter than 50 years. As periodic CERP updates are completed in accordance with section 385.31(c) of the Programmatic Regulations, the end-point for the period of analysis will be revised to reflect the new condition.

[1] At the time this Guidance Memoranda was being developed, RECOVER was in the process of formulating performance measures for flow. Until such time as flow performance measures are approved, the PDT should develop graphic displays showing flow performance as represented in Figure 5-D-9.

2.6 CONSIDERATION OF AVAILABILITY OF PRE-CERP BASELINE WATER AND EXISTING WATER RESERVATIONS OR ALLOCATIONS

Section 385.35(b)(2) of the Programmatic Regulations requires that:

> "Each PIR shall take into account the availability of Pre-CERP Baseline water and previously reserved water as well as the estimated total quantity of water that is necessary for restoration for the natural system and the quantity of water anticipated to be made available from future projects in identifying the appropriate quantity, timing, and distribution of water dedicated and managed for the natural system, determining whether improvements in water quality are necessary to ensure that water delivered to the natural system meets applicable water quality standards; and identifying the amount of water for the natural system necessary to implement, under State law, the provisions of section 601(h)(4)(A)(iii)(V) of WRDA 2000."

The Pre-CERP Baseline is a description of assumed hydrologic conditions on the date of enactment of WRDA 2000 (December 11, 2000). The PDT will compare the Existing Conditions Baseline to the Pre-CERP Baseline to determine if there are changes in baseline water availability. The results of this comparison will be used in project formulation and evaluation. If the Pre-CERP Baseline water is no longer available for the natural system, then the PDT may consider such things as:

- Developing alternatives that capture additional water; or
- Changes in system operations to increase the amount of water made available to the natural system.

More detailed information regarding the Pre-CERP Baseline is contained in Guidance Memorandum #3 and in the Pre-CERP Baseline document.

During the initial phase of plan formulation, the PDT must identify if any existing reservations or allocations of water made under State law need to be considered. The PDT must use the information related to the approved performance measures and associated targets from modeling for the existing reservations or allocations made by the State to aid in the identification of water made available for the natural system by the project (See Guidance Memorandum #4).

2.7 SCREEN ALTERNATIVE PLANS FOR EFFECTS ON EXISTING LEGAL SOURCES OF WATER AND LEVELS OF SERVICE FOR FLOOD PROTECTION

The PDT should perform a preliminary screening analysis for the final array of alternatives to determine potential effects on existing legal sources of water and levels of service for flood protection. The PDT should identify a subset of evaluation criteria correlated to existing legal sources of water and flood protection considerations; however, alternative plans should be primarily evaluated and compared based on the benefits produced by each plan. If there are

trade-offs in performance for natural areas that need to be considered, those trade-offs should be evaluated and justified as part of the formulation and evaluation process. Any disagreements on trade-offs will be elevated to appropriate agency management. A Savings Clause analysis for existing legal sources of water and flood protection will be conducted on the selected alternative plan (see Guidance Memorandum #3).

2.8 CONSIDERING CHANGES TO OPERATIONS OUTSIDE OF THE PROJECT AREA

The PDT should consider including, as appropriate, changes to operations in other areas of the system in order to optimize the delivery of system benefits. For example, changes to the WCA regulation schedules should be considered for projects, such as the Everglades Agricultural Area Storage Project, which are designed to improve the natural hydrology in the Water Conservation Areas and Everglades National Park. Changes to operations should be considered if there would be a direct beneficial impact to the project. Whenever possible, the PDT should incorporate Everglades Rainfall Driven Operations (ERDO) in the project being formulated to the greatest extent possible without creating harm elsewhere. The PIR should contain a discussion of the incorporation of ERDO into the project.

2.9 TRADE-OFF ANALYSIS

Trade-off analysis is the procedure to identify the potential gains and/or losses associated with producing a larger or lesser amount of a given output or outputs. The PDT will identify and analyze potential trade-offs as part of the formulation and evaluation process. The results of trade-off analysis are to be displayed in the PIR.

2.10 RISK AND UNCERTAINTY ANALYSIS

The PDT will identify areas of risk and uncertainty in the team's analysis and describe those risks and uncertainties clearly, so that decisions can be made with the knowledge of the degree of reliability of the estimated benefits and costs and of the effectiveness of the selected alternative plan. When the costs and outputs of alternate plans are uncertain and/or there are risks that outcomes will not be achieved, the identification of a selected alternative plan becomes more complex. Documentation of the assumptions made and uncertainties encountered during the course of planning analysis is essential. Some activities may have relatively low risk while other activities may have higher risks. When identifying the selected alternative plan, the associated risk and uncertainty of achieving the proposed level of outputs must be considered. For uncertainties that may significantly affect project performance, the PDT should conduct sensitivity analyses or scenario modeling. Adaptive management (Guidance Memorandum #6) provides a means for addressing uncertainty in ecosystem responses.

2.11 FORMULATION AND EVALUATION FOR THE PIR

While the PIR has many aspects of a USACE Feasibility Study, the primary difference with the PIR is the steps taken to complete plan formulation and evaluation of the project. Unlike

a feasibility study, the PIR is based on a component or components that have previously been formulated to a certain level in developing the Plan and are expected to accomplish specific Plan goals. As such, formulation in the PIR always begins with the formulation already documented in the Plan. The formulation and evaluation process and its relation to other major tasks for the PIR is depicted in Figure 2-2.

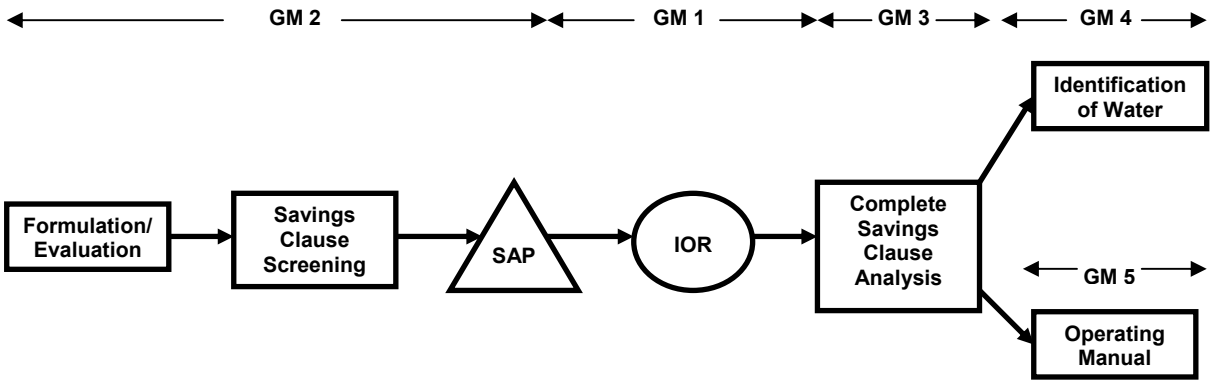


Figure 2-2: Relationship between Formulation and Evaluation and Other PIR Tasks

During the development of the base conditions and models (Guidance Memorandum #1) for the PIR, the PDT should extract the relevant information from the Plan documents. In addition, the project described in the Plan should be reviewed and cost information updated based on available information. The PDT should conduct an initial screening effort to determine if the project as described in the Plan will still achieve the benefits of the project as described in the Plan in a cost-effective manner. The results of this initial screening effort will be presented at the FSM with the USACE vertical team and the Office of the Assistant Secretary of the Army for Civil Works (OASA(CW)) to determine if the project plan formulation process will entail optimization of the project described in the Plan or if formulation of additional alternatives will be necessary.

If the project as described in the Plan will still achieve the benefits of the project as described in the Plan in a cost-effective manner, then the PDT's efforts will focus on development of design alternatives and optimization of the project features, cost-effectiveness, satisfaction of Programmatic Regulations requirements for PIRs, M-CACES cost estimates, and the integrated NEPA documentation to supplement the information contained in the Programmatic Environmental Impact Statement (PEIS) for the Plan, in accordance with the concept of tiering under NEPA.

If the project described in the Plan no longer achieves the benefits of the project as described in the Plan, additional formulation will be required to develop a justifiable alternative. However, the formulation completed and described in the Plan will provide the foundation for the PDT to formulate additional alternatives. The new or changed circumstances requiring additional formulation should be documented. As noted previously, for those

projects where the non-Federal sponsor has already acquired lands, the PIR will use the actual cost of the land bought for the project instead of the estimated value of the land. Additional management measures to address the new circumstances should be developed and screening should occur based on the project's evaluation criteria and approved performance measures. From the screening process additional alternatives will be formulated.

If formulation of additional alternatives is necessary, then the PDT will formulate additional alternatives by developing management measures at different scales or sites to meet the project's goals and purposes.

In both cases, either when a project is further optimized in a PIR or when additional formulation is needed, evaluations should be conducted on a system-wide basis in the context of the rest of the Plan using regional modeling tools such as the SFWMM when possible. Evaluation of system-wide effects of alternative plans conducted using regional models will be supported by RECOVER. The PDT should involve RECOVER as early as possible in the plan formulation process, including at the FSM, so that a system-wide perspective is maintained throughout the process.

In some cases, a project is hydrologically separate from the C&SF Project (see Attachment 1-A of Guidance Memorandum #1) or the regional model cannot capture the project's effects. In those cases, any necessary formulation and evaluation will utilize sub-regional or site-specific models that focus on more localized project outputs. Project performance measures will provide the link to describing system-wide benefits of the project.

2.11.1 Acceler8 Projects

The State of Florida has approved a SFWMD plan called "Acceler8" for the purpose of accelerating design and construction of a number of important restoration projects consistent with the Comprehensive Everglades Restoration Plan (CERP) but prior to one or more of the following: Administration approval, congressional committee resolution, congressional authorization, or federal construction funding. The State anticipates the Acceler8 program will provide immediate environmental, social, and economic benefits in the South Florida region.

For each PIR that includes an Acceler8 project, the Acceler8 project will be analyzed as one of the alternative plans considered or the Acceler8 project should be encompassed within at least one of the alternatives considered in the PIR. If the selected alternative plan for the PIR includes the features proposed to be constructed by the SFWMD under the Acceler8 program, then those Acceler8 features should be identified to be implemented as the first phase of construction of the selected alternative plan.

2.11.2 Plan Formulation and Evaluation Procedure

The formulation and evaluation approach for CERP considers the system-wide interdependencies of CERP projects. The formulation and evaluation procedure includes four steps: 1) system formulation and evaluation; 2) cost-effectiveness and ICA; 3) identification

of the tentatively selected plan; and 4) next-added increment analysis. These steps are described in more detail in the following paragraphs.

2.11.2.1 Step 1: System Formulation and Evaluation

Once the level of formulation necessary for the PIR has been determined, the PDT will initiate the formulation and evaluation process for the PIR. The PDT will formulate and evaluate alternatives to achieve the goals and purposes of the project, to optimize net benefits, both monetary and non-monetary, on a system-wide basis, and to achieve the benefits of the Plan. The Plan was formulated to improve the quantity, quality, timing, and distribution of water to the natural system, while providing for other water-related needs of the region – in short, "getting the water right." Performance measures for the natural system should be based on the conceptual ecological models that have been developed for the south Florida ecosystem. A key sub-set of the performance measures should be identified. This key sub-set of the performance measures will be the primary means to ensure that the goals and purposes of the project are achieved. To evaluate system-wide effects of projects, the system-wide performance measures developed by RECOVER should be used to the greatest extent possible. Depending on the scale of the project and the scope of formulation, project-level evaluation criteria and performance that are consistent with the RECOVER system-wide performance measures should be identified and developed.

The PDT is responsible for development of the set of alternative plans to be considered. For those projects where the formulation effort is to focus on optimization of the project described in the Plan, the PDT will develop various configurations. For those projects where formulation of additional alternatives is necessary, the PDT will consider different measures, components, features, and project scales within the study area to achieve the planning objectives and to achieve the benefits of the project described in the Plan. In accordance with the Programmatic Regulations, the initial alternative to be considered by the PDT will be the project as defined in the Plan. While new information and implementation of other CERP components may show that this is an unrealistic alternative for consideration, evaluation of this alternative is required to demonstrate the differences between the approved Plan and the alternatives being considered. For each PIR that encompasses an Acceler8 project, the proposed Acceler8 project will be analyzed as one of the alternative plans considered or encompassed within the alternatives considered in the PIR.

Although the PDT will be formulating and evaluating projects individually to achieve the benefits of the Plan as part of the planning process, the selected plan should optimize net benefits, both monetary and non-monetary, on a system-wide basis. The PDT, in coordination with RECOVER, will evaluate system-wide effects of alternatives. The PDT will use these system-wide benefits as the basis for project justification.

In accordance with the Programmatic Regulations, the evaluation of alternatives involves the comparison of the Future With Project Condition to the Future Without CERP Baseline. For this purpose, the Future With Project Condition for an alternative plan will be built from the Future Without CERP Baseline and include all of the other projects of the Plan (authorized and not yet authorized) along with the alternative plan being evaluated. This will result in a

system-wide "comprehensive plan" that can be compared to the Future Without CERP Baseline.

2.11.2.2 Step 2. Cost-Effectiveness and Incremental Cost Analysis (CE/ICA)

The second step in the formulation and evaluation process is to perform cost-effectiveness and incremental cost analyses (CE/ICA). A discussion of the metric that is used to conduct cost-effectiveness and ICA should be provided. This will include a summary of the ecological outputs and benefits as well as benefits to other water-related needs based on performance measures and a description of improvements to significant resources, including progress towards meeting more natural hydrology and flow. A discussion of the system-wide benefits of the alternatives should be included. In some cases, the PDT may not have tools available that adequately capture differences in outputs between alternative plans, particularly when considering design optimization alternative plans. In this case, the cost-effectiveness analysis is the critical analysis in selecting an alternative plan. Incremental cost analysis (ICA) would not be necessary, or would be limited to demonstrating the efficiency (cost per unit of output) of each alternative plan. If available tools are able to capture differences in outputs between alternative plans, an ICA should be conducted. The ICA demonstrates the increase in cost required for each additional unit of output. Only cost-effective alternative plans that demonstrate viable benefits should be retained for further analysis.

2.11.2.3 Step 3: Identification of Tentatively Selected Plan

The third step of the formulation and evaluation process is the identification of the tentatively selected plan. This step is performed after consideration of the various alternative plans, alternative plan effects, public comments, and success in meeting Federal, State, and other requirements. In this final iteration of the planning process, the final array of alternatives is presented. This group will also include the no-action plan. These alternatives are representative of those alternatives that have made it through all previous iterations of formulation, screening, and evaluation. In addition, the alternatives have been assessed to comply with the Principles and Guidelines (complete, effective, efficient, and acceptable) as well as with NEPA requirements. Any of the alternatives in this final array provide a feasible option for implementation, meeting the intended goals and planning objectives of the PIR. The tentatively selected plan will be the plan that reasonably optimizes net benefits, both monetary and non-monetary, consistent with the objectives of the Plan. Once a tentatively selected plan is identified, the next-added increment (NAI) analysis described in the next section must be conducted.

2.11.2.4 Step 4: Next-Added Increment Analysis

The Programmatic Regulations require evaluation of the tentatively selected plan as the "next-added increment" (NAI). The NAI analysis evaluates the effects, or outputs, of the tentatively selected plan as the next project to be added to the group of already approved CERP projects. This analysis helps illuminate the beneficial effects the selected alternative plan contributes without regard to future CERP projects as well as the importance of the

project in the sequence of implementing CERP and dependence of other CERP projects on the project under evaluation. The analysis also helps to ascertain whether sufficient benefits would be attributable to the tentatively selected plan to justify the cost, if no additional CERP projects (other than those already existing or authorized) were implemented.

The PDT will conduct the NAI analysis on the tentatively selected plan and display the results so that the justification of the tentatively selected plan may be demonstrated. The NAI analysis will use a comparison of the with project condition to the without project condition. For this analysis, the with project condition is the NAI Condition and the without project condition is the NAI Baseline. The comparisons should be made at appropriate time-points (e.g., implementation base year, period of analysis end-point) to determine average annual benefits or their equivalent. The tentatively selected plan must be justified on a NAI basis. The PDT should note that the NAI Baseline, which only includes those CERP projects that have already been approved, is synonymous with the no-action alternative for the PIR, which is different than the Future Without CERP Baseline. The model runs used for the NAI analysis should be operationally optimized.

The spatial extent of system-wide and project-level effects must be identified to quantify beneficial effects of a project. One of the underlying principles of CERP is to capture and store excess flows and discharges currently made to tide to restore some of the historic regional water storage function that has been lost through the implementation of drainage and flood control infrastructure and development in the region. Since the projects that comprise CERP are designed to work together to achieve the system-wide (i.e., pertaining to the C&SF Project or the South Florida ecosystem, as a whole) goals and purposes of CERP, in most cases, non-monetary benefits for the natural system or other water-related needs should be conducted on a system-wide basis in addition to a project-level basis.

The PDT may demonstrate NAI justification by:

- quantifying environmental and economic benefits attributable to the tentatively selected plan in the absence of other not-yet-approved CERP projects;
- demonstrating the dependency of environmental and economic benefits of CERP on the tentatively selected plan;
- describing the project's role to enable already approved CERP projects to function and provide benefits;
- demonstrating the relationship of other CERP projects and planning constraints (such as the Savings Clause) to the tentatively selected plan; or
- considering the application of adaptive management principles on the tentatively selected plan.

If the tentatively selected plan cannot be justified on a NAI basis, the PDT should consider combining the tentatively selected plan with other CERP components to identify an alternative that can be justified on a NAI basis or to consider delaying the implementation of the tentatively selected plan in order for the tentatively selected plan to be justified on a NAI basis.

SECTION 3: GUIDANCE MEMORANDUM #3
SAVINGS CLAUSE REQUIREMENTS

3.1 PURPOSE

This Guidance Memorandum provides guidance in determining whether or not the selected alternative plan and its operations meet the requirements of the Savings Clause of section 601(h)(5) of WRDA 2000. The Guidance Memorandum discusses procedures to determine if existing legal sources of water have been eliminated or transferred and whether levels of service for flood protection would be reduced.

3.2 APPLICABILITY

This Guidance Memorandum applies to all CERP projects. Identifying if an elimination or transfer of existing legal sources of water will occur as a result of implementation of CERP and whether levels of service for flood protection will be reduced by implementation of CERP is required by section 601(h)(5) of WRDA 2000. The PDT will conduct these analyses on the selected alternative plan. It is important for the PDT to note that the analyses described in this Guidance Memorandum pertain specifically to the analyses required for compliance with the Savings Clause of section 601(h)(5) of WRDA 2000. In addition to the analyses conducted under the Savings Clause, the PDT should conduct other appropriate analyses, such as those described in section 1.11 of Guidance Memorandum #1, to determine if the selected alternative plan will affect other rights provided under Federal or State law. It is also important for the PDT to recognize that a preliminary screening analysis of potential Savings Clause issues should be conducted as part of the formulation and evaluation process conducted for the PIR; however, alternative plans should be primarily evaluated and compared based on the benefits produced by each plan (see Guidance Memorandum #1 and Guidance Memorandum #2). If there are trade-offs in performance for natural areas that need to be considered, those trade-offs should be evaluated and justified as part of the formulation and evaluation process. The relationship between the Savings Clause analysis and other PIR tasks is shown in Figure 3-1.

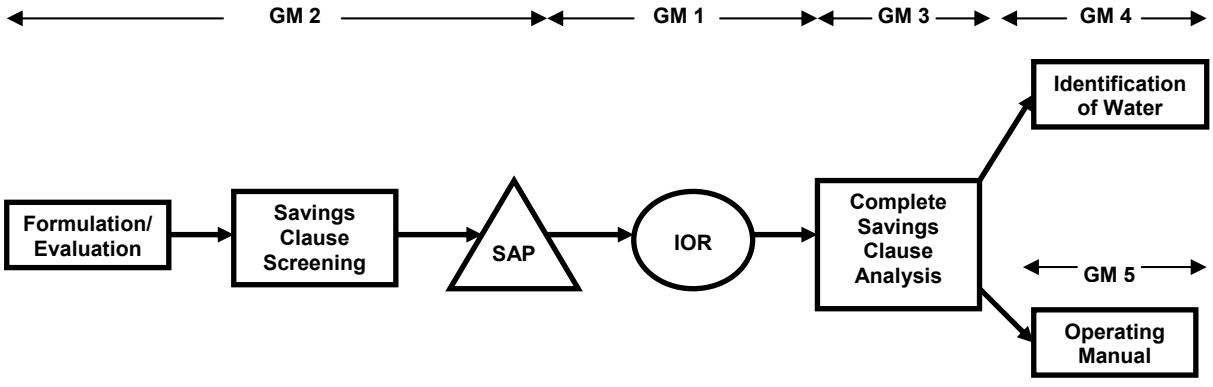


Figure 3-1: Relationship between Savings Clause and Other PIR Tasks

The Savings Clause analyses of this Guidance Memorandum also apply to proposed changes to Project Operating Manuals (POM) and the System Operating Manual (SOM) (see Guidance Memorandum #5). As modifications to POMs and the SOM are evaluated, identifying if an elimination or transfer of existing legal sources of water will occur as a result of implementation of a CERP operational change and whether levels of service for flood protection will be reduced by a CERP operational change will be necessary.

3.3 SAVINGS CLAUSE

For the components of CERP, the original purpose and intent was to improve quantity, quality, timing, and distribution of water for the natural system and for other water-related needs of the region. It is anticipated that if more water is made available for the natural system in South Florida through implementation of the Plan, more water should also be available for other existing and future uses. Under some circumstances, depending on the project components, the hydrologic changes inherent in the design of those components, and the sequence for implementation of CERP projects, existing legal sources of water may be partially or entirely eliminated or transferred to new sources as a result of project implementation. The PDT must determine whether a project will cause an elimination or transfer of an existing legal source that was in existence on the date of enactment of WRDA 2000 (i.e. December 11, 2000). The specific requirement in section 601(h)(5) of WRDA 2000 is:

> "Until a new source of water supply of comparable quantity and quality as that available on the date of enactment of this Act is available to replace the water to be lost as a result of implementation of the Plan, the Secretary and the non-Federal sponsor shall not eliminate or transfer existing legal sources of water, including those for:
>
> (i) an agricultural or urban water supply;
> (ii) allocation or entitlement to the Seminole Indian Tribe of Florida under section 7 of the Seminole Indian Land Claims Settlement Act of 1987 (25 U.S.C. 1772e);
> (iii) the Miccosukee Tribe of Indians of Florida;
> (iv) water supply for Everglades National Park; or
> (v) water supply for fish and wildlife."

In addition to the provision regarding elimination or transfer of existing legal sources of water, the Savings Clause requires that:

> "Implementation of the Plan shall not reduce levels of service for flood protection that are:
>
> (i) in existence on the date of enactment of this Act; and
> (ii) in accordance with applicable law."

To help meet this statutory obligation, the Programmatic Regulations require that the operational conditions included in the Pre-CERP Baseline be considered in the appropriate analyses in each PIR.

Lastly, the Savings Clause of section 601(h)(5) of WRDA 2000 has specific protections regarding the Seminole Tribe's compact:

> "Nothing in this section amends, alters, prevents, or otherwise abrogates rights of the Seminole Indian Tribe of Florida under the compact among the Seminole Tribe of Florida, the State, and the SFWMD, defining the scope and use of water rights of the Seminole Tribe of Florida, as codified by section 7 of the Seminole Indian Land Claims Settlement Act of 1987 (25 U.S.C. 1772e)."

Projects are allowed to eliminate or transfer an existing legal source; however a replacement source that is of comparable quantity and quality needs to be identified and be available prior to the elimination or transfer. Projects may not reduce levels of service for flood protection. Evaluation criteria for existing legal sources of water and for flood protection should not be used as performance measures to compare or rank alternative plans, to select a preferred alternative, or to measure project benefits. However, the PDT should conduct preliminary screening analyses on the final array of alternative plans to determine potential effects on existing legal sources of water and levels of service for flood protection.

3.4 DEFINITION OF EXISTING LEGAL SOURCE

The term "existing legal source" is unique to section 601 of WRDA 2000 and is not defined in State or Federal law. The Programmatic Regulations require that a definition be developed in this Guidance Memorandum. Accordingly, the following definition for existing legal source is adopted for CERP:

> "Existing legal source means the quantity and quality of water available within a water basin (including seepage, surface water, direct rainfall, and groundwater) used for a water supply, which is legally protected by Federal or State law, including the quantity and quality necessary for protection of the source of supply, consistent with State and Federal law, as of December 11, 2000, for:
>
> (i) An agricultural or urban water supply;
> (ii) Allocation or entitlement to the Seminole Indian Tribe of Florida under section 7 of the Seminole Indian Land Claims Settlement Act of 1987 (25 U.S.C. 1772e);
> (iii) the Miccosukee Tribe of Florida;
> (iv) water supply for Everglades National Park; or
> (v) water supply for fish and wildlife."

This Guidance Memorandum provides analytical procedures for evaluating existing legal sources of water as defined above.

3.5 RELATIONSHIP OF SAVINGS CLAUSE TO OTHER REQUIRED ANALYSES

The Savings Clause has a very specific purpose: to protect existing legal sources of water from elimination or transfer until a new source of comparable quantity and quality is available and to protect levels of service for flood protection, existing and in accordance with applicable law, from reduction by CERP projects. It is important for the PDT to understand

that just because implementation of the selected alternative plan would not cause a Savings Clause impact, there are other analyses that the team needs to conduct to evaluate whether there are impacts to the natural system or to other water users (See Attachments 3-A, 3-B, and 3-C). Other analyses required by State law are discussed in section 1.11 of Guidance Memorandum #1.

3.6 LEGAL ENTITLEMENTS

There are two entitlements existing in law outside of the Savings Clause that must be considered in the Savings Clause analysis. The following sections describe these entitlements and how they should be considered.

3.6.1 Seminole Tribe of Florida

The Seminole Tribe of Florida has a distinct set of water rights governed by Federal and State law and various Agreements. In 1987, the United States Congress passed the Seminole Indian Land Claims Settlement Act, P.L. 100-228, which incorporates the Water Rights Compact among the Seminole Tribe of Florida, the State of Florida and the SFWMD. The Florida Legislation enacted Chapter 87-292 and codified section 285.165, F.S., as the companion State legislation regarding the Water Rights Compact. The intent of the Compact, the Act, and the legislation was to create specifically defined water rights for the Tribe.

Section VI.A. of the Compact addresses agreements with landowners who may be affected by operations of the Tribe under a tribal Work Plan. This Work Plan must be submitted to the SFWMD for approval by the SFWMD Governing Board and amendment and is typically approved on an annual basis. Under section VI.A., the SFWMD Governing Board may approve private agreements between landowners and the Tribe, and if they are approved in that manner, the agreements will have the force and effect of the Compact as between the parties to the agreement. Section VI.B. addresses specific surface water entitlements for the Brighton Reservation, the Hollywood Reservation, and the Big Cypress Reservation.

The Compact describes an Evaluation Criteria Manual to further define and explain the conditions, criteria, and objectives of the Compact. The Compact also describes a Tribal Water Code to ensure compliance with the Compact.

In 1989, an Agreement was approved between the SFWMD and the Tribe on an “Emergency Plan for Implementation of Technical Report on Water Availability Estimates for the Brighton Seminole Reservation–Water Shortage Conditions.” The Agreement stated that when Lake Istokpoga can no longer release water, but while canals are still at or near optimum levels, the District will deliver the Tribe fifteen percent (15%) of the available water in the canals.

In 1992, under section VI.A. of the Compact, an Agreement was signed between the SFWMD and the Seminole Tribe of Florida entitled “Providing for Water Quality, Water Supply and Flood Control Plans for the Big Cypress Seminole Indian Reservation and the Brighton Seminole Indian Reservation Implementing Section V.C. and VI.D. of the Water

Rights Compact." This Agreement has the full force and effect of the 1987 Water Rights Compact. This 1992 Agreement provided for cooperation between the SFWMD and the Tribe to ensure that water quality criteria are addressed in the C-139 Basin and in waters entering the Big Cypress Seminole Indian Reservation. This 1992 Agreement also addresses the Tribe's Compact rights to surface waters for the Brighton Reservation.

The Compact, Evaluation Criteria Manual, Tribal Water Code, various Agreements and applicable Federal and State laws constitute the sources of regulation of consumptive water use, the management and storage of surface water and groundwater on Reservation and Tribal Trust lands.

The PDT will evaluate potential effects on water allocations to the Seminole Brighton Reservation. The PDT should use the estimated Tribal Work Plan Allocation for the Brighton Reservation of 2,561.74 million gallons per maximum month (MGMM) which is composed of 360 MGMM groundwater, 546.1 MGMM Lakeshore Perimeter surface water, and 1655.64 MGMM Indian Prairie Basin Surface Water to determine the Tribe's existing legal source for the Brighton Reservation. Allocations for the Tribe's other reservations are captured in the Pre-CERP Baseline.

3.6.2 Minimum Deliveries for Everglades National Park

In 1970, Congress passed the Minimum Deliveries Act, Public Law 91-282. The Act mandated that deliveries to Everglades National Park (ENP) will not be less than 315,000 acre-feet annually or 16.5 per cent of the total deliveries from the C&SF Project System for all purposes, including ENP, whichever is less. The accompanying Senate Report divided this quantity of water between Shark Slough, Taylor Slough, and the Eastern Panhandle of the Park, and provided monthly schedules for each of the delivery points.

In 1983, the Experimental Water Deliveries Program was authorized to develop a better hydrologic regime (PL 98-181). The 1983 Act authorized the USACE, with the concurrence of the National Park Service and the SFWMD, to modify the schedule for delivery of water to ENP as required by the Minimum Deliveries Act for two years to conduct an experimental program of water deliveries from the C&SF Project to ENP. Then in 1991, PL 102-104 amended PL 98-181 to allow the Experimental Program to continue until the modifications to the C&SF Project authorized in the Everglades National Park Protection and Expansion Act of 1989 are completed and implemented.

It is important to note, however, that while the experimental program modified the minimum deliveries schedule, it had not been superseded or repealed by a subsequent Federal law on the date of enactment of WRDA 2000. It is the intent of the Modified Water Deliveries to Everglades National Park Project and CERP to change the distribution of water set forth in the Minimum Deliveries Act and provide a more natural hydrologic regime to Everglades National Park. Since it has been recognized that the distribution of water in the Minimum Deliveries Act does not constitute a natural hydrologic regime, the Minimum Deliveries Act will not be utilized for purposes of the Savings Clause. Although it is not a plan formulation objective, it is desirable to compare the C&SF Project delivery quantities to Everglades

National Park with the quantities of water in the Minimum Deliveries Act. The PDT will follow the procedure set forth in Attachment 3-D to provide an accounting of the amount of water delivered to Everglades National Park.

3.7 THE PRE-CERP BASELINE

The Pre-CERP Baseline is a description of assumed hydrologic conditions on the date of enactment of WRDA 2000 (i.e. December 11, 2000), including a simulation of these conditions, which has been developed to satisfy the requirements of the Programmatic Regulations as a tool in the implementation of the Savings Clause (section 601(h)(5) of WRDA 2000). The Programmatic Regulations define the Pre-CERP Baseline as:

> "…the hydrologic conditions in the South Florida ecosystem on the date of enactment of WRDA 2000, as modeled by using a multi-year period of record based on assumptions such as land use, population, water demand, water quality, and assumed operations of the C&SF Project."

The Pre-CERP Baseline document (U.S. Army Corps of Engineers and South Florida Water Management District, 2005) provides a description of the model assumptions necessary to simulate the pre-CERP hydrologic conditions. Although regional models and model versions may change over time, the assumptions that define the Pre-CERP Baseline will not be changed.

3.7.1 Miccosukee Tribe of Indians of Florida

The Miccosukee Tribe of Indians of Florida has lived in the Everglades for generations and their culture and way of life is dependent on a healthy Everglades. The Miccosukee Tribe is generally recognized to be successor to any existing rights of the Seminole Indians under the Everglades National Park Enabling Act, 16 U.S.C. 410 (b), which are not in conflict with the purposes for which the Everglades National Park (ENP) is created. On October 30, 1998, Congress clarified the rights of the Miccosukee Tribe, which became Federally recognized in 1962, to live and govern its own affairs in perpetuity in manners consistent with the Miccosukee Reserved Act Area (MRAA) for purposes of the administration, education, housing, and cultural activities of the Tribe within a 666.6 acre Miccosukee Reserved Area (MRA) within the boundary of ENP (See MRAA, 16 U.S.C. 410). The MRA also contains provisions to protect the ENP outside the boundaries of the MRA from adverse effects of structures or activities within that area, and to support restoration of the South Florida ecosystem, including restoration of the environment of the ENP. The Tribe's interests also include a 75,000-acre Federal Indian Reservation that is held in trust by the Federal government. The Tribe has established water quality standards under the Clean Water Act for the Federal Reservation. The Tribe also has a perpetual lease from the State of Florida to a Leased Area in WCA 3 in accordance with The Florida Indian Claims Settlement Act. The Leased Area has for many years comprised part of WCA 3 as part of the Federally authorized project of flood control and water management for Central and Southern Florida. As stated in the Lease Agreement appended as Exhibit A to the Settlement Agreement in Miccosukee Tribe of Indians of Florida v. State of Florida, Case No. 79-253-Civ-JWK, in the United States District Court for the Southern District of Florida, Miami Division, the Tribe is subject

to and shall not interfere with rights, duties and obligations of the SFWMD or the USACE, pursuant to the requirements of the Central and Southern Florida Project, the requirements of the Federally authorized project conveyances, easements, grants, rules, statutes, or any other present or future lawful authority to manage, regulate, raise or lower the water levels within the Leased Area in WCA 3. Additionally, the Tribe is permitted under Public Law 93-440 to continue their usual and customary use and occupancy of Federal or Federally acquired lands and waters within the Big Cypress Preserve and the Addition Lands, including hunting and fishing on a subsistence basis, gathering of native plants, and conducting tribal ceremonies. In addition, there are Indian communities consisting of several Indian camps along Tamiami Trail.

3.7.2 Agricultural and Urban Water Supply

The existing legal sources of water for agricultural and urban water supplies in the Pre-CERP Baseline were determined using model assumptions based on the actual levels of consumptive use in existence as of the date of enactment of WRDA 2000. This methodology is consistent with the basic underlying principle used to choose assumptions for other existing legal sources of water, which is to represent as closely as possible the actual conditions in place in the system as of the date of enactment of WRDA 2000 (December 11, 2000). Permitted allocations in existence as of the date of enactment of WRDA 2000 which were not utilized would have incorporated projected demands over the life of the permit that may not have been in existence at that date.

Non-irrigation urban demands were calculated based on the actual pumpage and distribution in the year 2000. Urban irrigation and agricultural demands, including diversion and impoundment uses to supply these demands, were calculated based on the land use and crop acreage that existed as of 2000.

In addition, there are water deliveries made to the Lower East Coast in order to prevent salt water intrusion into water supply sources for urban and agricultural uses. Operations of the C&SF Project for these purposes are identified in the "USACE Water Control Plan for the Lower East Coast Canals" and are incorporated into assumptions in the Pre-CERP Baseline.

3.7.3 Water Supply for Everglades National Park and for Fish and Wildlife

Water supply for ENP is primarily provided through regulated environmental releases through the S-12 structures and other operations of the C&SF Project. In December 2000, the C&SF Project in south Miami-Dade County operated according to the Interim Structural and Operational Plan (ISOP) in an attempt to meet the Reasonable and Prudent Alternative to avoid jeopardizing the Cape Sable Seaside Sparrow. This version of ISOP failed to meet the Reasonable and Prudent Alternative and was later replaced by the Interim Operating Plan (IOP), which is anticipated to remain in place until the Combined Structural and Operating Plan (CSOP) is implemented. For purposes of the Pre-CERP Baseline, the model assumptions for ISOP model run 9dr (also known as ISOP 2001), the operational regime actually in place on the date of enactment of WRDA 2000, are used in the Pre-CERP Baseline.

Due to the highly managed nature of South Florida's hydrology, much of the water on which fish and wildlife depend is affected, directly, or indirectly, by deliveries made through the C&SF Project system for regulatory releases and other activities not explicitly intended to benefit fish and wildlife. Fish and wildlife habitat occurs in uplands, wetlands, and estuaries throughout the region in vegetation communities that depend on appropriate sources of groundwater, surface water, and flows to tide.

3.8 INTERVENING NON-CERP ACTIVITIES

The Savings Clause only applies to changes from the date of enactment of WRDA 2000 that result from "implementation of the Plan." In some cases, the existing legal sources of water and the level of service for flood protection that existed at that time may be altered or changed before a CERP project is implemented. These changes may result from actions by Federal, Tribal. State, and local governments–actions that are wholly outside the CERP process. These "intervening" conditions, brought about by the implementation of non-CERP activities after the date of enactment of WRDA 2000, but before a CERP project component becomes operational, may change the hydrologic conditions from those reflected in the Pre-CERP Baseline. Examples include construction of government public works projects that impact the configuration of the C&SF Project system (e.g., Modified Water Deliveries to ENP, C-111, and C-51 projects); construction of projects that impact the use of water from the C&SF Project system (e.g., stormwater treatment areas); changes to operations of the C&SF Project system (e.g., IOP, CSOP, Lake Okeechobee Regulation Schedule) and the issuance of consumptive use permits under State law. When the Pre-CERP Baseline conditions have already been altered by this kind of intervening non-CERP activity, a different analysis is required for the purpose of applying the Savings Clause.

This Guidance Memorandum provides guidance to PDTs in their analyses when dealing with intervening non-CERP activities. In general, the following principles will apply:

- The Savings Clause does not require CERP to make up for reductions in quantity and quality of existing legal sources of water or levels of service for flood protection caused by intervening non-CERP activities, but it does prohibit CERP projects from further reductions.
- The Savings Clause does not prohibit CERP from reducing quantity and quality of existing legal sources of water or levels of service for flood protection that were increased by intervening non-CERP activities, but it does prohibit CERP projects from reducing those increases below those in place on the date of enactment of WRDA 2000.

As an example, there have already been intervening non-CERP activities that have altered the hydrology affecting ENP. There have been operational changes since the ISOP, which is the operating schedule used in the Pre-CERP Baseline modeling. These operational changes, including the IOP, have had as their primary purpose avoiding jeopardy to the Cape Sable Seaside Sparrow until completion of construction of the Modified Water Deliveries Project and the 1994 C-111 General Reevaluation Report (GRR) modifications and the implementation of the CSOP, at which point in time these projects will become intervening

non-CERP activities. The IOP is considered an intervening non-CERP activity. The future construction of the Modified Water Deliveries to ENP Project and the 1994 C-111 GRR features, together with the implementation of CSOP, will also be intervening non-CERP activities.

Additional examples and further guidance are provided in Attachments 3-E and 3-F. It is important for the PDT to note that although the Savings Clause does not prohibit CERP projects from reducing benefits increased by intervening non-CERP activities, other analyses, such as those required by Florida law, may prohibit the project from reducing benefits increased by intervening non-CERP activities as discussed elsewhere; also see Attachments 3-A, 3-B, and 3-C. Notwithstanding the Savings Clause analysis described above, projects will be formulated to achieve the optimum benefits consistent with the goals and purposes of each CERP project.

3.9 MODEL SELECTION FOR SAVINGS CLAUSE ANALYSES

In general, the PDT should use the same models that are used for plan formulation. However, should the PDT determine that additional models are necessary, the PDT must present its recommendations for management approval. Modeling for the Saving Clause analyses of both existing legal sources of water and levels of service for flood protection should use the same assumptions and project operations.

- Evaluations should be done across a full range of hydrologic conditions, including wet, average, and dry years.
- The method used to quantify existing legal sources of water should be sensitive to conditions during which users of a source are most likely to be affected by changes in water quantity or quality.

The major regions of the South Florida ecosystem have been separated into water basins to determine existing legal sources of water. These water basins are shown as Figure 3-G-1 and listed in Table 3-G-1 in Attachment 3-G. These designated basins should be used for most existing legal source determinations. However, there may be project specific circumstances which indicate that a smaller scale approach for determination of existing legal sources is needed. Any proposed exception to the designated basins must be elevated through the DCT to the QRB for discussion.

The model chosen for the evaluation should incorporate the full range of available meteorological conditions since the determination of elimination or transfer and levels of service for flood protection are based on the performance of the system as modeled against a range of weather conditions. However, it is recognized that the PDT may determine that modeling the full period of record is impractical and that, in their professional judgment, modeling a subset of the full period of record is an adequate substitute. If a subset of years is chosen, the PDT should use a consistent subset for all Savings Clause analyses and the subset should be a representative sample of the range of conditions in the historical period of record including intra- and inter-annual variations. The PDT should document the selection of period of record used in the model.

As many CERP components are regional in scale, the Pre-CERP Baseline currently uses the SFWMM as the regional modeling tool for the area within the geographical limit of the model. Since regional models typically consist of large grid cells, only a general indication of flood protection can be determined through regional analysis. For that reason, smaller-scale integrated ground and surface water models may also be necessary for specific analysis of levels of service for flood protection.

3.10 IDENTIFYING IF THERE IS AN ELIMINATION OR TRANSFER OF EXISTING LEGAL SOURCES OF WATER

3.10.1 Identifying Existing Legal Sources of Water to be Evaluated

The PDT should identify all existing legal sources of water that could be affected by the project. The procedures in Attachment 1-A of Guidance Memorandum #1 should be used to determine the spatial extent of project effects. Once this geographical boundary is identified, the PDT should identify all existing legal sources of water within the boundary. Several sources of information are available to assist the PDT:

- Defined project purposes
- Information developed in the last completed PIR
- Maps of existing legal source basins within the regions affected by the project
- The Existing Conditions Baseline and the Pre-CERP Baseline

Some projects are intended to transfer users to different sources and clearly will require evaluation. Other cases of elimination or transfer of a source may be an incidental or unanticipated effect of a project. The analysis will need to address both types of elimination or transfer of sources.

3.10.2 Consider Project-level and System-wide Effects on All Existing Legal Sources of Water

Generally, the evaluation of existing legal sources of water should be conducted at a system-wide level for projects that show system-wide effects, using available regional and sub-regional hydrologic and water quality models and other information. Some projects are hydrologically separate from the regional water management system. Projects that do not affect regional water deliveries are exempt from the system-wide evaluations described in this Guidance Memorandum; however, the PDT should use an approach consistent with the procedures in this Guidance Memorandum. For both types of evaluations, the geographical evaluation area should be large enough to consider all potential effects on existing legal sources of water. Existing legal sources of water that are not affected should be identified and documented. Attachment 1-A of Guidance Memorandum #1 provides a procedure for determining whether a project has system-wide or project-level effects and for determining the spatial extent of project effects.

3.10.3 Identifying an Elimination or Transfer of Water

3.10.3.1 Analysis for PIRs

The PDT should follow the steps described in this section and depicted in Attachment 3-H to identify if the project creates an elimination or transfer of water. Additional guidance as to the effect of intervening non-CERP activities on determining if implementation of the selected alternative plan would result in an elimination or transfer is provided in Attachment 3-E.

Step 1

In Step 1, the inflow volume-probability curve for the Initial Operating Regime (IOR) will be compared to the inflow volume-probability curve for the Existing Conditions Baseline for each of the water basins in Attachment 3-G. Figure 3-2 shows an example of a volume-probability curve. The IOR and Existing Conditions Baseline inflow volume-probability curves should be displayed on the same graphic.

The results of the Step 1 analysis should reveal if the Initial Operating Regime reduces the overall quantity of water to one or more of the basins. If the comparison of the Initial Operating Regime with the Existing Conditions Baseline shows no significant reduction, then implementation of the selected alternative plan will not cause an elimination or transfer of existing legal sources of water, and the requirements of the Savings Clause have been met.

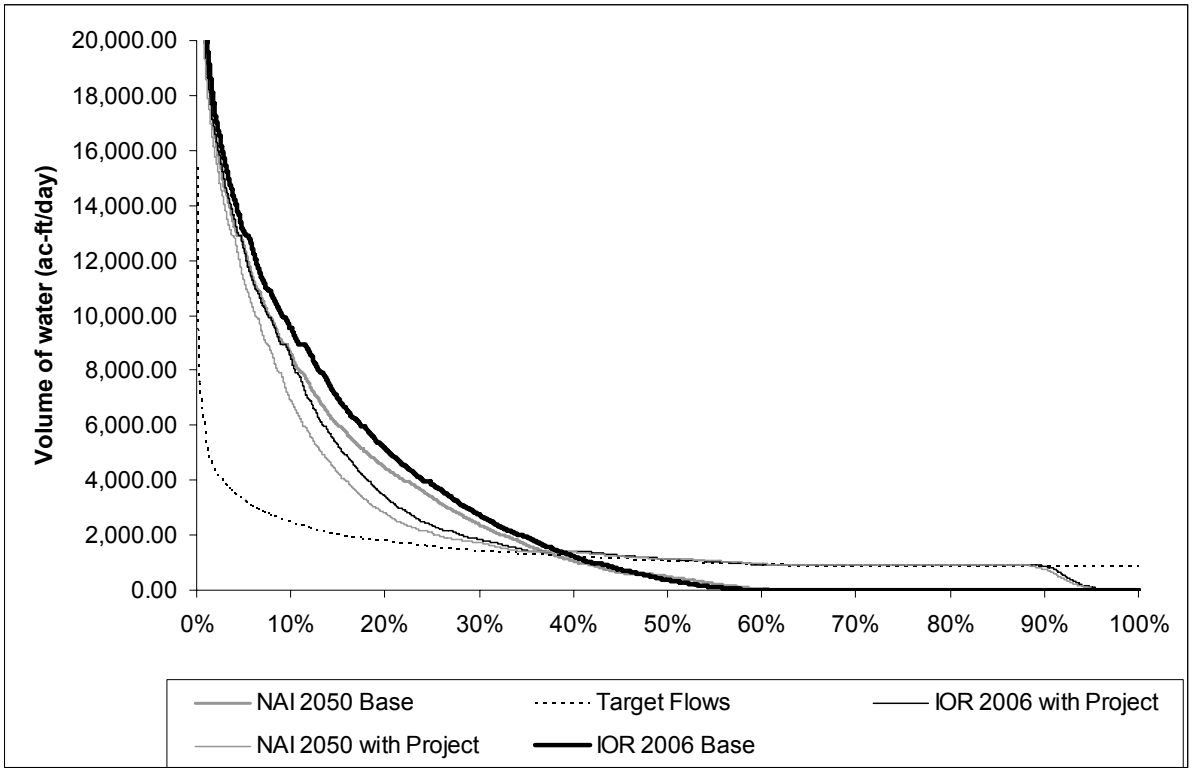


Figure 3-2: Example of a Volume-Probability Curve

If the IOR shows a significant reduction in volume from the Existing Conditions Baseline for one or more basins, then further analysis is needed. If the analysis shows that the reduction is necessary to achieve natural system performance, then implementation of the selected alternative plan will not cause an elimination or transfer of existing legal sources of water, and the requirements of the Savings Clause have been met. If the reduction is not necessary to achieve natural system performance, then the PDT must proceed to Step 2.

Step 2

In Step 2, the inflow volume-probability curve for the Initial Operating Regime will be compared to the inflow volume-probability curve for the Pre-CERP Baseline for each of the water basins in Attachment 3-G. The IOR and Pre-CERP Baseline inflow volume-probability curves should be displayed on the same graphic.

The results of the Step 2 analysis should reveal if the Initial Operating Regime reduces the overall quantity of water to one or more of the basins. If the comparison of the Initial Operating Regime with the Pre-CERP Baseline shows no significant reduction, then implementation of the selected alternative plan will not cause an elimination or transfer of existing legal sources of water, and the requirements of the Savings Clause have been met.

If the IOR shows a significant reduction in volume from the Pre-CERP Baseline in one or more basins, then further analysis may be needed. If the analysis shows that the reduction in a basin is necessary to achieve natural system performance, then implementation of the selected alternative plan will not cause an elimination or transfer of existing legal sources of water, and the requirements of the Savings Clause have been met. If the reduction is not necessary to achieve natural system performance, then the PDT must proceed to Step 3.

Step 3

In Step 3, the PDT will need to determine if the reduction in volume is due to changes in demands or other assumptions rather than implementation of the CERP project. This will be accomplished by modeling the IOR without the selected alternative plan. The inflow volume-probability curves for the IOR without the selected alternative plan will be compared to the IOR for each of the water basins in Attachment 3-G. The IOR without the selected alternative plan and the IOR should be displayed on the same graphic. If the IOR does not show any significant reduction in volume from the IOR without the selected alternative plan, then the Savings Clause requirements have been met because the reduction in volume found in the previous two steps is due to changes in demands, operations, or other assumptions rather than implementation of the CERP project. If the IOR shows a significant reduction in volume from the IOR without the selected alternative plan, then the PDT will need to develop a replacement source (see sections 3.10.6 and 3.10.7).

3.10.3.2 Analysis for Revisions to Operating Manuals

The Savings Clause analyses of this Guidance Memorandum also apply to revisions to Project Operating Manuals (POM) and the System Operating Manual (SOM). As modifications to POMs and the SOM are evaluated, identifying if an elimination or transfer

of existing legal sources of water will occur as a result of implementation of a CERP operational change will be necessary. The PDT should follow the same steps described in the above section for PIRs, except that the IOR should be updated for current conditions at the time that the analysis is conducted to identify if the project creates an elimination or transfer of water.

3.10.4 How Much of a Difference Between the Conditions Does it Take to Have an Elimination or Transfer?

It requires more than a simple volume change or change in water quality to have an elimination or transfer of existing legal sources of water under the Savings Clause. Changes between the Initial Operating Regime and the Existing Conditions Baseline should be significant. In the case of intervening non-CERP activities, differences between the Initial Operating Regime and the Pre-CERP Baseline should be significant. The determination of whether a volume change or a change in water quality is significant must be done on a case-by-case basis. The reason that there are no required criteria for evaluation is that this evaluation is fact specific–what is significant in one case may not be significant in another case. In consultation with affected entities, the PDT should consider and document all technical, factual, and other relevant information used in this determination.

3.10.5 How to Determine if a Replacement Source is a Comparable Source?

Implementation of a CERP project cannot result in the elimination or transfer of an existing legal source of water unless that source will be replaced with a source of comparable quantity and quality as that available on the date of enactment of WRDA 2000.

If the PDT determines that an elimination or transfer will occur, the team must then ensure that the replacement source is a comparable source in terms of water quality and quantity. The PDT will make this determination utilizing specific technical information available to the team. The following determinations must be included in the evaluation of whether a replacement source is a comparable source:

1. Determine whether the replacement source is sufficient to meet the demands from the existing legal source.

2. Determine whether the replacement source is sufficiently similar to that of the existing legal source in terms of its legal feasibility. In order to make this determination, the PDT, along with appropriate legal staff from USACE and the non-Federal sponsor, will need to identify that the necessary legal authorization to implement and use the sources of supply for the intended purpose can be obtained.

3. Determine whether the replacement source is sufficiently similar to that of the existing legal source in terms of its technical and economic feasibility. To make this determination, the quality of the replacement source shall be compared to the quality of the existing legal source. If these are comparable, no further analysis is necessary.

If the replacement source is not comparable and no other sources of comparable quality are available, see section 3.10.7.

3.10.6 What to Do if a Comparable Source Cannot Be Identified

The following are examples of actions that the PDT may evaluate if analyses show that implementation of the selected alternative plan would result in an elimination or transfer of an existing legal source and a comparable replacement source cannot be identified:

- Modify the operations of the selected alternative plan to avoid an elimination or transfer (Note: this requires additional formulation. See Guidance Memorandum #2).
- Redesign the selected alternative plan to avoid an elimination or transfer (Note: this requires additional formulation. See Guidance Memorandum #2).
- Determine if there are other CERP projects scheduled concurrently with the subject project that will solve the elimination or transfer issue. If so, the elimination or transfer by the subject project is no longer an issue.
- Consider rescheduling the project concurrently with other components to avoid an elimination or transfer or to ensure that a comparable replacement source is available.
- Formulate additional alternative plans or modifications to the selected alternative plan. (Note: this requires additional formulation. See Guidance Memorandum #2).

If the above actions are not feasible and the elimination or transfer can not be remedied, the PDT may recommend that the project be discontinued. A recommendation to discontinue a project will be reviewed by the appropriate decision-makers for the USACE and the non-Federal sponsor. Consultation in accordance with the provisions of the Programmatic Regulations will occur before a decision to discontinue a project is finalized.

3.11 DETERMINING IF LEVELS OF SERVICE FOR FLOOD PROTECTION HAVE BEEN REDUCED

3.11.1 Levels of Service for Flood Protection to be Evaluated

The Programmatic Regulations define levels of service for flood protection as "the expected performance of the Central and Southern Project and other water management systems in the South Florida ecosystem, consistent with applicable law, for a specific area or region." Section 601(h)(5) of WRDA 2000 did not limit levels of service for flood protection only to Federal law, but includes Federal and State law. State law includes levels of service for flood protection provided by subdivisions of the State, including water management districts, special taxing districts, and local governments. As such, in order to meet the second requirement, operational conditions associated with approved Federal, Tribal, State, and local public works projects were included as assumptions in the Pre-CERP Baseline model run. These operational conditions incorporate regulation schedules for the natural system and the secondary and tertiary canal systems in south Florida to ensure that levels of service for flood protection are maintained in urban and agricultural areas. Generally, it should not be necessary to conduct Savings Clause analyses below this level. Depending upon site-specific conditions, it may be necessary to do more detailed analyses. The level of evaluation performed must be consistent for urban and agricultural areas.

The PDT should identify all urban and agricultural areas within the study area where levels of service for flood protection could be affected by a project. The procedures in Attachment 1-A of Guidance Memorandum #1 should be used to determine the spatial extent of project effects. Several sources of information are available to assist the PDT:

- Defined project purposes
- Information developed in the last completed PIR
- The Existing Conditions Baseline and the Pre-CERP Baseline

The PDT must evaluate if levels of service for flood protection have been reduced on a project-by-project basis.

3.11.2 Levels of Service for Flood Protection are Based on Performance Modeled Against a Range of Conditions, Not a Design Level

The purpose of the Savings Clause is not to allow implementation of CERP projects that would reduce levels of service for flood protection existing as of December 2000. In the definition of "levels of service for flood protection" in the Programmatic Regulations, the term "expected performance" refers to the performance of the system actually in place when modeled against the period of record. It does not refer to specific design flood targets such as the 10-year or 100-year flood event.

Standard project flood and project design flood are not the same as Savings Clause "levels of service of flood protection…in existence on date of enactment." Standard project flood and similar terms are shorthand statements of design goals. They do not reflect the levels of service in existence in December 2000. There are several reasons for this:

- The project may not have been authorized as designed.
- Congress may not have funded the complete project as it was designed.
- Separate reaches of a project may have different levels of protection because of variance in the scope of project response to the flood threat.
- The level of protection may change over time because of new land uses or upstream development or because of other changed conditions, such as additional projects.
- Other projects may have been built which affected the original design level of flood protection; subsequent projects may have modified or superseded the original design plan.
- Operations of connected projects may have been changed and affected the feasibility of the originally projected level.
- Other circumstances may have affected the design level originally projected.

Finally, the Pre-CERP Baseline is defined by the Programmatic Regulations to mean the hydrological response of the system and operations in existence in December 2000 based upon the climatic conditions for a specific period of record rather than to a design flood level.

3.11.3 Analyze the Selected Alternative Plan for Reductions in Levels of Service for Flood Protection

3.11.3.1 Analysis for PIRs

The PDT should follow the steps described in this section to identify if the project reduces levels of service for flood protection. Additional guidance as to the effect of intervening non-CERP activities on determining if implementation of the selected alternative plan would reduce levels of service for flood protection is provided in Attachment 3-F. Attachment 3-C provides a list of other analyses of flood protection to be performed in addition to that required by the Savings Clause. Attachment 3-I provides a checklist for the levels of service for flood protection analysis for the selected alternative plan.

Step 1

In Step 1, the stage-duration curve for the Initial Operating Regime (IOR) will be compared to the stage-duration curve for the Existing Conditions Baseline for each of the water basins in Attachment 3-G. The stage-duration curves for the IOR and Existing Conditions Baseline should be displayed on the same graphic.

The results of the Step 1 analysis should reveal if the Initial Operating Regime reduces the levels of service for flood protection to one or more of the basins. If the comparison of the Initial Operating Regime with the Existing Conditions Baseline shows no significant and adverse reduction, then implementation of the selected alternative plan will not cause a reduction in levels of service for flood protection, and the requirements of the Savings Clause have been met.

If the IOR shows a significant and adverse reduction in levels of service for flood protection from the Existing Conditions Baseline in one or more basins, then the PDT must proceed to Step 2.

Step 2

In Step 2, the stage-duration curve for the Initial Operating Regime will be compared to the stage-duration curve for the Pre-CERP Baseline for each of the water basins in Attachment 3-G. The stage-duration curves for IOR and Existing Conditions Baseline should be displayed on the same graphic.

The results of the Step 2 analysis should reveal if the Initial Operating Regime reduces the levels of service for flood protection to one or more of the basins. If the comparison of the Initial Operating Regime with the Existing Conditions Baseline shows no significant and adverse reduction, then implementation of the selected alternative plan will not cause a reduction in levels of service for flood protection, and the requirements of the Savings Clause have been met.

If the IOR shows a significant and adverse reduction in levels of service for flood protection from the Pre-CERP Baseline in one or more basins, then the PDT must proceed to Step 3.

Step 3

In Step 3, the PDT will need to determine if the reduction in levels of service for flood protection is due to changes in demands or other assumptions rather than implementation of

the CERP project. This will be accomplished by modeling the IOR without the selected alternative plan. The IOR without the selected alternative plan will be compared to the IOR for each of the water basins in Attachment 3-G. The IOR without the selected alternative plan and the IOR should be displayed on the same graphic. If the IOR does not show any significant reduction in levels of service for flood protection from the IOR without the selected alternative plan, then the Savings Clause requirements have been met because the reduction in levels of service found in the previous two steps is due to changes in demands, operations, or other assumptions rather than implementation of the CERP project. If the IOR shows a significant reduction in levels of service for flood protection from the IOR without the selected alternative plan, then the PDT will need to consider actions to solve the reduction (see section 3.11.5).

3.11.3.2 Analysis for Revisions to Operating Manuals

The Savings Clause analyses of this Guidance Memorandum also apply to revisions to Project Operating Manuals (POM) and the System Operating Manual (SOM). As modifications to POMs and the SOM are evaluated, identifying whether levels of service for flood protection will be reduced by a CERP operational change will be necessary. The PDT should follow the same steps described in the above section for PIRs, except that the IOR should be updated for current conditions at the time that the analysis is conducted to identify if the project reduces levels of service for flood protection.

3.11.4 How Much of a Difference Between the Conditions Does it Take to Have a Reduction in Levels of Service for Flood Protection?

It requires more than a simple change in hydrological response to "reduce levels of service for flood protection" under the Savings Clause. Differences between the Initial Operating Regime and the Existing Conditions Baseline should be significant and adverse. In the case of intervening non-CERP activities, differences between the Initial Operating Regime and the Pre-CERP Baseline should be significant and adverse. The PDT should consider all technical information, including approved performance measures in determining if the reduction in levels of service for flood protection is significant and adverse, and thus prohibited. The intent of the Savings Clause is to avoid harm to existing levels of service for flood protection, and not to avoid harmless differences in project operations.

3.11.5 What to do if a Selected Alternative Plan Reduces the Levels of Service for Flood Protection

The following are examples of actions that the PDT may evaluate if analyses show that implementation of the selected alternative plan would result in a reduction in levels of service for flood protection:

- Modify the operations of the selected alternative plan to avoid a reduction in levels of service for flood protection (Note: this requires additional formulation. See Guidance Memorandum #2).

- Redesign the selected alternative plan to avoid a reduction in levels of service for flood protection (Note: this requires additional formulation. See Guidance Memorandum #2).
- To the extent consistent with Federal and State law, consider acquisition (fee or easement) of affected property if redesign of the selected alternative plan would not be cost-effective. Cost-effectiveness is required by the Programmatic Regulations, and the PDT should carefully evaluate whether acquisition of a flowage or conservation easement is more cost-effective than fee acquisition. (Note: this requires additional formulation. See Guidance Memorandum #2).
- If a redesign or property acquisition is not justified and cost-effective for the project alone, consider whether combining the project with other components would be justified and cost-effective.
- Formulate additional alternative plans or modifications to the selected alternative plan. (Note: this requires additional formulation. See Guidance Memorandum #2).

If the above actions are not feasible and the reduction of levels of service for flood protection can not be remedied, the PDT may recommend that the project be discontinued. A recommendation to discontinue a project will be reviewed by the appropriate decision-makers for the USACE and the non-Federal sponsor. Consultation in accordance with the provisions of the Programmatic Regulations will occur before a decision to discontinue a project is finalized.

3.12 DOCUMENTATION OF GUIDANCE MEMORANDUM #3 ANALYSES

The analyses conducted to determine whether or not existing legal sources of water have been eliminated or transferred and whether levels of service for flood protection will be reduced under the Savings Clause of section 601(h)(5) of WRDA 2000 will be documented.

For PIRs, a summary of the analysis of whether existing legal sources of water have been eliminated or transferred should be included in the Plan Implementation section of the PIR in the sub-section entitled “Effects on Existing Legal Sources of Water” (See Guidance Memorandum #1, Attachment 1-C “PIR Outline”). More detailed information about the analysis should be placed in Annex C - Analyses Required by Federal and State Law in the section entitled “Savings Clause Analyses.”

A summary of the analysis of whether existing levels of service for flood protection have been reduced should be included in the Plan Implementation section of the PIR in the sub-section entitled “Effects on Level of Service for Flood Protection.” More detailed information about the analyses should be placed in Annex C - Analyses Required by Federal and State Law in the section entitled “Savings Clause Analyses.”

For to the preliminary and Final Project Operating Manuals and the System Operating Manual, the Savings Clause analyses of whether existing legal sources of water have been eliminated or transferred and the analysis of whether existing levels of service for flood

protection have been reduced should be documented in an appropriate section of the Operating Manual.

ATTACHMENT 3-A
OTHER ANALYSES AND PROTECTIONS FOR THE NATURAL SYSTEM

The protection provided by the Savings Clause in section 601(h)(5) of WRDA 2000 is limited to protecting sources of water identified as of the date of enactment of WRDA 2000, such as those for the natural system, from elimination or transfer by CERP projects. Projects that will provide beneficial water for the natural system–Modified Water Deliveries to ENP and the 1994 C-111 GRR modifications to the C&SF Project–were not included in the assumptions for quantifying the natural system's existing legal sources of water because the CSOP process, which will determine the operations of these features, was not completed as of the date of enactment of WRDA 2000. For the purpose of the Savings Clause evaluation, these projects are considered intervening non-CERP activities.

The purpose of this attachment is to make the PDT aware that there are other analyses besides the Savings Clause which provide protection for the natural system for intervening non-CERP activities such as the Modified Water Deliveries to ENP Project and the C-111 Project,. PDTs will consider these intervening non-CERP activities that benefit the natural system in the following ways:

- **Evaluation of non-CERP activity benefits by WRDA 2000 Section 601(f):** Section 601(f)(2) of WRDA 2000 requires that the proposed activity be justified by the environmental benefits derived by the South Florida ecosystem. This will require consistency of the project with the benefits provided by existing non-CERP activities and the Future Without CERP Baseline identified in the Plan.

- **Evaluation of non-CERP activity benefits by "optimizing" process in the Programmatic Regulations:** The Programmatic Regulations (33 CFR 385.26(b)) require that, in preparing a PIR, the USACE and the non-Federal sponsor follow a formulation and evaluation process for alternative plans. Section 601 of WRDA 2000 mandates that this process will optimize the project's contributions towards achieving the benefits of the Plan. Achieving the benefits of the Plan assumes that the benefits provided by non-CERP activities, like the Modified Water Deliveries, C-111, Critical Restoration Projects (pursuant to WRDA 1996), and the Everglades Construction projects, and other elements of the Future Without CERP Baseline described in the Plan are necessary to achieve the benefits of the Plan.

- **Evaluation of non-CERP activity benefits by NEPA analysis:** The environmental effects of proposed CERP projects will be evaluated under NEPA. NEPA requires a comparison of a range of alternative plans with conditions that will exist if no action is taken.

- **Evaluation of non-CERP activity benefits by the Fish and Wildlife Coordination Act, the Endangered Species Act, the Coastal Zone Management Act, and other Federal laws:** The environmental effects of proposed CERP projects on fish and

wildlife resources available at the time of the PIR will be evaluated under the Fish and Wildlife Coordination Act, the Endangered Species Act, the Coastal Zone Management Act, and other Federal laws. This evaluation will consider any loss of benefits to fish and wildlife, any impacts on endangered or threatened species, and any impacts on resources of Florida's coastal zone, including benefits provided by non-CERP activities, even though they did not exist on date of enactment.

- **Evaluation of non-CERP activities benefits by Florida law:** The environmental effects of proposed CERP projects will be evaluated under applicable Florida laws, including minimum flows and levels, and F.S. section 373.1501. For example, the Modified Water Delivery Project to ENP and the 1994 GRR modifications to the C-111 Canal projects both were included in the Future Without CERP Baseline and were assumed by Congress to be constructed and operational before related Plan projects become operational. They are part of the framework Plan, as well as the benefits provided by Florida's Everglades Construction Project, and the water treatment requirements of the 1994 Everglades Forever Act.

ATTACHMENT 3-B
OTHER ANALYSES AND PROTECTIONS FOR OTHER WATER-RELATED NEEDS

The protection provided by the Savings Clause in section 601(h)(5) of WRDA 2000 is limited to protecting existing legal sources of water identified as of the date of enactment of WRDA 2000 for the specified user classifications. In addition, the primary State authority regarding the implementation of CERP is Chapter 373, F.S., provides assurances that implementation of CERP will not have adverse affects. These provisions provide responsibility to the State, including the SFWMD and the FDEP, to ensure restoration of the Everglades and the protection of existing legal uses of water and existing levels of flood protection when designing and implementing CERP project components.

Assurances are provided under State law requiring that CERP be used as a "guide and framework ... to:… 2. ensure that the project components will be implemented to achieve the purposes of the Federal Water Resources Development Act of 1996 that include restoring, preserving and protecting the South Florida ecosystem, …and providing such features as are necessary to meet the other water-related needs of the region, including flood control, the enhancement of water supplies, and other objectives served by the project" (section 373.470(3)(b)2., F.S).

Section 373.1501(2), F.S., in part, provides that CERP components must be implemented through appropriate processes under Chapter 373 and consistent with the balanced policies and purposes of Chapter 373, F.S. Specifically, section 373.1501(5) provides assurances to natural systems, existing legal users and for flood protection, including requirements that SFWMD has for each project component:

a. Analyze and evaluate all needs to be met in a comprehensive manner and consider all applicable water resource issues, including water supply, water quality, flood protection, threatened and endangered species, and other natural system and habitat needs.
b. Consistent with Chapter 373, the purposes for the Restudy provided in the Water Resources Development Act of 1996, and other applicable Federal law, provide reasonable assurances that the quantity of water available to existing legal users shall not be diminished by implementation of project components so as to adversely impact existing legal users, that existing levels of service for flood protection will not be diminished outside the geographic area of the project component, and that water management practices will continue to adapt to meet the needs of the restored natural environment.

Prior to executing a PCA, the SFWMD must develop a PIR with the USACE to address the requirements in section 373.1501, F.S., and to obtain approval under section 373.026, F.S., from the FDEP. This ensures that the PIR will be sufficient to meet both State, as well as Federal, law requirements for implementing a CERP project.

Definition of Existing Legal Uses Pursuant to Chapter 373, F.S.

As explained above, State law protects existing legal uses of water when implementing CERP. Permitted consumptive uses and domestic water uses (which are exempt from requirements to obtain a permit) have the legal status of an "existing legal use." The existing legal use is defined by the consumptive use permit authorizing the use of a specified source to meet an identified reasonable-beneficial demand for water for a limited duration. They receive the permits pursuant to the statutes and rules set forth in Part II of Chapter 373, F.S. The existing legal use is conditioned to ensure that the consumptive use activities under the permit continue to be conducted in accordance with Chapter 373, F.S. Unauthorized, including unpermitted, consumptive uses do not constitute an "existing legal use" and are not protected by the statute.

Other Chapter 373 Tools for Protecting Existing Legal Uses of Water

Chapter 373, F.S., addresses the protection of existing legal uses in several places. Section 373.171, F.S., provides that no rule or order of the water management district shall require modification of an exiting legal use unless such use is detrimental to other water users or to the water resources of the state. In addition, there are limited grounds upon which revocation of consumptive use permits can occur, as set forth in section 373.243, F.S., including willful violation of permit conditions and submission of false material information required under law.

Existing legal uses of water are also protected when adopting water reservations pursuant to section 373.223(4), F.S. Specifically, existing legal uses are protected so long as they are "not contrary to the public interest." This public interest balancing is conducted by the Governing Board of the water management district when establishing a reservation. For CERP project reservations, section 373.1501 provides additional direction for protection of existing legal uses.

Furthermore, existing legal use rights are considered when implementing water shortage declarations under section 373.246, F.S. Specifically, under this section, water supplies are to be equitably distributed during droughts so as to protect water resources from serious harm and to reasonably meet the continued demands of the permitted users. This is commonly referred to as the "shared adversity" standard, in which both existing legal uses and water resources share in the adversity that occurs during water shortages. These provisions are implemented through water management district rules, including the SFWMD water shortage plan set forth in Chapter 40E-21, F.A.C.

ATTACHMENT 3-C
OTHER ANALYSES OF FLOOD PROTECTION TO BE CONDUCTED IN ADDITION TO THE SAVINGS CLAUSE

Analysis of flood protection under the Savings Clause compares the proposed CERP project with conditions existing at a specific point in time, the date of enactment of WRDA 2000. The Savings Clause analysis is separate from, and different than, each of the following. All of these analyses may require additional analysis of flood protection in the PIR:

- NEPA analysis of impact of alternative plans on the Next-Added Increment Baseline ("no action plan"). This analysis compares the impact of the proposed CERP project to conditions existing at a different point in time than the Savings Clause. Under NEPA, alternative plans are compared to the no-action alternative.
- Takings analysis. This compares the impact of the proposed component to constitutional property rights, which may or may not be related to levels of service for flood protection at the time of enactment of WRDA 2000.

Section 373.1501 analysis: The Programmatic Regulations, 33 CFR section 385.15, requires that "PIRs will include such information and analyses, consistent with this part, as are necessary to facilitate review and approval of projects by the SFWMD and the State pursuant to the requirements of Florida law." The State requirements are different in several ways from the Federal law. The current Florida law (F.S. 373.1501[d]), in part, requires the non-Federal sponsor to provide "reasonable assurances" that "the existing levels of service for flood protection will not be diminished outside the geographic area of the Plan project component."

Consideration of additional flood protection under 33 CFR Section 385.37(c): This section of the Programmatic Regulations provides that "As appropriate, the USACE and the non-Federal sponsor shall consider opportunities to provide additional flood protection, consistent with restoration of the natural system, and the provisions of section 601(f)(2)(B) of WRDA 2000 and other applicable laws." This comparison is different than, and in addition to, the Savings Clause analysis.

ATTACHMENT 3-D
PROCEDURE FOR MINIMUM DELIVERIES TO EVERGLADES NATIONAL PARK WATER ACCOUNTING

The 1970 Minimum Deliveries to Everglades National Park Act (PL 91-282) "requires that the [C&SF] project deliver to the park annually not less than 315,000 acre-feet, or 16.5 percent of total water deliveries from the project, whichever is less." Monthly minimum deliveries to three parts of the park totaling the 315,000 acre-feet were specified.

It is the intent of the Modified Water Deliveries to Everglades National Park Project and the CERP to change the distribution of water set forth in the Minimum Deliveries Act and provide a more natural hydrologic regime to Everglades National Park. Since it has been recognized that the distribution of water in the Minimum Deliveries Act does not constitute a natural hydrologic regime, the Minimum Deliveries Act will not be utilized for purposes of the Savings Clause. Although it is not a plan formulation objective, it is desirable to compare the C&SF Project delivery quantities to Everglades National Park with the quantities of water in the Minimum Deliveries Act by undertaking the following accounting procedure for each project that could affect water deliveries to Everglades National Park:

> For each month, the sum of deliveries through the S-12 A, B, C, and D structures into Shark River Slough, into Taylor Slough, and into the Eastern Panhandle should be compared to the quantities shown in Table 3-D-1 for total water deliveries to Everglades National Park.

Table 3-D-1: Minimum Monthly Deliveries to Everglades National Park

Month	Quantity (Acre-Feet)			
	S-12 (A-D)	Taylor Slough	Eastern Panhandle	Total
January	22,000	740	1,540	24,280
February	9,000	370	630	10,000
March	4,000	185	290	4,475
April	1,700	185	110	1,995
May	1,700	370	110	2,180
June	5,000	6,660	340	12,000
July	7,400	7,400	510	15,310
August	12,200	2,960	860	16,020
September	39,000	5,920	2,690	47,610
October	67,000	7,770	4,630	79,400
November	59,000	3,700	4,060	66,760
December	32,000	740	2,230	34,970
TOTAL	260,000	37,000	18,000	315,000

ATTACHMENT 3-E
EFFECT OF INTERVENING NON-CERP ACTIVITIES ON EXISTING LEGAL SOURCES OF WATER

As described in section 3.8 of this Guidance Memorandum, when the Pre-CERP Baseline conditions have already been altered by an intervening non-CERP activity, the PDT applies a different analysis. In general, CERP will deal with intervening non-CERP activities as follows:

- The Savings Clause does not require CERP to make up for reductions in quantity and quality of existing legal sources of water or levels of service for flood protection caused by intervening non-CERP activities, but it does prohibit CERP projects from further reductions.
- The Savings Clause does not prohibit CERP from reducing quantity and quality of existing legal sources of water or levels of service for flood protection that were increased by intervening non-CERP activities, but it does prohibit CERP projects from reducing those increases below those in place at the date of enactment of WRDA 2000.

The PDT must make a determination in the PIR as to this elimination or transfer by the intervening non-CERP activities. The following examples are provided as guidance to the PDT for analyzing whether the project will eliminate or transfer quantities of existing legal source water in cases where the Pre-CERP Baseline hydrology has been altered by an intervening non-CERP activity:

Example (1):

After date of enactment of WRDA 2000, a non-CERP activity is implemented in accordance with applicable law. The non-CERP activity eliminates or transfers the water quantity or quality of an existing legal source that existed on the date of enactment. The proposed CERP project does not change the elimination or transfer caused by the intervening non-CERP activity.

Q. Is this an "elimination or transfer of an existing legal source" under the Savings Clause?

A. No. The existing legal source quantity or quality was eliminated or transferred by the non-CERP activity, not by implementation of CERP. The statute does not require the proposed CERP project to restore the quantity or quality that existed on date of enactment after that quantity or quality had been changed by an intervening project.

Example (2):

After date of enactment, a non-CERP activity is implemented in accordance with applicable law. The non-CERP activity eliminates or transfers the existing legal source quantity or quality that existed on the date of enactment. A proposed CERP project would increase the

quantity or quality above that of the non-CERP activity, but it would not restore the existing legal source quantity or quality existing on date of enactment.

Q. Is this an "elimination or transfer" under the Savings Clause?

A. No. The elimination or transfer of quantity or quality was caused by the non-CERP activity, not by implementation of CERP. The statute does not require the CERP project to restore the existing legal source quantity or quality that existed on date of enactment after it had been changed by an intervening non-CERP activity.

Example (3):

After date of enactment, a non-CERP activity is implemented. The non-CERP activity provides an improved quantity or quality of water than existed on the date of enactment. A proposed CERP project would eliminate or transfer the existing legal source quantity or quality below that provided by the non-CERP activity but still provide a higher existing legal source quantity or quality than on the date of enactment.

Q. Is this an "elimination or transfer" under the Savings Clause?

A. No. There is no elimination or transfer of an existing legal source quantity or quality from the date of enactment. The Savings Clause does not prohibit a reduction in the non-CERP improvement in existing legal source water quantity or quality provided by the intervening non-CERP activity because the increased quantity or quality was not in existence on the date of enactment. However, the PDT should be aware that there might be other reasons why the proposed CERP project cannot reduce the increased water quantity or quality (see Attachments 3-A and 3-B).

Example (4):

After date of enactment, a non-CERP activity is implemented in accordance with applicable law. The non-CERP activity eliminates or transfers an existing legal source quantity or quality that existed on the date of enactment. A proposed CERP project would eliminate or transfer that existing legal source quantity or quality that existed on date of enactment even more than the non-CERP activity.

Q. Is the additional elimination or transfer of the existing legal source quantity or quality an "elimination or transfer" under the Savings Clause?

A. Yes. The initial elimination or transfer was not due to implementation of the CERP project; the Savings Clause does not require the proposed CERP project to restore that existing legal source quantity or quality. However, the additional elimination or transfer was due to implementation of the CERP project. The intent of the Savings Clause prohibits the proposed CERP project from eliminating or transferring the existing legal source quantity or quality more than it had been already eliminated or transferred by the non-CERP activity.

Example (5):

After date of enactment, a non-CERP activity is implemented in accordance with applicable law. The non-CERP activity provides a greater quantity or quality than existed on the date of enactment. A proposed CERP project would eliminate the increased quantity or quality provided by the non-CERP activity, but would not reduce the benefit from that which existed on the date of enactment.

Q. Is this an "elimination or transfer" under the Savings Clause?

A. No. The Savings Clause prohibits the implementation of CERP from eliminating or transferring the existing legal source quantity or quality existing on the date of enactment. The Savings Clause does not prohibit elimination or transfer of the non-CERP activity increased quantity or quality because it was not in existence on the date of enactment. The proposed CERP project is not required to restore the increased quantity or quality provided by the non-CERP activity. However, the PDT should be aware that there might be other reasons why the proposed CERP project cannot reduce the increased water quantity or quality (see Attachments 3-A and 3-B).

Example (6):

After date of enactment, a non-CERP activity is implemented in accordance with applicable law. The non-CERP activity provides an increased water quantity or quality than existed on the date of enactment. A proposed CERP project not only would eliminate and transfer the greater water quantity or quality provided by the non-CERP activity, but also would eliminate or transfer the existing legal source water quantity or quality existing on the date of enactment.

Q. Is this an "elimination or transfer" under the Savings Clause?

A. Yes. The elimination or transfer of the existing legal source quantity or quality in existence on date of enactment is due solely to implementation of the CERP project. The Savings Clause prohibits implementation of the CERP project from eliminating a legal source quantity or quality in existence on date of enactment. The Savings Clause does not prohibit an elimination or transfer of the non-CERP quantity or quality because it was not in existence on the date of enactment. The proposed CERP project is not required to restore the quantity or quality provided by the non-CERP activity. However, the PDT should be aware that there might be other reasons why the proposed CERP project cannot reduce the increased water quantity or quality (see Attachments 3-A and 3-B).

Note: It is important for the PDT to note that the Savings Clause analyses described in this Guidance Memorandum pertain specifically to the analyses required for compliance with the Savings Clause of section 601(h)(5) of WRDA 2000. The PDT should conduct other

appropriate analyses to determine if the selected alternative plan will affect other rights provided under Federal or State law.

ATTACHMENT 3-F
EFFECT OF INTERVENING NON-CERP ACTIVITIES ON REDUCTION IN LEVELS OF SERVICE FOR FLOOD PROTECTION

The Savings Clause applies to reduction in levels of service for flood protection only caused by "implementation of the Plan." The PDT should not assume that differences between the Initial Operating Regime and the Existing Conditions Baseline are due to implementation of the Plan. The PDT must use some appropriate method to identify any reduction in levels of service caused by implementation of non-CERP activities since December 2000.

After the PDT has determined the reduction in levels of service caused by the intervening non-CERP activity, the PDT must then determine if the CERP project will further reduce the levels of service from that reduction caused by the intervening non-CERP activity. If the CERP project will significantly impact levels of service beyond those caused by the non-CERP activity, guidance is provided in Attachment 3-I as to next steps for the PDT.

The following examples for the effect of intervening non-CERP activities on the Savings Clause analysis for levels of service for flood protection are provided:

Example (1):

After date of enactment of WRDA 2000, a non-CERP activity is implemented in accordance with applicable law. The non-CERP activity reduces the level of service that existed on the date of enactment. The proposed CERP project does not change the level of service provided by the intervening non-CERP activity.

Q. Is this a "reduction in levels of service for flood protection" under the Savings Clause?

A. No. The level of service was reduced by the non-CERP activity, not by implementation of CERP. The statute does not require the proposed CERP project to restore the level of service that existed on date of enactment after that level of service had been changed by an intervening project.

Example (2):

After date of enactment, a non-CERP activity is implemented in accordance with applicable law. The non-CERP activity reduces the level of service that existed on the date of enactment. A proposed CERP project would increase the level of service above that of the non-CERP activity, but it would not restore the levels of service existing on date of enactment.

Q. Is this a "reduction in levels of service for flood protection" under the Savings Clause?

A. No. The level of service was reduced by the non-CERP activity, not by implementation of the Plan. The statute does not require the CERP project to restore the level of service that

existed on date of enactment after it had been changed by an intervening non-CERP activity.

Example (3):

After date of enactment, a non-CERP activity is implemented in accordance with applicable law. The non-CERP activity provides a greater flood protection level of service than existed on the date of enactment. A proposed CERP project would reduce the level of service below the non-CERP activity but still provide a higher level of service than on the date of enactment.

Q. Is this a "reduction in levels of service for flood protection" under the Savings Clause?

A. No. There is no reduction in level of service from the date of enactment. The Savings Clause does not prohibit a reduction in the non-CERP level of service because it was not in existence on the date of enactment. However, the PDT should be aware that there may be other reasons why the proposed CERP project cannot reduce the increased level of service.

Example (4):

After date of enactment, a non-CERP activity is implemented in accordance with applicable law. The non-CERP activity reduces the flood protection level of service that existed on the date of enactment. A proposed CERP project would further reduce the level of service that existed on date of enactment even more than the non-CERP activity.

Q. Is the additional reduction in the level of service a "reduction in levels of service for flood protection" under the Savings Clause?

A. Yes. The initial reduction in level of service was not due to implementation of the CERP project; the Savings Clause does not require the proposed CERP project to restore that level of service. However, the additional reduction in level of service was due to implementation of the CERP project. The intent of the Savings Clause prohibits the proposed CERP project from reducing the level of service more than it had been reduced by the non-CERP activity.

Example (5):

After date of enactment, a non-CERP activity is implemented in accordance with applicable law. The non-CERP activity provides a greater flood protection level of service than existed on the date of enactment. A proposed CERP project would eliminate the increased level of service provided by the non-CERP activity, but would not reduce the level of service from that which existed on the date of enactment.

Q. Is this a "reduction in levels of service for flood protection" under the Savings Clause?

A. No. The Savings Clause prohibits the implementation of CERP from reducing the level of service existing on the date of enactment. The Savings Clause does not prohibit a reduction in the non-CERP level of service because it was not in existence on the date of enactment. The proposed CERP project is not required to restore the level of service provided by the non-CERP activity. However, the PDT should be aware that there may be other reasons why the proposed CERP project cannot reduce the increased level of service.

Example (6):

After date of enactment, a non-CERP activity is implemented in accordance with applicable law. The non-CERP activity provides a greater flood protection level of service than existed on the date of enactment. A proposed CERP project not only would eliminate the greater level of service provided by the non-CERP activity, but also would reduce the level of service existing on date of enactment.

Q. Is this a "reduction in levels of service for flood protection" under the Savings Clause?

A. Yes. The reduction in the level of service in existence on date of enactment is due solely to implementation of the CERP project. The Savings Clause prohibits implementation of the CERP project from reducing the level of service in existence on date of enactment. The Savings Clause does not prohibit a reduction in the non-CERP level of service because it was not in existence on the date of enactment. The proposed CERP project is not required to restore the level of service provided by the non-CERP activity. However, the PDT should be aware that there may be other reasons why the proposed CERP project cannot reduce the increased level of service.

Note: It is important for the PDT to note that the Savings Clause analyses described in this Guidance Memorandum pertain specifically to the analyses required for compliance with the Savings Clause of section 601(h)(5) of WRDA 2000. The PDT should conduct other appropriate analyses to determine if the selected alternative plan will affect other rights provided under Federal or State law.

ATTACHMENT 3-G
WATER BASINS

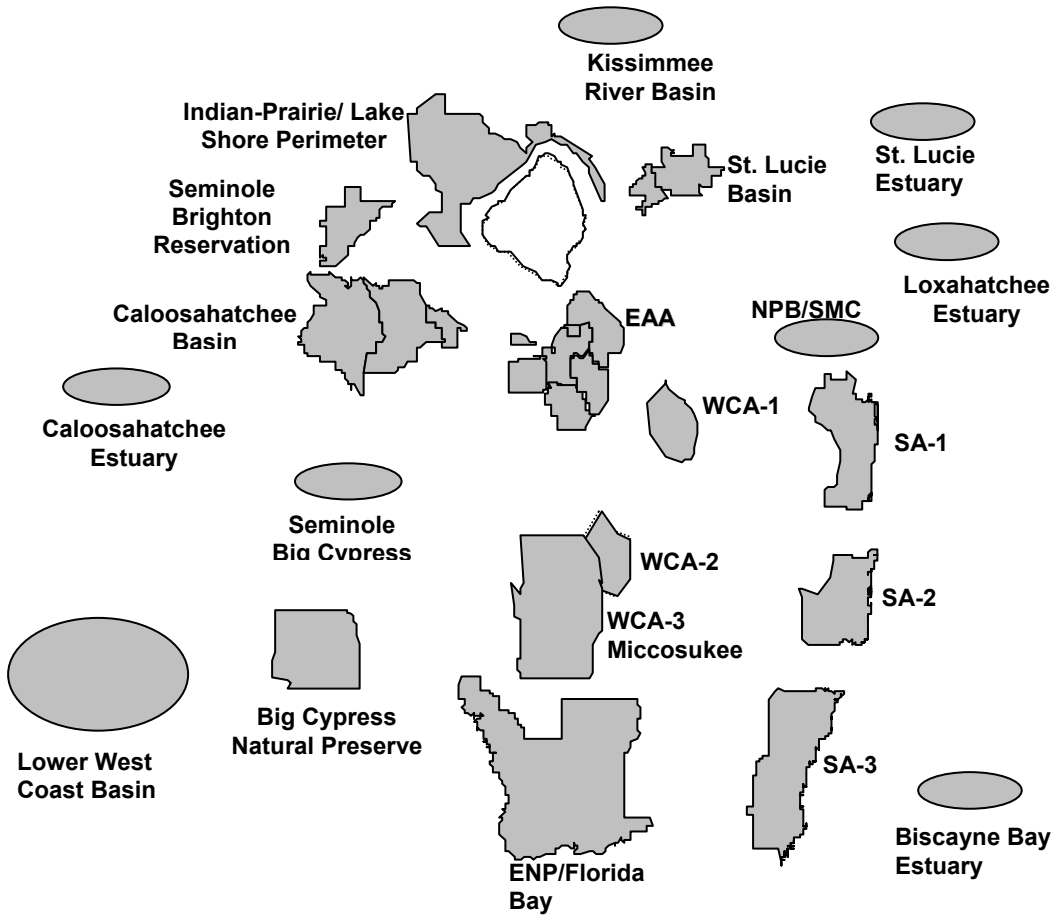


Figure 3-G-1: Water Basins

Legend

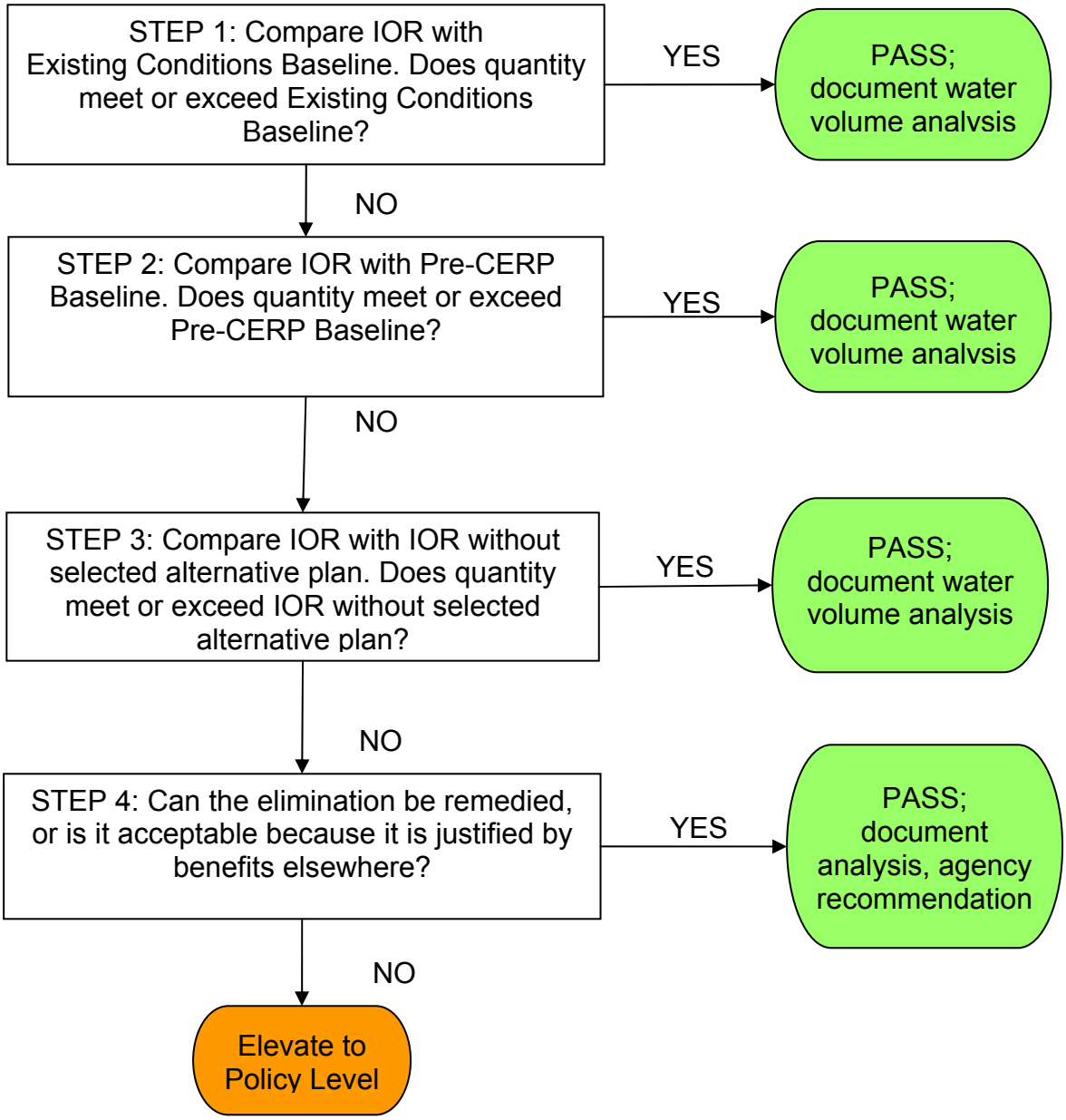
NPB	North Palm Beach
SMC	Southern Martin County
SA-1	Service Area 1
SA-2	Service Area 2
SA-3	Service Area 3
WCA-1	Water Conservation Area 1
WCA-2	Water Conservation Area 2
WCA-3	Water Conservation Area 3

Table 3-G-1: List of Water Basins

Water Basin
Kissimmee River Basin
Indian Prairie/Lake Shore Perimeter
St. Lucie Basin
St. Lucie Estuary
Seminole Brighton Reservation
Caloosahatchee Basin
Caloosahatchee Estuary
North Palm Beach and Southern Martin County (NPB/SMC)
Loxahatchee Estuary
Everglades Agricultural Area (EAA)
Seminole Big Cypress Reservation
Big Cypress Natural Preserve
Lower West Coast Basin
Lower East Coast Service Area 1 (SA-1)
Lower East Coast Service Area 2 (SA-2)
Lower East Coast Service Area 3 (SA-3)
Water Conservation Area 1 (WCA 1)
Water Conservation Area 2 (WCA 2), Water Conservation Area 3 (WCA 3), and Miccosukee Tribe
Biscayne Bay Estuary
Everglades National Park and Florida Bay (ENP/Florida Bay)

EXHIBIT 9

ATTACHMENT 3-H
FLOW CHART FOR ELIMINATION OR TRANSFER TEST



ATTACHMENT 3-I
CHECKLIST FOR LEVELS OF SERVICE FOR FLOOD PROTECTION

Step (1). Was there a Water Management District, Chapter 298 District, county or municipal flood protection project or stormwater management system constructed and operating in the proposed CERP project area on the date of enactment of WRDA 2000 (i.e. December 11, 2000)?

If the answer is "no," stop. Go to step (2).

If "yes," determine all the facts and circumstances, and determine if this qualifies as a level of service for flood protection "in accordance with applicable law" under this Guidance Memorandum. Then go to steps (2) and (3)

Step (2). On the date of enactment of WRDA 2000, was there a Federal or State flood protection project in the area affected by the proposed CERP project component?

If there was no Federal, State or local level of service for flood protection, stop. There is no "level of service for flood protection" issue. Go to step (12).

If "yes," go to step (3).

Step (3). Determine the actual stage-duration curve(s) for the flood protection or stormwater management project as it was constructed and operating on the date of enactment of WRDA 2000. As required by the Programmatic Regulations, consider the operational conditions included in the Pre-CERP Baseline, and other appropriate analysis, in determining the actual stage-duration curve. Go to step (4).

Step (4). Determine the stage-duration curve(s) for the "with CERP project" alternative being considered. Go to step (5).

Step (5). Is there a difference between (3) and (4)?

If "no," stop. Go to step (11)

If "yes," go to step (6).

Step (6). Is the difference both significant and adverse to current land uses in the proposed CERP project component area?

If "no," stop. Go to step (11).

If "yes," go to step (7).

Step (7). Is the difference both significant and adverse to land uses that were in existence in the proposed CERP project component area on the date of enactment of WRDA 2000?

If "no," stop. Go to step (11).

If "yes," go to step (8).

Step (8). Are significant and adverse changes in the levels of service for flood protection due to changes in land use or to implementation of a non-CERP activity?

If there are no significant and adverse changes caused solely by the proposed CERP project component, stop. Go to step (11)

If there are significant and adverse differences caused by the proposed CERP project component, go to step (9).

Step (9). (a) Can the proposed alternative be changed to avoid either significant or adverse effects, or (b) can a mitigation feature (e.g. pumps, retention areas, and levees) be added to prevent either significant or adverse effects on the "levels of service for flood protection"?

If you determined the answer to either (a) or (b) as "yes," determine if the proposed alternative is still justified and cost-effective. CERP and the Programmatic Regulations require projects to be justified and cost-effective (WRDA 2000 section 601(f)(2)).

If the redesigned alternative is still justified and cost-effective, stop. Change or mitigate the proposed alternative for the CERP component accordingly. Then go to step (11).

If the redesigned alternative is not justified and/or cost-effective, then go to step (10).

If both (a) and (b) answers are "no," stop. Eliminate this alternative.

Step (10). If redesign would not be cost-effective, consider acquisition of affected property.

If affected property cannot be acquired or if the alternative would no longer be justified or cost-effective if property were acquired, stop. Eliminate this alternative.

If the alternative is still justified or cost-effective, go to step (11)

Step (11). Determine if smaller scale modeling must be done to determine flood impacts on a site-specific basis.

Regional models such as the SFWMM may be used for the initial screening. Many CERP components are regional in scale. The PDT may use their best professional judgment to determine when smaller scale site-specific modeling is needed to determine whether there is a reduction in "levels of service for flood protection." Smaller sub-regional projects may be a likely candidate for smaller scale modeling.

If regional modeling of a proposed alternative shows a negative direction in those performance measures, that's an indication that more site specific modeling is needed.

If you determine that no further modeling is necessary, stop. There is no level of service for flood protection issue. Go to step (12).

If you determine that modeling on a smaller scale/more site-specific basis must be done in addition to the regional modeling, repeat steps (3)-(10), then go to step (12).

Step (12). Level of service for flood protection analysis complete.

SECTION 4: GUIDANCE MEMORANDUM #4 IDENTIFYING WATER MADE AVAILABLE FOR THE NATURAL SYSTEM AND FOR OTHER WATER-RELATED NEEDS

4.1 PURPOSE

This Guidance Memorandum provides instructions on how to identify the water made available for the natural system and for other water-related needs. This Guidance Memorandum also provides instructions on how to identify water to be reserved or allocated for the natural system. It is important to note that this Guidance Memorandum is to be used by the PDT after the identification of a selected alternative plan, as described in Guidance Memorandum #2. The procedures described in this Guidance Memorandum are not intended to be used to optimize the performance of the project nor to document all the types of benefits associated with the project.

4.2 APPLICABILITY

This Guidance Memorandum applies to PIRs for all CERP projects. Identifying water made available by the project and identifying water to be reserved or allocated for the natural system is required by section 601 of WRDA 2000 and the Programmatic Regulations. The PDT will identify the water necessary to achieve the benefits of the project – both water existing in the natural system and for other water-related needs prior to implementation of CERP and water made available to the natural system and for other water-related needs by the CERP project. These analyses will be conducted on the selected alternative plan.

4.3 LEGAL FRAMEWORK FOR IDENTIFYING WATER

The legal framework for identifying water made available by each project for the natural system and for other water-related needs is provided by section 601 of WRDA 2000, the Programmatic Regulations, and the CERP Assurance of Project Benefits Agreement of January 9, 2002 (also known as the President-Governor Agreement). After water made available from each project is identified, section 601 of WRDA 2000 and the Programmatic Regulations contain specific assurances for the water for the natural system. Specifically, section 601 of WRDA 2000 requires that the State reserve or allocate this water from availability for consumptive use. While the reservation or allocation of water is a process solely undertaken by the State, section 601 of WRDA 2000 and the Programmatic Regulations require that this reservation or allocation be based on the identification of water made available for the natural system. Furthermore, the State has elected to use its legal authority to protect water existing in the natural system that is identified in each PIR that is necessary to achieve the benefits of the project. See Attachment 4-B for a description of the tools available under State law for providing assurances.

4.4 PROJECT IMPROVEMENTS IN WATER QUALITY

In general, water quality must be considered for all CERP projects during project plan formulation and evaluation. As a result, the requirements of this Guidance Memorandum to address improvements in water quality necessary to ensure that water delivered by the Plan meets applicable water quality standards have been addressed in the application of the plan formulation and evaluation procedures of Guidance Memorandum #1 and Guidance Memorandum #2, which resulted in the selected alternative plan to which the technical methodologies in this Guidance Memorandum then apply. The requirement of section 385.35(b)(3)(i) of the Programmatic Regulations that the procedures in this Guidance Memorandum ensure that any features to improve water quality are implemented in a manner consistent with the WRDAs of 1996 and 2000 are included in Guidance Memorandum #2.

4.5 KEY CONCEPTS FOR IDENTIFYING WATER

4.5.1 Achieving the Benefits of the Plan

Both section 601 of WRDA 2000 and the Programmatic Regulations require that the identification of water needed to achieve the benefits of the Plan be undertaken as part of developing the Project Implementation Report. The process of identifying water is integral to the specific assurances of section 601 of WRDA 2000 and ultimately to ensuring that the overarching objective of the Plan – restoration, preservation, and protection of the south Florida ecosystem while providing for other water-related needs of the region, including flood protection and water supply – is met. This Guidance Memorandum specifies how the identification of water will take place.

The assurances section of section 601 of WRDA 2000 and the Programmatic Regulations require that all the water necessary to achieve the benefits of each project, and ultimately, the Plan, be identified as each PIR is developed. The Programmatic Regulations (section 385.31[c]) further require that the total quantity of water that is expected to be generated by implementation of the Plan be periodically updated.

In order to achieve the benefits of the Plan for the natural system, all the water necessary to achieve the natural system benefits of each project will be identified in the PIR. This includes both water available to the natural system prior to the implementation of the project which is needed to achieve project benefits and the water made available for the natural system as a result of the project. These two categories of water are both necessary to achieve the benefits of the Plan, but are to be protected by the State of Florida using separate authorities. The State has elected to use its authority to protect the existing water in the system that is identified by each PIR as necessary to achieve the natural system benefits of each project. The second category, water made available for the natural system that is identified by each PIR, includes any changes the project makes in the quantity, timing, or distribution of water which provides the benefits of the project. This is the water that will be reserved or allocated by the State pursuant to section 601(h)(4)(A)(iii)(V) of WRDA 2000.

This Guidance Memorandum also sets forth the methodology for each PIR to identify the water made available for other water-related needs. The State will then determine the use or allocation thereof as appropriate.

4.5.1.1 The Relationship between Plan Formulation and the Identification of Water

This Guidance Memorandum specifies how the identification of water made available by the project and the identification of water to be reserved or allocated for the natural system will take place. Figure 4-1 illustrates the framework for assuring that the benefits of the CERP project are achieved.

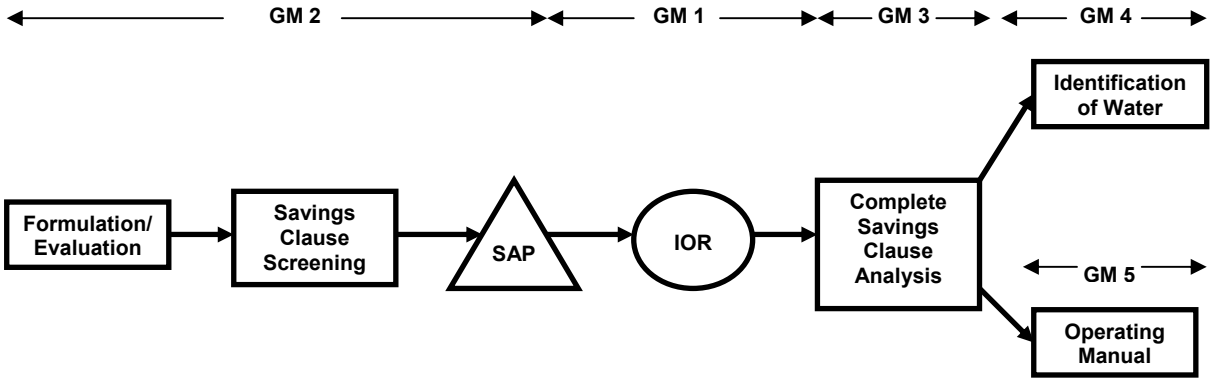


Figure 4-1: Relationship between Identification of Water and Other PIR Tasks

The quantification of water made available by a project occurs after the selected alternative plan has been identified from an array of alternative plans and the Initial Operating Regime has been developed for this plan. Once the selected alternative plan has been identified and the Initial Operating Regime developed, the procedures described in this Guidance Memorandum will be used to quantify the amount of water that is made available by the project for the natural system and for other water-related needs.

4.5.2 Water for Estuaries

Identification of water for estuaries is based on a determination of water that contributes to meeting hydrologic, water quality, and ecologic targets for restoration of the estuary, including salinity targets. These restoration targets should be based on ensuring a healthy, sustainable population of fish and wildlife that can remain healthy and viable through natural cycles of drought, flood, and population variation, and can continue on into the future as a healthy, sustainable population. As measured by the restoration targets, fish and wildlife are the native communities of fish and wildlife that use the habitat in its healthy state, not exotic, invasive, or other species that have moved into an area because the habitat has become degraded. Approved hydrologic, water quality, and ecologic performance measures for each estuary should be utilized to measure fresh water quantities needed for the protection of fish

and wildlife in the estuary, versus that which may be harmful to it or otherwise not contributing to the restoration targets for the estuary. Figure 4-2 illustrates the concept of water meeting restoration targets for estuaries.

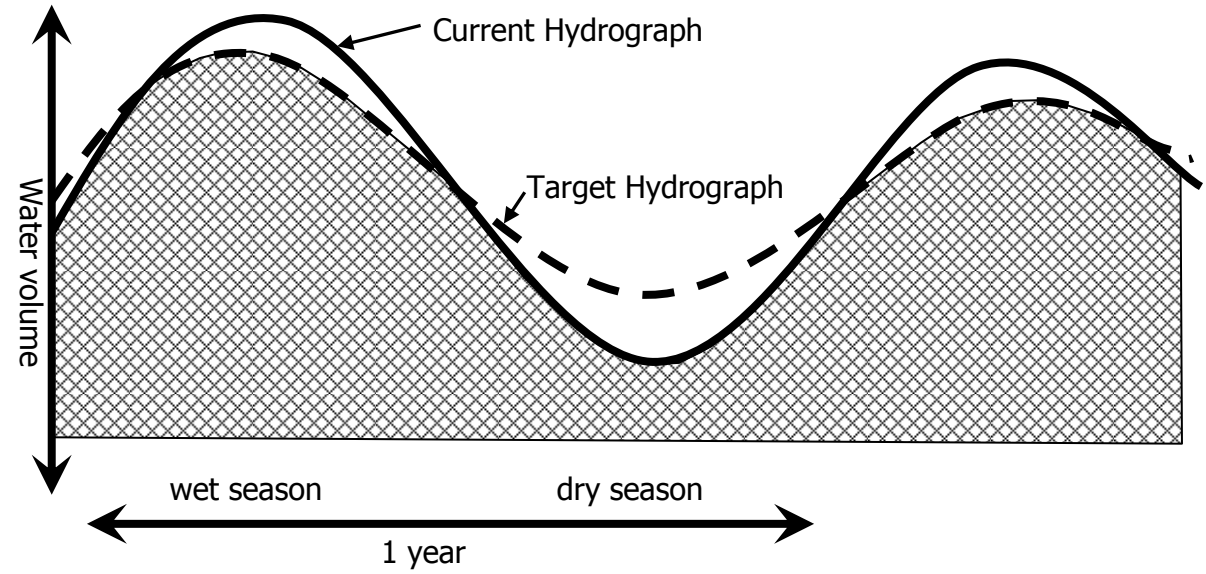


Figure 4-2: Concept for Quantifying Restoration Flows to the Estuaries

4.5.3 Hydrologically Separate Basins

Generally, the identification of water made available for the natural system and for other water-related needs should be conducted at a system-wide level using available regional and sub-regional hydrologic models. Some projects, such as Picayune Strand Restoration Project, are hydrologically separate from the regional water management system. Projects that do not affect regional water deliveries are exempt from the system-wide evaluations described in this Guidance Memorandum. While these areas are too small to be quantified for identifying water using current modeling tools, the benefits and performance improvements should be described in the PIR using qualitative methods or quantitative methods, if possible. Attachment 1-A of Guidance Memorandum #1 provides a procedure for determining whether a project has system-wide or project-level effects and for determining the spatial extent of project effects.

4.5.4 Significant Natural System Areas located within Other Water-Related Needs Basins

Significant natural system areas located within basins identified as other water-related needs basins (e.g., Pennsuco) that are affected by the selected alternative plan should be identified.

While these areas are too small to be quantified for identifying water using current modeling tools, the benefits and performance improvements should be described in the PIR.

4.6 IDENTIFYING WATER

This section describes the analyses that the PDT is to use in identifying the total water necessary to achieve the benefits of the project and the water made available by a project.

4.6.1 Volume-Probability Analysis of IOR and NAI Condition

For the purposes of this Guidance Memorandum, there are two concepts that need to be addressed – the identification of the total water necessary to achieve the benefits of the project and the water made available by the project. The Programmatic Regulations define water made available as the "water expected to be generated pursuant to the implementation of a Project of the Plan in accordance with the Project Implementation Report for that Project."

The identification of the total water necessary to achieve the benefits of the project will be determined from the inflow volume-probability curves for two separate conditions – the Initial Operating Regime (IOR) and the Next-Added Increment (NAI) Condition.

The identification of the water made available by the project will be determined from the difference between the inflow volume-probability curves for two separate conditions – the Initial Operating Regime (IOR) with the Existing Conditions Baseline and the Next-Added Increment (NAI) Condition with the Next-Added Increment Baseline. The difference between the Initial Operating Regime and the Existing Conditions Baseline is used to quantify the volume of water that will be immediately available when the project becomes operational and is the water that will be reserved or allocated by the State as identified in the PIR. This comparison is necessary because physical and operational constraints may exist temporarily in the system that prevents the attainment of all of the project's projected benefits immediately upon operation. Once these constraints are removed as modeled in the Next-Added Increment simulations, the quantity of water made available is expected to change. Furthermore, project operations would be expected to change due to a variety of reasons, including adjustments to operations and the construction of other CERP and non-CERP projects.

The total water necessary to achieve the benefits of the project and the water made available by the project will be computed for each of the following basins of interest:

<u>Everglades</u>

- Water Conservation Area 1
- Water Conservation Area 2 (2A and 2B)
- Water Conservation Area 3 (3A and 3B)
- Big Cypress National Preserve
- Everglades National Park

Estuaries

- Caloosahatchee Estuary
- St Lucie Estuary
- Loxahatchee River
- Biscayne Bay
- Florida Bay

Other Water-Related Needs

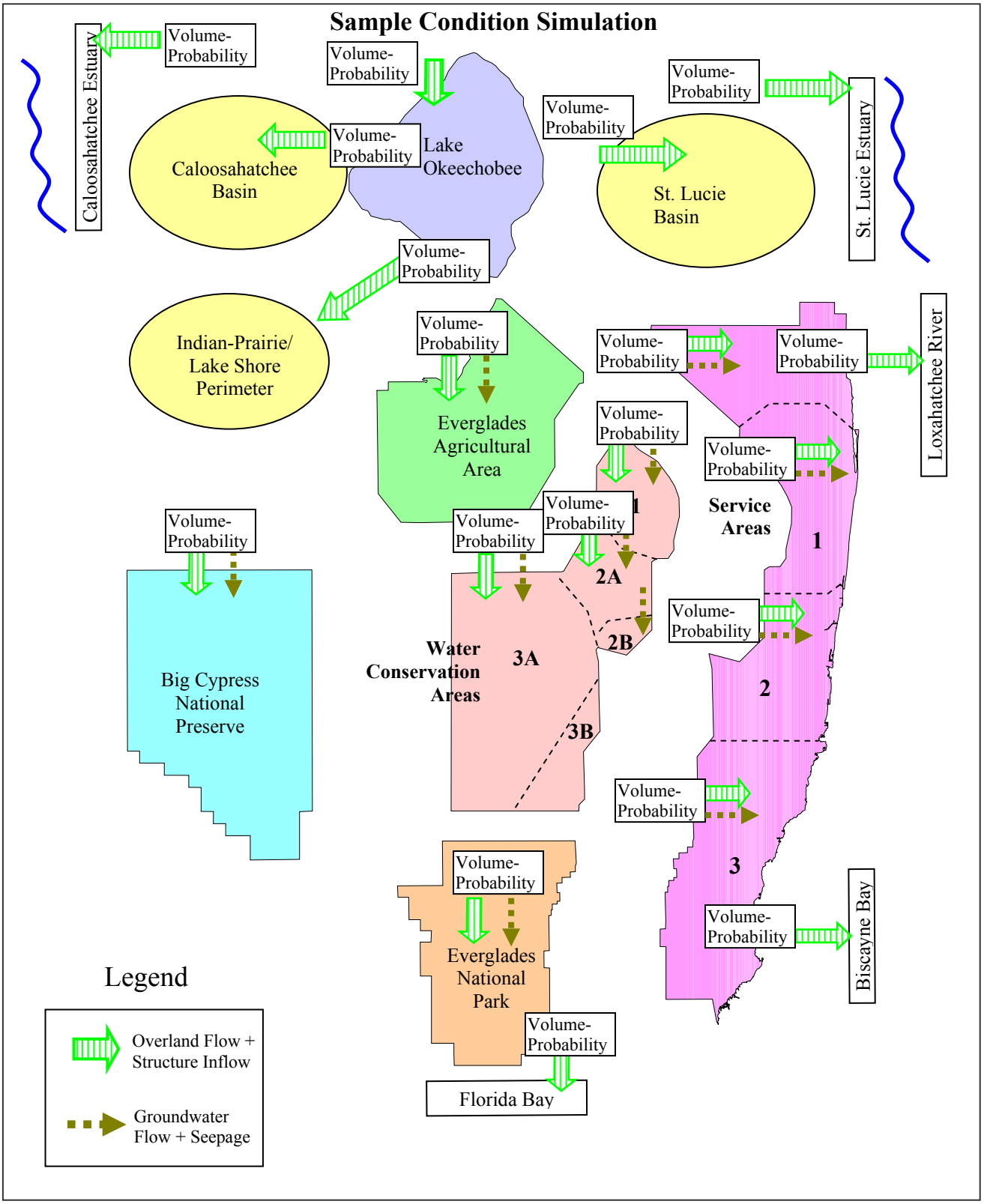
- Lake Okeechobee
- Caloosahatchee River Basin
- St Lucie River Basin
- Everglades Agricultural Area
- Indian Prairie/Lake Shore Perimeter
- North Palm Beach and Southern Martin Counties (NPB/SMC)
- Lower East Coast Service Area 1
- Lower East Coast Service Area 2
- Lower East Coast Service Area 3

The volumes of inflow to each basin are to be calculated as the sum of all simulated structural (e.g., pump stations, weirs, culverts, etc) and passive (e.g., bridges, overland flow, etc) means of water conveyance or transfer from one basin to another basin. For the estuary basins, the calculations must be based on determining water that contributes to meeting hydrologic, water quality, and ecologic targets for restoration of the estuary, including salinity targets (see section 4.5.2). Once water flows into a basin, it becomes part of that basin. The inflow volumes into a particular basin should include structural flow, overland flow, groundwater flow, and seepage. Figure 4-3 shows the basins of interest for which inflows are to be calculated. A map similar to Figure 4-3 should be prepared for each condition – Existing Conditions Baseline, Initial Operating Regime, Next-Added Increment Baseline, and Next-Added Increment Condition.

The inflow volumes for each basin will be displayed as volume-probability curves for the simulation period of record. The volume-probability curves rank the total annual cumulative inflow into a basin from the lowest to the highest value for the period of simulation. Figure 4-4 is an example of a volume-probability curve. For each volume probability curve, the 10%, 50% and 90% exceedence probability volumes will be identified.

Two sets of difference curves will then be developed from the volume-probability curves. The two sets of difference curves will be derived from comparison of the annual values for the two conditions - Existing Conditions Baseline and IOR and NAI Baseline vs. NAI. The results will then be sorted, ranked (from greatest to least), and plotted as difference curves. The 10%, 50%, and 90% exceedance points on the difference curve will be identified for each comparison and the water year for each of these points will be determined. The volumes associated with that water year will then be identified for each of the two conditions from which the difference curve was developed. Figure 4-5 is an example of difference curves.

Figure 4-3: Inflow Volumes for Basins of Interest



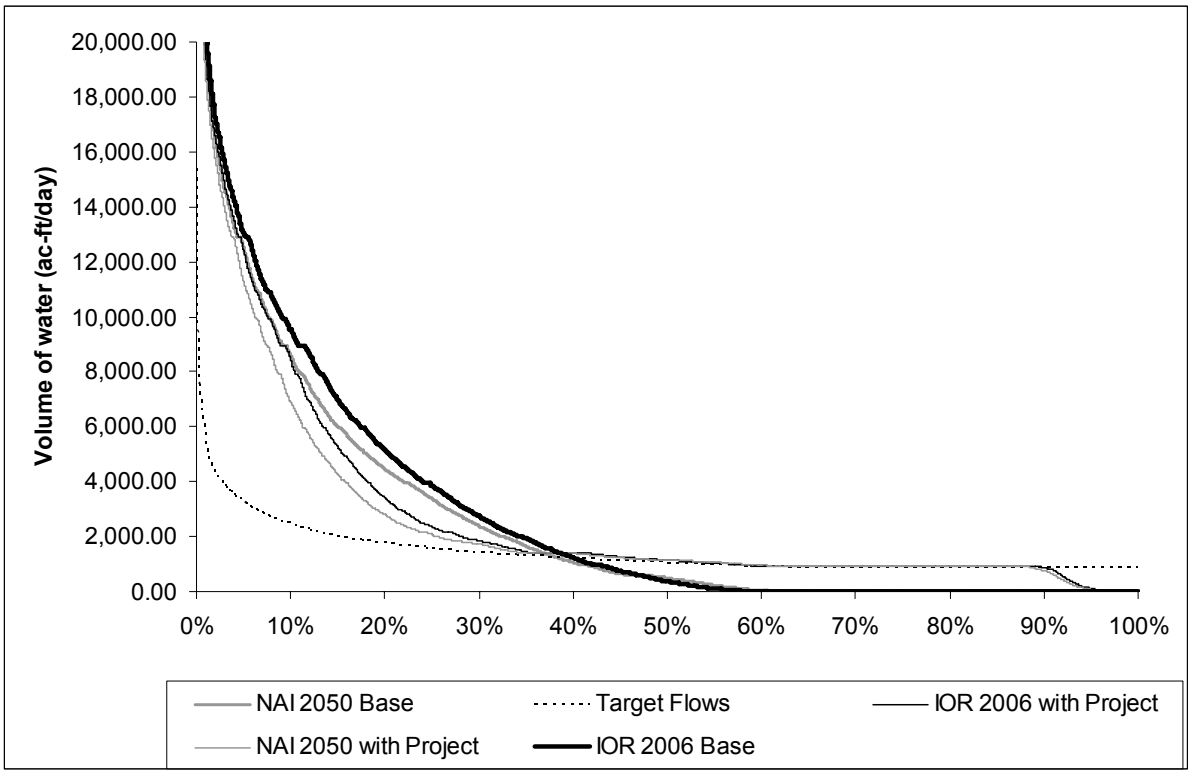


Figure 4-4: Example of a Volume-Probability Curve (Note: this example is for an estuary see section 4.5.2)

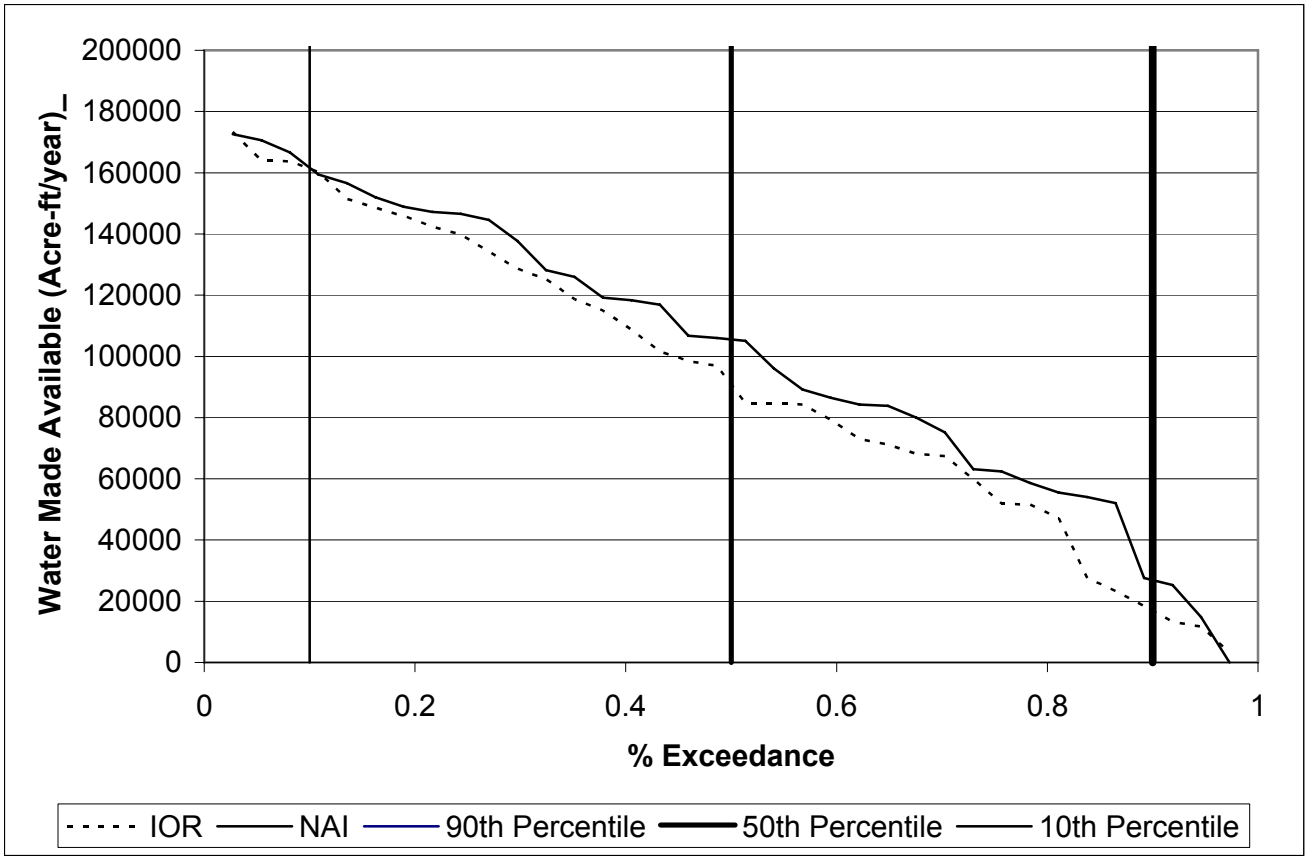


Figure 4-5: Example of Difference Curves for IOR and NAI to the Base (Note: this example is for an estuary)

4.6.2 Identifying Total Water and Water Made Available for the Natural System

The identification of the total water necessary to achieve the benefits of the project and the identification of water made available for the natural system is to be based on quantifying surface water and groundwater inflow to each affected natural system basin. For analysis purposes, these natural system basins are divided into two categories, Everglades and Estuaries. Natural system basins are listed below:

Everglades

- Water Conservation Area 1
- Water Conservation Area 2 (2A and 2B)
- Water Conservation Area 3 (3A and 3B)
- Big Cypress National Preserve
- Everglades National Park

Estuaries

- Caloosahatchee Estuary
- St Lucie Estuary
- Loxahatchee River
- Biscayne Bay
- Florida Bay

Together, the water identified for the Everglades and the Estuaries represent all the water that is made available by the project for the natural system. The modeling comparison and analysis for each category is explained in the following two sections.

4.6.2.1 Everglades

The total water necessary to achieve the benefits of the project and water made available for the basins in the Everglades category (i.e., Water Conservation Area 1, Water Conservation Area 2, Water Conservation Area 3, Big Cypress National Preserve, and Everglades National Park) is to be identified. Inflow volumes for the Existing Conditions Baseline, the Initial Operating Regime, the Next-Added Increment Baseline, and the Next-Added Increment Condition will be computed and displayed as described in section 4.6.1.

From analysis of the inflows, volume-probability curves, and difference curves that are generated, a summary table can be prepared displaying the locations as rows and the differences between the IOR and Existing Conditions Baseline and the differences between the Next-Added Increment Baseline and the Next-Added Increment Condition as columns for the 10% exceedence probability, 50% exceedence probability, and 90% exceedence probability. Example tables are shown in Figures 4-6 and 4-7.

4.6.2.2 Estuaries

Identification of water for estuaries is based on a determination of water that contributes to meeting hydrologic, water quality, and ecologic targets for restoration of the estuary, including salinity targets. These restoration targets should be based on ensuring a healthy, sustainable population of fish and wildlife that can remain healthy and viable through natural cycles of drought, flood, and population variation, and can continue on into the future as a healthy, sustainable population. Consequently, the identification of water for estuary basins is computed differently than Everglades basins. The total water necessary to achieve the benefits of the project and the water made available for the natural system for estuary basins (i.e., Caloosahatchee Estuary, St. Lucie Estuary, Loxahatchee River, Biscayne Bay, and Florida Bay) should be identified. Inflow volumes for the Existing Conditions Baseline, the Initial Operating Regime, the Next-Added Increment Baseline, and the Next-Added Increment Condition will be computed and displayed as described in section 4.6.1. For the Initial Operating Regime computation, the portion of the Existing Conditions Baseline required to meet restoration targets and the portion of the Initial Operating Regime required to meet restoration targets should be used. The portion required for restoration targets will be quantified by using salinity envelopes or other appropriate estuarine targets.

EXHIBIT 9

From analysis of the inflows, volume-probability curves and difference curves that are generated, a summary table can be prepared displaying the locations as rows and the differences between the IOR and Existing Conditions Baseline and the differences between the Next-Added Increment Baseline and the Next-Added Increment Condition as columns for the 10% exceedence probability, 50% exceedence probability, and 90% exceedence probability. Example tables are shown in Figures 4-6 and 4-7.

Figure 4-6 – Summary Table for Total Water and Water Made Available for the Natural System by the IOR

	Initial Operating Regime								
	10% Exceedence Probability			50% Exceedence Probability			90% Exceedence Probability		
	IOR	Existing Conditions Baseline	Diff	IOR	Existing Conditions Baseline	Diff	IOR	Existing Conditions Baseline	Diff
Caloosahatchee Estuary									
St. Lucie Estuary									
Loxahatchee River									
WCA 1									
WCA 2 (2A and 2B)									
WCA 3 (3A and 3B)									
Big Cypress National Preserve									
Everglades National Park									
Biscayne Bay									
Florida Bay									

Figure 4-7 – Summary Table for Total Water and Water Made Available for the Natural System by the NAI

	Next-Added Increment								
	10% Exceedence Probability			50% Exceedence Probability			90% Exceedence Probability		
	NAI Condition	NAI Baseline	Diff	NAI Condition	NAI Baseline	Diff	NAI Condition	NAI Baseline	Diff
Caloosahatchee Estuary									
St. Lucie Estuary									
Loxahatchee River									
WCA 1									
WCA 2 (2A and 2B)									
WCA 3 (3A and 3B)									
Big Cypress National Preserve									
Everglades National Park									
Biscayne Bay									
Florida Bay									

4.6.3 Identifying Total Water and Water Made Available for Other Water-Related Needs

The identification of the total water necessary to achieve the benefits of the project and the identification water made available for other water-related needs is to be based on quantifying surface water and groundwater inflow to each affected other water-related needs basin listed below:

- Lake Okeechobee
- Caloosahatchee River Basin
- St Lucie River Basin
- Everglades Agricultural Area
- Indian Prairie/Lake Shore Perimeter
- North Palm Beach and Southern Martin Counties
- Lower East Coast Service Area 1
- Lower East Coast Service Area 2
- Lower East Coast Service Area 3

Inflow volumes for the Existing Conditions Baseline, the Initial Operating Regime, the Next-Added Increment Baseline, and the Next-Added Increment Condition will be computed and displayed as described in section 4.6.1.

From analysis of the inflows, volume-probability curves and difference curves that are generated, a summary table can be prepared displaying the locations as rows and the differences between the IOR and Existing Conditions Baseline and the differences between the Next-Added Increment Baseline and the Next-Added Increment Condition as columns for the 10% exceedence probability, 50% exceedence probability, and 90% exceedence probability. Example tables are shown in Figures 4-8 and 4-9.

Figure 4-8 – Summary Table for Total Water and Water Made Available for Other Water-Related Needs by the IOR

	Initial Operating Regime								
	10% Exceedence Probability			50% Exceedence Probability			90% Exceedence Probability		
	IOR	Existing Conditions Baseline	Diff	IOR	Existing Conditions Baseline	Diff	IOR	Existing Conditions Baseline	Diff
Lake Okeechobee									
Caloosahatchee River Basin									
St. Lucie River Basin									
EAA									
Indian Prairie/Indian Shore Perimeter									
North Palm Beach and Southern martin Counties									
LECSA1									
LECSA2									
LECSA3									

Figure 4-9 – Summary Table for Total Water and Water Made Available for Other Water-Related Needs by the NAI

	Next-Added Increment								
	10% Exceedence Probability			50% Exceedence Probability			90% Exceedence Probability		
	NAI Condition	NAI Baseline	Diff	NAI Condition	NAI Baseline	Diff	NAI Condition	NAI Baseline	Diff
Lake Okeechobee									
Caloosahatchee River Basin									
St. Lucie River Basin									
EAA									
Indian Prairie/Indian Shore Perimeter									
North Palm Beach and Southern martin Counties									
LECSA1									
LECSA2									
LECSA3									

4.7 IDENTIFYING WATER TO BE RESERVED OR ALLOCATED FOR THE NATURAL SYSTEM

The water to be reserved or allocated for the natural system will be identified using the appropriate difference between the volume-probability curve for the Initial Operating Regime and the Existing Conditions Baseline for both the Everglades (using the methodology of section 4.6.2.1) and the estuaries (using the methodology of section 4.6.2.2). Identification of water to be reserved or allocated for the natural system is to be based on quantifying surface water and groundwater inflow to each affected natural system basin listed below:

Everglades

- Water Conservation Area 1

- Water Conservation Area 2 (2A and 2B)
- Water Conservation Area 3 (3A and 3B)
- Big Cypress National Preserve
- Everglades National Park

Estuaries

- Caloosahatchee Estuary
- St Lucie Estuary
- Loxahatchee River
- Biscayne Bay
- Florida Bay

4.8 ASSURANCE LANGUAGE FOR THE PIR

The overarching objective of the Plan is the restoration, preservation, and protection of the South Florida ecosystem while providing for other water-related needs of the region, including water supply and flood protection. The Federal Government and the State of Florida are committed to the protection of the appropriate quantity, quality, timing, and distribution of water to achieve and maintain the benefits to the natural system described in the Plan. Attachment 4-B summarizes State tools available to achieve and maintain the benefits to the natural system.

The State will protect the water for the natural system by taking the following actions: 1) the State will use its water reservation or allocation authority to protect the water made available for the natural system from each project as required by section 601 of WRDA 2000; and 2) the State has elected to protect the existing water in the natural system that the Project Implementation Report identifies is necessary to achieve the restoration benefits of the project, using resource protection authority under Florida law. Language setting forth these commitments will be included in the Plan Implementation section of each PIR in the sub-section entitled "Identification of Water Made Available" (See Guidance Memorandum #1, Attachment 1-C "PIR Outline"). Model language memorializing this concept is contained in Attachment 4-C.

4.9 FUTURE CHANGES TO WATER TO BE RESERVED OR ALLOCATED

Implementation of the Plan will take place over a number of years; however section 601 of WRDA 2000 and the Programmatic Regulations require project-specific analyses that include the identification of the water made available and the water to be reserved or allocated for individual projects.

The difference between the Initial Operating Regime volume-probability curve and the Existing Conditions Baseline volume-probability curve will be used to quantify the volume of water that needs to be reserved or allocated when the project becomes operational. This is necessary because physical and operational constraints may exist temporarily in the system

and prevent the attainment of all of project's projected benefits immediately upon operation. Once these constraints are removed, the quantity of water made available for the natural system is expected to change. Subsequent PIRs will contain the information necessary for the State to make updated reservations or allocations of water to show progress towards and ultimately to achieve this quantification.

4.10 DOCUMENTATION OF GUIDANCE MEMORANDUM #4 ANALYSES IN THE PIR

The analyses conducted to identify the water made available and to identify the water to be reserved or allocated for the natural system will be documented in the PIR.

A summary of the identification of water made available for both the natural system and for other water-related needs should be included in the Plan Implementation section of the PIR in the sub-section entitled "Identification of Water Made Available" (See Guidance Memorandum #1, Attachment 1-C "PIR Outline"). More detailed information about the analyses should be placed in Annex C - Analyses Required by Federal and State Law in the section entitled "Identification of Water Made Available."

A summary of the identification of water to be reserved or allocated for the natural system should be included in the Plan Implementation section of the PIR in the sub-section entitled "Identification of Water to be Reserved or Allocated for the Natural System." More detailed information about the analyses should be placed in Annex C - Analyses Required by Federal and State Law in the section entitled "Identification of Water to be Reserved or Allocated for the Natural System."

ATTACHMENT 4-A
CERP ASSURANCE OF PROJECT BENEFITS AGREEMENT
(PRESIDENT-GOVERNOR AGREEMENT)

COMPREHENSIVE EVERGLADES RESTORATION PLAN
ASSURANCE OF PROJECT BENEFITS AGREEMENT

WHEREAS, the Everglades ecological system is unique in the world and one of the Nation's great treasures;

WHEREAS, the Central and Southern Florida Project as originally authorized in 1948 has had unintended consequences on the Everglades and the South Florida Ecosystem;

WHEREAS, the Water Resources Development Act of 1992 authorized a Comprehensive Review Study (Restudy) of the Central and Southern Florida Project;

WHEREAS, as required by the Water Resources Development Act of 1996, the Restudy was submitted to the Congress of the United States on July 1, 1999;

WHEREAS, the Restudy, renamed the Comprehensive Everglades Restoration Plan, was authorized by the Congress in the Water Resources Development Act of 2000;

WHEREAS, the Comprehensive Everglades Restoration Plan (the "Plan") will restore, preserve, and protect the more than 2.4 million acres of the Everglades and the South Florida Ecosystem;

WHEREAS, implementation of the Plan will require a collaborative effort among Federal and State partners, and the Seminole Tribe of Florida and the Miccosukee Tribe of Indians of Florida, acting under Federal and State law, to achieve the shared goal of restoration of the Everglades and the South Florida Ecosystem;

WHEREAS, as the ecosystem is restored, all interests seek a level of assurance that they will receive the anticipated benefits from the Plan;

WHEREAS, the Federal interest in restoration flows largely from the substantial Federal resources in the ecosystem, including Everglades National Park and other National Parks, National Wildlife Refuges, and National Marine Sanctuaries, which comprise a significant portion of the natural system;

WHEREAS, in recognition of this interest, the Congress established that the overarching objective of the Plan is the restoration, preservation, and protection of the South Florida Ecosystem, while providing for other water-related needs of the region, including water supply and flood protection;

WHEREAS, section 601(h)(2) of the Water Resources Development Act of 2000 (the "Act"), requires that the President of the United States and the Governor of Florida enter into a binding agreement that ensures that water from the Comprehensive Everglades Restoration Plan will be made available for the restoration of the natural system;

WHEREAS, section 601(h)(3) of the Act further requires that the Secretary of the Army, with the concurrence of the Governor and the Secretary of the Interior, and in consultation with the Seminole Tribe of Florida, the Miccosukee Tribe of Indians of Florida, the Administrator of the Environmental Protection Agency, the Secretary of Commerce, and other Federal, State, and local agencies, promulgate programmatic regulations to ensure that the goals and the purposes of the Plan are achieved;

WHEREAS, section 601(h)(4)(A)(iii) of the Act requires that a Project Implementation Report (PIR) identify the amount of water to be reserved or allocated for the natural system under State law;

WHEREAS, section 601(h)(4)(B)(ii) of the Act requires that the Secretary of the Army shall not execute a Project Cooperation Agreement until any reservation or allocation of water for the natural system identified in the PIR is executed under State law;

WHEREAS, the State of Florida has the authority to reserve water for the natural system pursuant to Chapter 373, Florida Statutes;

The signatories to this agreement hereby affirm that:

As required by the Water Resources Development Act of 2000, water made available by each project in the Comprehensive Everglades Restoration Plan will not be permitted for a consumptive use or otherwise made unavailable by the State of Florida until such time as sufficient reservations of water for the restoration of the natural system are made by regulation or other appropriate means pursuant to Chapter 373, Florida Statutes, and in accordance with the project implementation report for the project and consistent with the Comprehensive Everglades Restoration Plan.

To effectuate this agreement, the Federal party agrees:

- To include within the President's budget submissions to the Congress requests for Federal appropriations in the amount the President deems necessary to implement the Federal share of the Plan's implementation;

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- To initiate authorized project planning and design;
- To work with the State of Florida on developing information jointly to support the adaptive assessment component of the Plan;
- To use the planning process to supply information for both Federal and State legislative oversight requirements;

To effectuate this agreement, the State party agrees:

- To include within the Governor's budget submissions to the Legislature requests for State appropriations in the amount the Governor deems necessary to implement the State share of the Plan's implementation.
- To undertake reservations of water for the natural system upon completion of each PIR, and to ensure that reservations of water for the natural system will be consistent with information developed in the PIR, indicating appropriate timing, distribution, and flow requirements sufficient for the restoration of the natural system.
- To manage its water resource allocation process to ensure that water made available by each project in the Comprehensive Everglades Restoration Plan will not be permitted for a consumptive use or otherwise made unavailable for restoration of the natural system, consistent with the PIR and the provisions of the Water Resources Development Act of 2000.
- To monitor and assess the continuing effectiveness of reservations as long as the project is authorized,to achieve the goals and objectives of the Plan.

PRESIDENT OF
THE UNITED STATES

GOVERNOR OF THE
STATE OF FLORIDA

Dated: January 9, 2002

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ATTACHMENT 4-B
STATE TOOLS FOR PROVIDING ASSURANCES

State law includes provisions that were specifically enacted to implement the Plan by the State as a partner with the Federal government. State law also contains provisions that will be utilized to reserve and allocate water to the natural system and for other water-related needs, sometimes referred to as "State water law." These legal tools provided under State water laws include water reservations, consumptive use permitting, water shortage management, and minimum flows and levels.

State and Federal law specifically provide that State water law controls the procedures and implementation of water reservations and allocation of water for natural systems and other water-related needs and that nothing in the Federal law should be interpreted as prescribing the process for implementing State water law. A description of the key provisions in State water law are provided in the following paragraphs solely to provide background for the guidance memoranda, as they will play a key role in assuring that the goals and purposes of the Plan will be achieved.

STATE LAWS REGARDING CERP IMPLEMENTATION

The primary State authority regarding the implementation of the Plan is Chapter 373, F.S. These provisions provide responsibility to the State, including the SFWMD and the Florida Department of Environmental Protection (FDEP), to ensure restoration of the Everglades and the protection of existing legal uses of water and existing levels of flood protection when designing and implementing CERP project components.

Assurances are provided under State law requiring the Plan be used as a "guide and framework…to ensure that the project components will be implemented to achieve the purposes of the WRDA 1996 that include restoring, preserving and protecting the South Florida ecosystem, …and providing such features as are necessary to meet the other water-related needs of the region, including flood control, the enhancement of water supplies, and other objectives served by the project." Section 373.470(3)(b)2, F.S.

To meet these assurances, State law provides specific provisions that apply to implementing, funding, and permitting of CERP projects. These include sections 373.026(8), 373.1501, 373.1502, and 373.470, F.S. They are summarized in the following paragraphs.

Prior to any project component being submitted to Congress for authorization or receipt of an appropriation of State funds for construction, the FDEP must approve each project component, pursuant to section 373.026(8), F.S., upon a finding that the SFWMD has complied with the requirements set forth in section 373.1501, F.S.

Section 373.1501(2), F.S., in part, provides that CERP components must be implemented through appropriate processes under Chapter 373 and consistent with the balanced policies and purposes of Chapter 373, F.S. Specifically, section 373.1501(5) provides assurances to

natural systems, existing legal users and for flood protection, including requirements that SFWMD for each project component:

> Section 5. Analyze and evaluate all needs to be met in a comprehensive manner and consider all applicable water resource issues, including water supply, water quality, flood protection, threatened and endangered species, and other natural system and habitat needs.

> i) Consistent with [Chapter 373], the purposes for the Restudy provided in the WRDA of 1996, and other applicable Federal law, provide reasonable assurances that the quantity of water available to existing legal users shall not be diminished by implementation of project components so as to adversely impact existing legal users, that existing levels of service for flood protection will not be diminished outside the geographic area of the project component, and that water management practices will continue to adapt to meet the needs of the restored natural environment.

Prior to executing a PCA, the SFWMD must develop a PIR with the USACE to address the requirements in section 373.1501, F.S., and to obtain approval under section 373.026, F.S., from the FDEP. This ensures that the PIR will be sufficient to meet both State, as well as Federal, law requirements for implementing a CERP project.

STATE LAWS FOR RESERVING, ALLOCATING, AND MANAGING WATER RESOURCES

As mentioned above, in addition to laws specifically enacted to implement the Plan, State law also includes a framework of several tools for reserving, allocating and managing water for the natural system and other water-related needs. These tools will play a key part in providing assurances that the goals and purposes of the Plan will be achieved as required by both State and Federal law. They are briefly summarized in the following paragraphs.

Reservations of Water for the Natural System

Section 373.470(3)(c), F.S., requires that each PIR identify the increase in water supplies resulting from a project component. These increased water supplies for the natural system must be allocated or reserved by the SFWMD under Chapter 373, F.S. section 373.470(3)(c), F.S.

State law on water reservations, in section 373.223(4), F.S., provides:

> "The governing board or the department, by regulation, may reserve from use by permit applicants, water in such locations and quantities, and for such seasons of the year, as in its judgment may be required for the protection of fish and wildlife or the public health and safety. Such reservations shall be subject to periodic review and revision in the light of changed conditions.

> However, all presently existing legal uses of water shall be protected so long as such use is not contrary to the public interest."

When water is reserved under this statute, it is not available to be allocated for use under a consumptive use permit and is protected for the natural system. The SFWMD anticipates that both CERP and non-CERP related reservations will be adopted for Everglades protection. For Plan reservations, the amount of water to be reserved is the water made available for the protection of fish and wildlife by a Plan project.

Protection of fish and wildlife may include ensuring a healthy, sustainable population of fish and wildlife that can remain healthy and viable through natural cycles of drought, flood, and population variation, and can continue on into the future as a healthy, sustainable population. Fish and wildlife to be protected are the native communities of fish and wildlife that use the habitat in its healthy state, not exotic, invasive, or other species that have moved into an area because the habitat has become degraded.

The CERP project reservation or allocation will identify water made available by the project, which is in part based on project operations in concert with other existing CERP and non-CERP projects and conditions. For this reason, the project reservation or allocation will be appropriately conditioned to account for circumstances when such related projects and conditions are not realized as anticipated. This may result in the need to revise the project reservation or allocation based on unanticipated circumstances.

Pursuant to section 601 of WRDA 2000, CERP reservations or allocations for a specific project must be executed prior to entering into the PCA for the project. However, reservations or allocations are subject to periodic review based on changed conditions, such as the changes that will occur in the C&SF Project as Plan projects become operational. This provides flexibility to account for changes in implementation strategies, restoration objectives, and contingency plans during the life of the project.

Presently existing legal uses of water are protected so long as they are "not contrary to the public interest." Under Florida law, permitted uses and domestic water uses (which are exempt from requirements to obtain a permit) have the legal status of an "existing legal use." Unauthorized, including unpermitted, existing uses do not constitute an "existing legal use" and are not protected by the statute.

Consumptive Use Permitting

In order to obtain a consumptive use permit, the permit applicant must provide reasonable assurances that the use is "reasonable-beneficial", will not interfere with any presently existing legal use of water, and is consistent with the public interest, pursuant to section 373.223, F.S. The SFWMD implements this three-prong test pursuant to SFWMD rules, including Chapters 40E-2 and 40E-20, Florida Administrative Code (F.A.C.). Permits are conditioned to assure that uses are consistent with the overall objectives of Chapter 373, F.S. and are not harmful to the water resources of the area.

Protection of water supplies for restoration of the Everglades natural system under CERP is recognized as a legitimate and essential component of consumptive use permitting pursuant to Chapter 373, Florida Statutes. Under the "public interest" test the SFWMD is authorized to consider whether the project impacts fish and wildlife, among several other potential impacts and benefits of authorizing a given consumptive use of water. These "public interest" considerations are outlined in Chapter 373, F.S., including section 373.016, F.S., which identifies the protection of fish and wildlife and development of water resources for meeting existing and future reasonable-beneficial uses of water. Section 373.1501(2), F.S, specifically requires that CERP implementation be consistent with the balanced policies and purposes of section 373.016, F.S. section 373.1502(2)(a) provides that implementation of CERP is in the public interest.

In exercising this authority allocation authority under Chapter 373, the SFWMD intends to limit additional demands on the Everglades system from consumptive use withdrawals through a restricted allocation rule covering Dade, Broward and Palm Beach county urban service areas. This rule would have the similar effect as a water reservation for the Everglades in that additional impacts on existing levels of water available in the Everglades would not be permitted.

Permit durations under Florida law are tied to the time period for which the applicant can provide reasonable assurances that the use will not be harmful to the water resources of the area and are consistent with the overall objectives of the SFWMD. Under current district rules, duration of permits for water from the Central and Southern Florida Project are limited to allow renewal of existing levels of use for up to 20 years and to allow increased allocations over existing levels of use for a five year interval.

In implementing this authority the SFWMD has agreed to include in its rules the following, as appropriate:

1. Supplemental information identifying the expected water to be made available for the natural system and for other water-related needs based on the system formulation analysis to reflect the projected performance of the project through time up to the end of the period of analysis (currently 2050) ensuring that the benefits of the Plan will be achieved. The rule will include language that it will be updated in the future as necessary to meet the actual changed conditions as quantified in future PIRs. The rule will be reviewed and revised appropriately, at least every five years.

2. Include a limiting condition in consumptive use permits stating that upon renewal a permit shall be modified as necessary to comply with consumptive use permit rules that ensure such use is consistent with the CERP goals and purposes, including adopted reservations and allocation rules.

Minimum Flows and Levels

Minimum flows are established to identify where further withdrawals would cause significant harm to the water resources, or to the ecology of the area. Minimum levels are

established to identify where further withdrawals would cause significant harm to the water resources of the area. Specific minimum flows and levels (MFLs) are established by rule for specified priority water bodies that have been designated pursuant to section 373.042(2), F.S.

Minimum flows and level rules have been adopted for several areas within the C&SF Project, including Everglades National Park and the Water Conservation Areas, which are contained in Chapter 40E-8, F.A.C. The recovery strategy for meeting these MFLs includes implementation of CERP and the SFWMD's Lower East Coast Regional Water Supply Plan (2000), which includes Plan components. This recovery strategy will be updated through SFWMD rulemaking and updates of the regional water supply plan. Under SFWMD MFL rules for these areas consumptive use permit applicants must demonstrate that their use is consistent with this recovery strategy. As such, MFLs are a key component in assuring that the goals and purposes of CERP will be achieved.

Water Shortage Implementation

Pursuant to section 373.246, F.S., water shortage declarations are designed to prevent serious harm from occurring to water resources during drought conditions, when shortfalls of water occur. Declarations of water shortages by the SFWMD Governing Board are used to equitably distribute the water resources for consumptive and non-consumptive uses during droughts, including fish and wildlife, as provided in Chapter 40E-21, F.A.C. Water shortage declarations are imposed in phases, with increasing water use cutbacks with increasing drought conditions. CERP Project Operating Manuals include drought contingency plans, which incorporate these water shortage rules for information purposes.

ATTACHMENT 4-C
MODEL LANGUAGE FOR ASSURANCES SECTION OF THE PIR

The overarching objective of the Plan is the restoration, preservation, and protection of the South Florida ecosystem while providing for other water-related needs of the region, including water supply and flood protection. The Federal Government and the State of Florida are committed to the protection of the appropriate quantity, quality, timing, and distribution of water to achieve and maintain the benefits to the natural system described in the Plan. As envisioned in section 601 of WRDA 2000 and the Programmatic Regulations, each Project Implementation Report will identify this appropriate quantity, quality, timing, and distribution of water for the natural system.

The following language setting forth these commitments will be included in the "Project Assurances Section" of each PIR (See Guidance Memorandum #1, Attachment 1-C "PIR Outline"):

> "The overarching objective of the Plan is the restoration, preservation, and protection of the South Florida ecosystem while providing for other water-related needs of the region, including water supply and flood protection. The Federal Government and the non-Federal sponsor are committed to the protection of the appropriate quantity, quality, timing, and distribution of water to ensure the restoration, preservation, and protection of the natural system as defined in section 601 of WRDA 2000, for so long as the project remains authorized. This quantity, quality, timing, and distribution of water shall meet applicable water quality standards and be consistent with the natural system restoration goals and purposes of CERP, as the Plan is defined in the Programmatic Regulations. The non-Federal sponsor will protect the water for the natural system by taking the following actions to achieve the overarching natural system objectives of the Plan:
>
> 1. Ensure, through appropriate and legally enforceable means under Florida law, that the quantity, quality, timing, and distribution of existing water that the Federal Government and the non-Federal sponsor have determined in this Project Implementation Report is available to the natural system, will be available at the time the Project Cooperation Agreement for the project is executed and will remain available for so long as the Project remains authorized.
>
> 2a. Prior to the execution of the Project Cooperation Agreement, reserve or allocate for the natural system the necessary amount of water that will be made available by the project that the Federal Government and the non-Federal sponsor have determined in this Project Implementation Report.
>
> 2b. After the Project Cooperation Agreement is signed and the project becomes operational, make such revisions under Florida law to this

reservation or allocation of water that the Federal Government and the non-Federal sponsor determines, as a result of changed circumstances or new information, is necessary for the natural system.

3. For so long as the Project remains authorized, notify and consult with the Secretary of the Army should any revision in the reservation of water or other legally enforceable means of protecting water be proposed by the non-Federal sponsor, so that the Federal Government can assure itself that the changed reservation or legally enforceable means of protecting water conform with the non-Federal sponsor's commitments under paragraphs 1 and 2. Any change to a reservation or allocation of water made available by the project shall require an amendment to the Project Cooperation Agreement."

SECTION 5: GUIDANCE MEMORANDUM #5
OPERATING MANUALS

5.1 PURPOSE

This Guidance Memorandum provides specific guidance for the preparation of Operating Manuals. Operating Manuals describe how CERP projects will be operated and are part of the framework for assuring that the benefits of the Plan are achieved. In general, project operations in natural areas are intended to mimic natural hydrologic events in the basin. In built areas, the operations are intended to provide water supply and flood control benefits as described in the PIR.

Section 385.28(a)(1) of the Programmatic Regulations requires that the USACE and the non-Federal sponsor; in consultation with the Department of the Interior, the EPA, the Department of Commerce, the Seminole Tribe of Florida, the Miccosukee Tribe of Indians of Florida, the FDEP, and other Federal, Tribal, State, and local agencies; develop Operating Manuals to ensure that the goals and purposes of the Plan are achieved. The Programmatic Regulations also state in section 385.28(a)(6) that the Operating Manuals will: comply with NEPA; describe regulation schedules, water control, and operating criteria for a project, group of projects, or the entire system; make provisions for the natural fluctuation of water made available in any given year and fluctuations necessary for the natural system as described in the Plan; be consistent with applicable water quality standards and applicable water quality permitting requirements; be consistent with the reservation or allocation of water for the natural system and the Savings Clause provisions described in the PIR and the PCA; reflect the operational criteria used in the identification of the appropriate quantity, timing, and distribution of water dedicated and managed for the natural system; include a drought contingency plan (DCP) that is consistent with the Seminole Tribe of Florida's Water Rights Compact; and include provisions authorizing temporary short term deviations. When implemented, the CERP SOM and POMs will replace the existing C&SF Project Water Control Plans, Master Water Control Manuals and regulation schedules.

5.2 APPLICABILITY

This Guidance Memorandum applies to all projects of CERP and, over time the SOM will incorporate and integrate many of the features of the C&SF project. The format and major elements of Operating Manuals should be similar for all project components implemented under the Plan. However, the content of the manual for each project will vary depending on the number and complexity of features in the project, as well as the complexity of interactions between the subject project, other projects within the Plan, and other existing C&SF Project features.

5.3 OPERATING MANUALS

As required by the Programmatic Regulations, Operating Manuals for CERP consist of a System Operating Manual (SOM) and Project Operating Manuals (POMs). The following

subsections provide a brief summary of the composition of the SOM and the POMs, along with the manual's relationship to existing USACE water control plans and Master Water Control Manuals (Master WCMs).

Water control plans include coordinated operating schedules for project/system regulation and such additional provisions as may be required to collect, analyze and disseminate basic data, prepare detailed operating instructions, assure project safety and carry out regulation of projects in an appropriate manner. Regulation schedule refers to a compilation of operating criteria, guidelines, rule curves and specifications that govern basically the storage and release functions of a reservoir. In general, schedules indicate limiting rates of reservoir releases required during various seasons of the year to meet all functional objectives of the particular project, acting separately or in combination with other projects in a system. Schedules are usually expressed in the form of graphs and tabulations, supplemented by concise specifications. Water control plans are developed for reservoirs, locks and dams, deregulation and major control structures and interrelated systems to conform to objectives and specific provisions of authorizing legislation and applicable USACE reports.

5.3.1 Project Operating Manuals

Each PIR developed under CERP will include a Draft POM as an annex to the PIR. As described in section 5.5 of this Guidance Memorandum, the Draft POM in the PIR will be updated and revised as necessary for subsequent phases of project implementation. Prior to the completion of project construction, the assumptions in the Draft POM will be reviewed and updated. The Draft POM will be revised as appropriate and promulgated as the Preliminary POM for use during the Operational Testing and Monitoring Phase. A Final POM will be completed for the long-term operations and maintenance phase of the project. The preliminary and Final POMs for a project will be developed in compliance with NEPA and in compliance with the Savings Clause of section 601 of WRDA 2000 (see Guidance Memorandum #3).

One main purpose of the POM is for day-to-day use in water resource management for essentially all foreseeable conditions affecting the project. The POM also documents how the project objectives were translated into operational rules, thereby providing guidance when unforeseen situations arise or conditions change. The POM should clearly describe what the intent of the operational rules is. The POMs will include water management related regulation schedules, detailed operating instructions and operating criteria developed to meet the project purposes, goals, objectives and benefits outlined in the PIR, including the quantity, timing and distribution of water for the natural system and other water-related needs. The POMs may also contain provisions, as required, to collect, analyze and disseminate basic data related to structure operations (e.g., headwater, tailwater, and stage). The POMs will also include instructions to ensure project safety and to carry out project operations in an appropriate manner.

The USACE and the non-Federal sponsor, in consultation with other Federal, State, tribal, and local governments, will jointly develop and approve the POMs. Within the USACE, approval authority for POMs rests with the USACE South Atlantic Division (SAD).

Development of POMs will be coordinated with SAD to ensure consistency with applicable regulations. Development of the POMs will be carried out in a public process in accordance with NEPA and other applicable laws and regulations. The POMs, along with other information included in the PIR, will provide information necessary to complete an application for water quality certification.

5.3.2 System Operating Manual

In general, the SOM will provide a system-wide plan for operation of the projects implemented under CERP, as well as for other existing features of the C&SF Project. The POMs are included in Volumes 2-7 of the SOM by providing the details necessary for integrating the operation of the individual project components with the system-wide operational framework described in Volume 1 of the SOM. The SOM will include the operating criteria of all of the approved POMs.

The Programmatic Regulations require that the SOM initially be based on the existing completed C&SF Project features and will be developed by the USACE and the SFWMD as laws and regulations require. Existing water control plans, regulation schedules, and Master Water Control Manuals (Master WCMs) for the C&SF Project will remain in effect until approval of the SOM. The SOM will follow the procedures for preparation of water control plans, regulation schedules and Master WCMs found in applicable USACE regulations. The SOM is envisioned to be comprised of seven volumes. Volume 1 will provide a system-wide operational framework for projects implemented under the Plan, as well as existing C&SF Project features. Volumes 2 through 7 will be organized by geographical region and will include an appendix containing each of the POMs for that region. The geographical volumes of the SOM will be revisions of the original Master WCMs previously developed for the C&SF Project. The entire SOM will be revised periodically to integrate changes and ensure optimum system-wide operations.

The POMs will be considered supplements and revisions to the SOM, and will present aspects of the projects that are not common to the system as a whole. As POMs for new projects are implemented, the POMs will be inserted into an appendix of the appropriate geographical volume of the SOM.

The USACE and the SFWMD, in consultation with other Federal, State, tribal, and local governments, will jointly develop and approve the SOM. Within the USACE, approval authority for the SOM rests with the USACE South Atlantic Division (SAD). Development of the SOM will be coordinated with SAD to ensure consistency with applicable regulations. Development of the SOM will be carried out in a public process in accordance with NEPA and other applicable laws and regulations. The SOM will also meet the requirements of the Savings Clause of section 601(h)(5) of WRDA 2000 and will contain documentation of the Savings Clause analyses.

5.4 GENERAL GUIDANCE FOR PREPARATION OF OPERATING MANUALS

This section provides general guidance related to development of operating manuals, particularly with regard to: 1) coordination and public review during development of the operating manuals; 2) ensuring consistency with other requirements of the Programmatic Regulations; and 3) providing sufficient operational flexibility within the operating manuals to accommodate the wide range of climatic and regional conditions that are frequently encountered within the existing water management system. Attachment 5-A provides detailed guidance related to the format and content for POMs and Attachment 5-B provides detailed guidance related to the format and content for the SOM.

5.4.1 Coordination and Public Review

The following discussion is provided to emphasize the importance of enhanced coordination between modelers, water managers, hydraulic designers and PDT members, as well as providing guidance for public review and input, throughout the development of the PIR and the POMs.

5.4.1.1 Coordination Between Modelers, Water Managers, Hydraulic Designers, and the Project Delivery Team

The general procedure in the planning process is to develop alternative plans that are intended to meet the project goals and objectives. These alternative plans are then evaluated and compared against one another to select the best alternative. This evaluation and comparison step often involves the use of hydrologic simulation models**.** One of the major factors that can affect project performance during simulation modeling is the operating criteria. In order for the planning process to result in practical and realistic project operations, it is imperative that the operating criteria used for simulation modeling are feasible in the real world, and that the simulation modeling adequately represents the project features and operations. Thus, the POM must provide "real world" operating criteria that is consistent with the assumptions from the original plan formulation and simulation modeling process. The operating rules that are described in the Project Operating Manual must translate the operational intent of the project necessary to achieve the benefits of the project. This can be challenging since the formulation and evaluation of the project is based on simulation modeling of an available period of record while the POM needs to describe the operating criteria and protocols that are based on current conditions.

To maintain consistency throughout the operational planning process, continued coordination and communication is required between the PDT, hydrologic simulation modelers, hydraulic designers and water managers. During the early stages of operating criteria development, the PDT should coordinate with modelers, designers, and water managers that are familiar with current and past operations in the basin. Coordination between the PDT and the modelers should be focused on ensuring that the modelers clearly understand the objectives of the project features articulated in the PIR and how the operations of each feature are intended to meet those objectives. With this information, the modelers will be able to conceptualize and

simulate the project features in a manner that is consistent with the objectives of the project and the operating criteria. This is an extremely important consideration, as the modeling process inevitably involves the use of simplifying assumptions. While these assumptions are necessary, the modelers must be aware of the intent of project features, as well as how the model output will be used to evaluate the performance of the project features.

Communication between the PDT and the water managers is also critical to ensure the feasibility of implementing the POM in real-time, real world conditions. There are frequently constraints on water levels and flow volumes within hydrologic basins that may affect the ability of operations to be carried out within that basin. Water managers are a knowledgeable resource for any real-world constraints that may apply to specific operations, and should be consulted throughout the development of the operating criteria and the POM.

The project managers must ensure that the intent and objectives of the entire project are well documented and that adequate communication regarding the intent of the operating criteria takes place between the PDT, modelers, designers, and water managers during plan formulation. In addition, documentation of how each project feature fits into meeting these objectives is necessary. Effective communication between all parties involved in planning and operating the project is the best assurance that project goals, objectives and desired benefits will be achieved in the most efficient manner possible.

5.4.1.2 Public Review Process

The public will be provided with an opportunity to review and comment on the Draft POM as part of the review process for the PIR as described in the Programmatic Regulations. Public involvement activities will also be implemented to inform and educate the public about updates and revisions to the POMs, and to allow opportunities for public review and comment whenever significant changes are made to the POMs.

5.4.2 Consistency with Requirements of the Programmatic Regulations

It is essential that the project be operated to deliver water as identified in the PIR during each phase of project implementation and operations described in section 5.5 of this Guidance Memorandum. In addition, the Programmatic Regulations also specifically include several provisions requiring consistency of the Operating Manuals with other factors, including: the reservation or allocation of water made available by the State as required by section 601 of WRDA 2000; Savings Clause provisions; changes made as a result of CERP updates; and water quality standards and water quality permitting. The following provides a brief discussion of these requirements.

5.4.2.1 Consistency with Guidance Memorandum #4 and Consistency with the Reservation or Allocation of Water made by the State Pursuant to Section 601 of WRDA 2000

In the PIR, the PDT is required to identify the water made available by the project and to identify the water to be reserved or allocated for the natural system following the process

outlined in Guidance Memorandum #4. The Draft POM will be developed using the Initial Operating Regime, described in Guidance Memorandum #1 and in Guidance Memorandum #4, and will include conceptual discussion of the operations necessary for the Next-Added Increment Condition. The Draft POM will also include a discussion on how to transition from the Initial Operating Regime to the operations expected as constraints in the IOR are lifted. The operational rules expressed in the Draft POM must show how they will be used to achieve the benefits of the project and the Plan. Similarly, the Preliminary POM and the Final POM will also contain this discussion on how to transition from the Initial Operating Regime to the operations expected as constraints in the IOR are lifted.

The Programmatic Regulations have a specific requirement that the POM must be consistent with the reservation or allocation of the water for the natural system that is made under State law (Guidance Memorandum #4).

Both the consistency with the identification of water made available in Guidance Memorandum #4 and consistency with the reservation or allocation of water made available to the natural system will be accomplished through close coordination between the PDT, modelers, and water managers during all four of the following closely related tasks in the PIR development: 1) development of operating criteria for the hydrologic simulation modeling to optimize the benefits of the selected alternative plan; 2) development of the Initial Operating Regime 3) development of the POM; and 4) identification of water made available by the project and the identification of water to be reserved or allocated for the natural system.

This coordination is graphically depicted in Figure 5-1. During the hydrologic simulation modeling of the selected alternative plan, the project operators and water managers will work with hydrologic modelers to develop operating criteria to be used in simulating operations of structural features of the selected alternative plan. The operating criteria from this model run will then be carried over and adapted for the preparation of the POM. The hydrologic modelers will work with project operators and water managers to ensure that the criteria and guidance in the Operating Manuals is a reasonable representation and captures the intent of the operating criteria used in the modeling and provides the intended benefits of the project.

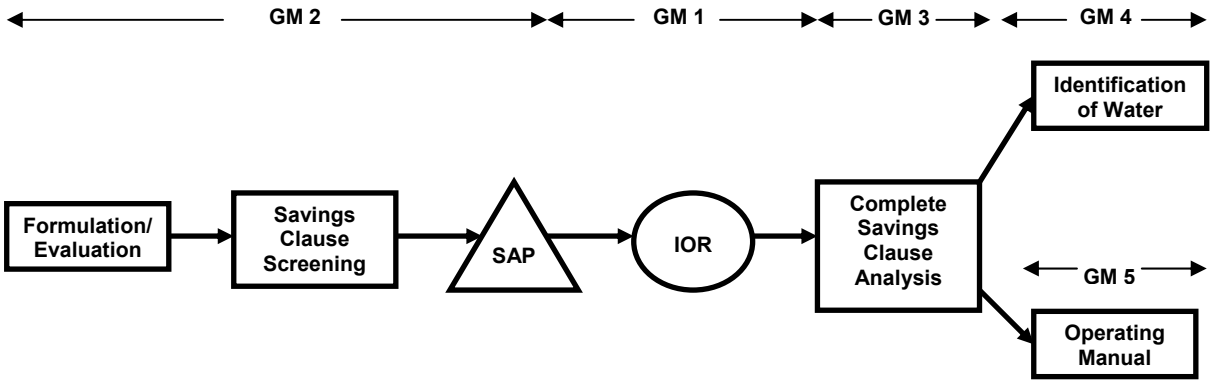


Figure 5-1: Relationship between Project Operating Manual and Other PIR Tasks

5.4.2.2 Savings Clause and State Assurances Provisions

The Programmatic Regulations also require that the POM be consistent with the Savings Clause requirements of WRDA-2000 to ensure that a new project resulting from implementation of the Plan does not: 1) eliminate or transfer existing legal sources of water until a new source of water supply of comparable quantity and quantity is available to replace the water to be lost as a result of implementing the project; 2) reduce levels of service for flood protection that are in existence on the date of enactment of WRDA-2000; or 3) have an effect on the rights of the Seminole Tribe of Florida under the compact among the Seminole Tribe of Florida, the State of Florida, and the SFWMD. This consistency will be maintained by ensuring that the operating criteria in the POM are based on the criteria used for hydrologic simulation modeling that was performed to verify conformance with Savings Clause provisions during development of the PIR. As the POM is updated or revised, analyses to determine if the project is causing an elimination or transfer of existing legal sources of water or a reduction in levels of service for flood protection will be conducted to ensure that project operations are in compliance with the provisions of the Savings Clause (see Guidance Memorandum #3).

In addition to the Savings Clause provisions, the POM must be consistent with the assurances provided in Chapter 373 of the Florida Statutes, for the project. These assurance are described in Attachment 4-B to Guidance Memoranda #4.

5.4.2.3 Consistency With Periodic CERP Updates

In accordance with the Programmatic Regulations, the USACE and the SFWMD are required to perform periodic CERP updates whenever necessary to ensure that the goals and purposes of the Plan are achieved, but not any less often than every five years. The periodic updates will provide one of the many means for determining if management actions are necessary to seek improvements in CERP based on new information resulting from changed or unforeseen circumstances, new scientific and technical information, new or updated modeling, information developed through the adaptive management and assessment principles contained in the Plan, and/or future authorized changes to the Plan. When necessary, changes to the POMs and SOM will be considered to incorporate new information identified during the CERP updates.

5.4.2.4 Water Quality Standards And Water Quality Permitting Requirements

In order to meet the requirements of section 601 of WRDA 2000 and the Florida Statutes, all CERP POMs must be consistent with applicable water quality standards. Therefore, POMs should provide sufficient information to demonstrate that proposed operations will be consistent with applicable water quality standards and will meet the requirements set forth in the State water quality certificate. Attachment 5-C provides some guidelines and examples for information to include in the POM related to water quality certification.

5.4.3 Relationship Between Operational Flexibility and Adaptive Management

Some level of operational flexibility must be incorporated into the POM in order to accommodate the wide range of climatic and regional conditions that are frequently encountered within the existing water management system. This operational flexibility is necessary to allow water managers to better meet project goals, objectives and desired benefits of the project while still providing for flood control and other C&SF Project purposes. A simple example of operational flexibility is provided by spillways that could have a high range and a low range of headwater stages that could be used depending on field conditions. Another more extreme example of operational flexibility is illustrated by the range of allowable discharges in the Decision Trees of the Lake Okeechobee Water Storage and Environmental (WSE) regulation schedule adopted in 2000 (Attachment 5-D).

As discussed in Guidance Memorandum #6, adaptive management is an on-going refinement process that is an integral part of the effort to provide continuous improvement of CERP. Once the Final POM is implemented during the Long-term Operations and Maintenance Phase of the project, monitoring and assessment of project performance, as well as the system-wide performance of the Plan, may reveal opportunities or unforeseen problems related to the project that may be outside the scope of the POM. These scenarios will be addressed using the adaptive management protocols described in Guidance Memorandum #6.

The adaptive management process may result in modifications to water management operations in the POM. If the operational modification recommended by the adaptive management process falls within the established ranges of the POMs operational flexibility, then the adaptive management recommendation may be implemented without revising the POM. However, if the adaptive management recommendation falls outside the scope of the POM, then additional analysis, formal agency coordination and public review, and/or a temporary deviation approved as set forth in Attachment 5-A, section III, subsection 13, "Deviation from Normal Operating Criteria" would likely be required to revise or deviate from the operating criteria in the POM.

5.5 PHASING OF PROJECT OPERATING MANUALS

Development of POM will involve an iterative process that will continue throughout the life of the project, as illustrated by Figure 5-2. The Draft POM will include operating criteria based on the IOR and will generally discuss the transitions to operations during, construction, the Operational Testing and Monitoring Phase, and the Long-term Operations and Maintenance Phase. Refinements to the operating criteria will be made as more design details, data, operational experience and information is gained during these phases. A Preliminary POM will be prepared and approved for the Operational Testing and Monitoring Phase. This will be followed by a Final POM that will be prepared and approved for the Long-term Operations and Maintenance phase. After the Final POM is completed and the Long-term Operations and Maintenance Phase is underway, the Final POM and the SOM will continue to be revised based on additional scientific information, new CERP or non-CERP activities being implemented, and new CERP updates.

As updates and revisions are made to the SOM, individual revised pages will be clearly identified with the date of the latest revision. As a POM is revised, each previous iteration of the manual will be archived to provide historical continuity for project operations.

As shown by Figure 5-2, the anticipated points of update and revisions to the POM are as follows:

- Draft POM for the PIR/EIS
- Preliminary POM during Operational Testing and Monitoring Phase
- Final POM
- Revisions to the Final POM and SOM during the Long-Term Operations and Maintenance Phase

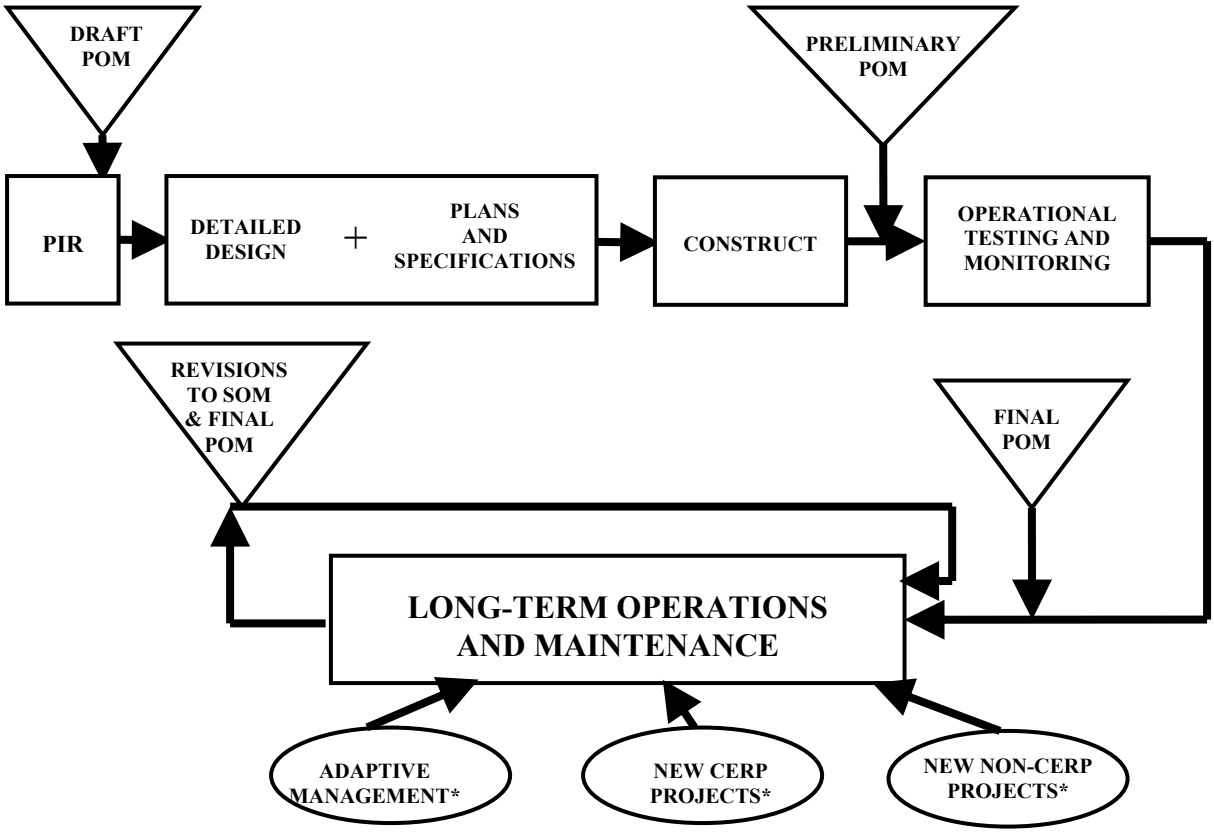


Figure 5-2 Phasing of the Project Operating Manual

5.5.1 Draft POM for Inclusion in the PIR

Initially, a Draft POM will be developed during the PIR phase of the project. This Draft POM will be consistent with, and part of, the NEPA documentation and will be included as an annex to the PIR. Water management operations in the Draft POM will consider operations of existing or planned projects with approved operating plans, including both CERP and non-CERP activities, that may influence operations of the subject project. This may include projects or project features that are upstream, downstream or in the vicinity of the subject project, and operations to be used during construction. The Draft POM will include operating criteria that are applicable for the construction phase and the Operational Testing and Monitoring Phase. The operational rules expressed in the Draft POM must show how they will be used to achieve the benefits of the project and the Plan. The Draft POM will be based on the Initial Operating Regime (IOR).

The construction phase operations portion of the Draft POM will focus on facilitating construction of the project components while maintaining established levels of project purposes, such as water supply, flood protection, and any required delivery of water to the natural system. Defining operating criteria to be used during construction will require consideration of issues that are unique to the construction phase such as real estate issues, construction schedules, contract sequencing, temporary by-pass canals, and dewatering activities. During the design Phase, the Draft POM may need to be updated as a result of updated information or changes to the project. Some of these POM modifications may result from value engineering analyses conducted during the design phase. During the construction phase, the Draft POM may need to be updated based on detailed design information and operational experience gained during the construction phase.

5.5.2 Preliminary POM

The Preliminary POM will be used for operations during the Operational Testing and Monitoring Phase (OTMP), which is the time period between completion of physical construction and the final acceptance and transfer of the project or project feature to the non-Federal sponsor and the assumption of operation and maintenance of the project or project feature by the non-Federal sponsor. The purpose of the OTMP is to verify that the project features perform as designed prior to transferring the project to the non-Federal sponsor. The time period for the OTMP will be defined in the PCA. Analyses to determine if the project is causing an elimination or transfer of existing legal sources of water or a reduction in levels of service for flood protection will be conducted to ensure that OTMP operations are in compliance with the provisions of the Savings Clause. When approved, the Preliminary POM will be added to the appropriate volume of the SOM.

5.5.3 Final POM

Following completion of the OTMP, the Final POM will be prepared. The Final POM will consolidate the incremental refinements recommended during the previous phases and will describe water management regulation schedules and operating criteria for use by the non-Federal sponsor for the long-term operation of the project component. Analyses to determine if the project is causing an elimination or transfer of existing legal sources of water or a reduction in levels of service for flood protection will be conducted to ensure that project

operations are in compliance with the provisions of the Savings Clause. This Final POM will supersede all other iterations of the POM. At this point, the project or project feature will be transferred to the non-Federal sponsor and operation and maintenance assumed by the non-Federal sponsor. The Operation and Maintenance (O&M) Manual, a separate and distinct requirement from the POM that establishes the policy for the long-term maintenance of flood control and related structures, will also be completed at this time. The O&M Manual will contain pertinent information for the safe and efficient use of the physical infrastructure of the project, and maintenance of the project's structural, mechanical and electrical systems.

5.5.4 Updating the Final POM

After the Final POM is approved and long-term project operations are underway, it is likely that the POM will need to be updated or modified over time. This may result from implementation of new CERP project components, implementation of new non-CERP activities, changes resulting from recommendations made through the adaptive management and assessment process outlined in Guidance Memorandum #6 or changes made through CERP updates. All revisions to the POMs and SOM will be completed in accordance with the process outlined in the Programmatic Regulations and applicable USACE regulations, consistent with applicable NEPA requirements. These regulations include ER 1110-2-240 Water Control Management (also published in 33 CFR 222.5); Engineering Manual (EM) 1110-2-3600 Management of Water Control Systems; ER 1110-2-8156, Preparation of Water Control Manuals; and Engineering Technical Letter (ETL) 1110-2-335 Development of Drought Contingency Plans.

It is anticipated that in some cases, a new CERP project and POM will result in a need to change operating criteria and/or update a Final POM for an existing project. In that circumstance, the NEPA requirements for the change to the existing POM may have been fulfilled during the NEPA coordination for the new PIR. If not, then additional NEPA documentation and public involvement may be required. Analyses to determine if the project is causing an elimination or transfer of existing legal sources of water or a reduction in levels of service for flood protection will be conducted to ensure that project operations are in compliance with the provisions of the Savings Clause. The POM for the existing project will be revised, as necessary, and will replace the old POM. This revised POM will also replace the old version of the POM in the appropriate geographical volume of the SOM. Furthermore, if the modifications to the existing POM will influence system-wide operations, then Volume 1 of the SOM will be updated to reflect these changes, including the rationale for the modifications and a description of any interactions between project features.

5.6 DEVELOPMENT OF THE SYSTEM OPERATING MANUAL

During the development of the original USACE Master WCMs for the C&SF Project (ER 1110-2-8156-Preparation of Water Control Manuals), the south Florida hydrologic system was divided into five interconnected geographical regions. The SOM will replace this existing set of Master WCMs. The SOM provides an integrated system-wide framework for operating the implemented projects of CERP as well as the existing C&SF Project. The complete SOM will provide explicit guidance and operating criteria for the operational

interactions between the system's geographically related regions. Attachment 5-B provides more detailed information on the format and content of the SOM.

5.6.1 Composition of the System Operating Manual

The SOM will consist of seven volumes, six of which (Volumes 2 through 7) are comprised of the geographically related regions within the original C&SF Project. The overall system framework of the SOM will be contained in Volume 1, which will provide a system-wide operating plan for the implemented projects of the Plan and the C&SF Project features. Generally, Volumes 2 through 7 will retain the original format of the Master WCMs for the existing C&SF Project, with a few modifications to accommodate the CERP POMs. The format of Volume 1 will be modified to provide the framework for system-wide operations.

The information from the existing C&SF Project Master WCMs will be utilized and modified as necessary for the appropriate volumes of the SOM. A new volume, entitled "Southwest Florida", a region not covered in the original Master WCMs, will be added as Volume 7. The C&SF Project "Authorities and Responsibilities (A&R) Manual" (the original Volume 1) will be incorporated into the new Volume 1 of the SOM. The "Discretionary Changes" chapter of the A&R Manual, which describes historical modifications to the C&SF Project, will be moved to Appendix A of the new Volume 1 for reference purposes. The new volume 1 will include language that captures the system-wide intent of the CERP, the role of RECOVER in evaluating the system-wide benefits and guidance on the periodic efforts to conduct a system-wide analysis to ensure continuing optimum performance of existing capability.

All approved water control plans, POMs, and/or operating criteria for C&SF Project structures will be found in the appropriate geographical volume (Volumes 2 through 7) of the SOM. Any modifications resulting from implementation of a new POM that are relevant to system-wide operations will be incorporated into the appropriate SOM volume. The existing C&SF Project structure descriptions and rating curves appendix, formerly found in Appendix A of the Master WCMs, will be located in Appendix A of Volumes 2 through 7 of the SOM. This appendix will be modified, and/or new descriptions added, as each new POM is implemented.

Each CERP Preliminary and Final POM will be inserted into Appendix B of the appropriate SOM volume as a supplement and will be referenced in the front of the SOM in a "History of Revisions" table that will be updated as each POM is completed. The table will provide the location of the POM within the SOM, the date the POM was completed, and the location of the structure descriptions and rating curves.

To summarize, the SOM will consist of the following volumes:

- Volume 1: System Operating Manual–System-wide
- Volume 2: System Operating Manual–Kissimmee River–Lake Istokpoga Basin
- Volume 3: System Operating Manual–Lake Okeechobee and Everglades Agricultural Area

- Volume 4: System Operating Manual–Water Conservation Areas, Everglades National Park, and ENP–South Dade Conveyance System
- Volume 5: System Operating Manual–East Coast Canals
- Volume 6: System Operating Manual–Upper St. Johns River Basin
- Volume 7: System Operating Manual–Southwest Florida

For clarification, Table 5-1 describes the old and new nomenclature for the 7 Volumes of the SOM.

Table 5-1: Old/New Nomenclature for the Seven Volumes of the SOM

VOLUME	OLD	NEW
1	Authorities and Responsibilities	System-wide
2	Kissimmee River–Lake Istokpoga Basin	Same
3	Lake Okeechobee and Everglades Agricultural Area	Same
4	Water Conservation Areas, Everglades National Park, and ENP-South Dade Conveyance System	Same
5	East Coast Canals	Same
6	Upper St. Johns River Basin	Same
7	None	Southwest Florida

5.6.2 Updates to the System Operating Manual

As discussed previously, each POM will be incorporated into the System Operating Manual. As the POMs are incorporated into the SOM, other sections of the SOM may need to be revised to ensure that the operations of all projects are integrated and consistent and that the system is operated to achieve the benefits of the Plan. The revision process must follow the requirements of the Programmatic Regulations.

ATTACHMENT 5-A
FORMAT AND CONTENT OF PROJECT OPERATING MANUALS

This attachment provides guidance related to the format and content of POMs for CERP projects. In general, the POM should include descriptions and operating criteria for all structures that are part of the CERP project, such as gravity structures, pump stations, diversion, or ASR facilities. The POM should also consider and discuss foreseeable operations of other water resource projects that are hydrologically connected, but are not integrated components of the subject CERP project. The following provides more detailed instructions on format and content for the POMs.

I. Format of Project Operating Manuals

This section describes the general format for POMs. Some topic headings listed in this section may not be utilized in all phases of the POM. Topic headings may be included as placeholders in early Draft POMs for use in future iterations. Additionally, use of topic headings may vary depending upon the number and complexity of project features covered by the POM, as well as interactions with other C&SF Project features and other CERP features.

The "Table of Contents" in section II and the "Guidance on Content for Project Operating Manuals" in section III provide an easy to follow guide for preparation of POMs. These two sections should be used by the PDT as a checklist of relevant issues/items to be addressed in the Draft POM for the PIR.

A. General

The following items provide a summary of general formatting guidance for POMs:

- Manual covers will be color coded by basin.
- All completed versions of the POMs should have a spine labeled with the project name.
- Pages in the manuals should be dimensioned 8-1/2 by 11 inches and loosely bound with cover stock.
- Every page should include a page number and a date showing the most recent revision date.
- Individual revised pages will be clearly identified with the date of revision.

B. Editorial Guidance

The following guidance should be followed when developing the POM:

- Use of the term "regulation" should be used carefully because the term has multiple meanings. For example, "regulation" can mean either: (1) water control procedures and decisions that normally are determined by regulating engineers (hydrologic or hydraulic), or (2) legal rules, agreements, or contracts;

e.g., section 7 of Flood Control or Navigation Regulations, ER 1110-2-240, water supply contracts, and ruling of interstate compacts.

- Use of the term "operation" should be restricted to physical manipulation of spillway gates, outlet works, or instrumentation associated with projects.
- Use of the term "operator" refers to the individual who has the responsibility for the physical "operation" of the project.
- Use of the term "water manager" refers to the individual who prepares the successive phases of the POM, and participates in the development of the PIR and the translation of modeling results to real-world operating criteria.

C. Tables and Plates

- Disperse tables that are one page or less in size throughout the text. Include all tables that are over one page in the "Tables" section following the text to facilitate narrative continuity within the text. Although these tables are located separately, the table numbering system in the text should include both sets of tables–those in the Tables section and those dispersed throughout the text. Page numbering for the section on tables would be the same as numbering chapters except page numbers would be preceded by a "T." Reference to a table would read as follows," … shown in Table 1-2 (see page T1-1)", and in the List of Tables as:

Table		Page
1-1	_____	1-2
1-2	_____	T1-1
1-3	_____	1-4

- Include tables showing elevation versus area and elevation versus capacity in increments of one foot or less. These tables should cover elevation ranges e.g. from the bottom of the lake, storage area and impoundment to maximum pool.
- Plate and table numbers should correspond to chapter numbers where first referenced. Example: Plate 1-1, 1-2, 1-3, 2-1, 2-2.
- Title block on plates should be easily readable when the manual is opened, with the preferred location in the lower right-hand corner.
- Scales used on plates should be divided into units of one, two, five or multiples of ten per inch. The scale selected should be easy to read and usable for actual operations.

II. Example Table of Contents (Subject to Project Needs)

15	Seepage Control
16	Initial Reservoir/Storage/Treatment Area Filling Plan
17	Non-typical Operations for Reservoir/Storage/Treatment Area Performance
18	ASR System Plan
19	Water Control Data Acquisition System Plan
20	Consistency with the Adaptive Management Program and Periodic CERP Updates
21	Interim Operations During Construction
22	Interim Operations During Operational Testing and Monitoring
23	Conceptual Description of Project Operations for Transition from the Initial Operating Regime to the Next- Added Increment Condition

NOTE: The sections below that follow the main text of the document will be preceded by individual title pages:

- Tables
- Figures
- Plates/Operational Schematics
- Exhibits:
  - Structure Descriptions and Rating Curves
  - Formal Agreements
  - Water Control Data Acquisition System Plan
  - Standing Instructions to Project Operators
  - Other (e.g. supplementary pertinent data)

III. Guidance on Content for Project Operating Manuals

The content of the POMs may vary depending upon the number and complexity of project features covered by the POM, as well as interactions with other C&SF Project features and other CERP features. Most POMs will include the topic headings shown in section II Example Table of Contents. Paragraphs may be further subdivided when necessary. For example, subdivision may be necessary to accommodate larger projects, projects with multiple features, or projects that impact or affect adjacent projects that may also require some explanation. In addition, examples of site layouts and operational schematics can be found in Attachment 5-D.

The following provides guidance regarding the content for each of the paragraphs shown in Section II Example Table of Contents.

i. **Title Page**
ii. **Notice to Users of Manual**
iii. **Emergency Regulation Assistance Procedures**
iv. **Table of Contents**
v. **Pertinent Data.** The pertinent data included in this paragraph should be limited to approximately one page. If necessary, additional information relating to water

management may be tabulated in an exhibit following the main text of the document. Restrict information included here as follows:

- Location (state, county, river/canal, and river/canal mile).
- Drainage area upstream of the project and the uncontrolled areas above any major control points downstream.
- Site layout and schematic of project features. Examples of operational schematics and figures are located in Attachment 5-D.
- Type, length, height, crest elevation, top width of dam, dikes, and tidal barriers; type and size of all discharge facilities; spillway, pump stations, outlet works, water supply pipes, and navigation locks.
- Real estate guide taking lines by fee and easement. (Optional for Draft POM.)
- Pertinent elevations with corresponding reservoir/storage area surface areas, incremental and cumulative storage and discharge capacities of spillway and outlet works for maximum pool, top induced surcharge, top flood control pool, top conservation pool, top inactive pool, invert lowest intake, and streambed/canal bottom. Also indicate the volumes of sediment reserve, dead storage, and the range of any seasonal joint use, when applicable.

1. Introduction

This paragraph should include a very brief introduction to the POM which may include, but is not limited to, the following:

- A statement that the main purpose of this POM is for day-to-day use in water management for essentially all foreseeable conditions affecting the [INCLUDE PROJECT OR PROJECT FEATURE NAME OR DESCRIPTION].
- A statement identifying project phase that this POM will cover (e.g., PIR/EIS Phase, Construction Phase, and OTMP, or Long-Term Operations and Maintenance Phase).
- A statement that there is a possibility that modifications and/or revisions to the POM may occur during the remaining project phases.

2. General Project Purposes, Goals, Objectives and Benefits

This paragraph should include a summary of the project purposes, goals, objectives, and benefits described in the PIR and should describe, in general terms, how the Draft POM is designed to meet project purposes as stated in the PIR. This paragraph should also include a statement that the project will be operated in accordance with the POM to achieve the goals, purposes and benefits outlined in the PIR, including the quantity, timing and distribution of water for the natural system and other water-related needs identified through the process outlined in Guidance Memorandum #4.

3. Project Features

- Existing Features. Provide a brief description of existing project features by basin, including water control structures, reservoirs, canals, stormwater treatment areas (STAs), and a brief description of each feature's purpose and role in meeting the project purposes and achieving project benefits.
- Proposed Features. Provide a brief description of the proposed features of the selected alternative plan including location, water control structures, reservoirs,

canals, and STAs, with a brief description of each feature's function in meeting the project purposes and achieving project benefits.

- Removed Features. Describe any existing project features that will be or have been removed or altered due to the new project, along with a brief explanation of the reason that the operational function of this feature is no longer needed and/or how this operational function will be provided by another project feature or operational change, if applicable.

4. Project Relationships

As new CERP and non-CERP activities are implemented, POMs for existing C&SF or CERP project features may need to be modified or revised. This paragraph should describe how the new project features and/or operating criteria change, impact, link, or interact with the existing features. If this new POM results in operational modifications to other existing CERP or C&SF Project features, the POMs for the existing project features will be revised and the revised POMs will supersede the previous version of the POMs.

5. Major Constraints

Identify constraints related to the movement, storage, and/or utilization of the water resource. List and explain constraints imposed by existing projects, anticipated constraints from project components currently underway but not yet completed, and anticipated constraints from future CERP projects. Describe physical constraints including unremediated malfunctions; gate change limitations; structural and hydraulic design limitations; discharge constraints associated with inoperative gates; low pool level; ASR system intake and water supply; outlet limitations; reservoir/storage area limitations associated with high pool levels such as backwater into upstream structures, water quality concerns during initial filling and refilling of storage/treatment areas, leaks in levees, embankment boils, and required movement of facilities. This paragraph should also identify any potential legal, political, and social conflicts with project operations, as well as any major conflicts between purposes that could influence operations.

6. Standing Instructions to Project Operators

Briefly describe existing and proposed regulations for the project operators during normal conditions, during communication outages, unforeseen emergency events requiring deviations from prevailing regulation schedules, and spillway/outlet works restrictions.

7. Operational Strategy to Meet Project Objectives

In general terms, briefly describe existing and proposed regulations and/or operational strategies of project features to meet the goals, objectives, and benefits in the PIR as described in Paragraph 2 (General Project Purposes, Goals, Objectives, and Benefits), which include restoration, preservation, and protection of the South Florida ecosystem, while providing for the other water-related needs of the region and meeting the requirements for protection of health and public safety. Include project component interaction with other project components from a system-wide

perspective. Briefly explain how the project component would be operated to meet the quantity, timing, and distribution of water for the natural system and other water-related needs identified through the process outlined in Guidance Memorandum #4. Provide a brief explanation of the relationship of the Draft POM to the project's phases as outlined in the PIR, the implementation schedules for projects currently underway but not yet completed, and implementation schedules for future CERP projects that may influence operations of the subject project component. Include a summary of how the assumptions used in the development of the hydrologic simulation model have been translated into operational rules to fulfill the project's purposes, goals, objectives, and benefits.

a.) **Achieving Natural System Goals, Objectives, and Benefits.** State the primary ecological objectives for the project features as outlined in the PIR, with a description of operational criteria that are designed to meet those primary ecological objectives. Operating criteria for the natural system must be designed to achieve the environmental performance and benefits described in the Plan while maintaining other water related needs. Operational criteria should be consistent with water reservations or allocations and where applicable, should include specific environmental operations such as marsh-driven, estuarine salinity targets, or rain-driven operations, all of which are intended to avoid unintended harmful impacts to the natural system. Operating criteria should include descriptions concerning operational intent and explain how the operational rules were developed to meet desired objectives. These objectives should seek to mimic the natural hydrology of the receiving basin as much as possible. Included should be a detailed description of the hydrologic targets, the predictive tools used to estimate the targets, and discussions of operational flexibility. See Figure 5-D-9 in Attachment 5-D for an example of predictive tools graphics. It should be noted in the Project Operating Manual that the predictive tools graphics are planning tools used to estimate the performance of the project and are based on the best available science, hydrologic analyses and on historical meteorological conditions. Actual meteorological conditions may vary from historical. Although operating criteria for the natural system will be developed to achieve the predicted performance of the project, these predictions may not be accurate in all cases. Project performance will be monitored and adaptive management utilized to refine project operations and performance as necessary to achieve expected benefits. Water managers should be provided operational flexibility in meeting environmental targets based on the water available and inherent system constraints. The Project Operating Manual should contain a discussion of operational intent including this operational flexibility.

b) **Flood Damage Reduction.**

i) Normal and Emergency Operations. Describe any flood damage reduction operating criteria for project phases that require flood damage reduction operations, including rule curves, triggers, water surface elevations, and minimum flows. Include normal and emergency regulations. This discussion

should briefly address the following: an explanation of existing and proposed operating criteria; release scheduling procedures during flood emergency; computer applications; role of the USACE; relative emphasis upon controlling peak outflow or pool level and backwater; use of seasonal or joint use storage; regulation with respect to storage zones including surcharge; use of streamflow predictions; forecasting total flow downstream; reference to exhibits (Standard Design Flood [SDF], Standard Project Flood [SPF], maximum flood of record, other); special concerns for safety. This paragraph should also reference a release schedule or water management diagram (this should be a table or plate, see EM 1110-2-3600). This paragraph should also provide transitional operations, as necessary, for existing features that are affected by new features coming on-line. Include a summary of how the assumptions used in the development of the hydrologic simulation model have been translated into operational rules relative to flood damage reduction, the project area, and areas of concern adjacent to the project area.

ii) **Hurricane or Tropical Storm Operations.** State the agency/organization that is responsible for operations at project water management structures prior to, during, and after a hurricane or tropical storm. Provide a detailed explanation of operating criteria to be followed before and during hurricanes or tropical storms, if different from typical operating criteria. Include a procedure for using weather forecasting and National Weather Service broadcasts to determine the timing for implementation of hurricane or tropical storm procedures. Reference the Emergency Action Plan for the project, including the State procedure for interrupted communications, and the procedure for informing local emergency management offices, if necessary.

iii) **Storage Area Weir Discharge.** Provide a general listing of conditions that may cause reservoir/storage area emergency overflow weir discharge. Include a detailed explanation of operating criteria to be followed at project features when weir discharge is occurring due to exceedance of storage capacity at reservoir/storage area.

iv) **Uncontrolled Discharge.** Provide a brief description and design capacity for structures designed for uncontrolled discharge, including emergency overflow spillways and uncontrolled weirs and culverts.

c) **Water Quality**. P.L. 92-500 requires that all Federal facilities be managed, operated, and maintained to protect and enhance the quality of water and land resources through conformance with applicable Federal, State, Interstate, and local substantive standards. Where specific water quality benefits of a project have been identified, this paragraph should include specific operating criteria that are to be used to achieve those benefits. If no specific water quality benefits are identified, this paragraph should include information on specific operating criteria that are to be used continuously or periodically to ensure project compliance with applicable Federal/State water quality standards. Appropriate staff, in conjunction with water managers, should coordinate as necessary with FDEP and other

appropriate agencies to ensure that the project will comply with applicable water quality standards or CERP water quality certifications and permits during all phases of the project, including unique water quality concerns during the construction phase.

d) **Water Supply Operations.** Describe operating criteria to be used to provide releases to a canal or stream or withdrawal from a reservoir or storage area for municipal/industrial/irrigation usage and/or resource protection; reference contract(s), low flow requirements, fish and wildlife, water rights, roles of the USACE and the non-Federal sponsor; short-term release scheduling; long-range release planning, storage utilization (seasonal commingled, joint use). Show storage accounting method for more than one use of conservation storage. Reference and discuss example regulation exhibit. Include a summary of how the assumptions used in the development of the hydrologic simulation model have been translated into operational rules relative to water supply deliveries and storage within the project area and beyond the project area.

e) **Recreation.** Identify any special release or operating criteria for recreational activities such as fishing tournaments and competitive boating. Provide a list of passive recreation that is anticipated to result from operation of project's reservoir or storage area, if applicable. Project operations to enhance recreational activities must be consistent with the purposes of the project.

f) **Fish and Wildlife.** Where applicable, describe any special operating criteria necessary to accomplish specific fish and wildlife objectives that are in addition to the natural system goals, objectives, and benefits of the project, such as fish spawning, waterfowl, and endangered species.

g) **Navigation.** Release scheduling, accomplishment in general, lock filling and emptying procedure, aids to navigation, reference and discuss example regulation exhibit, integration with other projects.

h) **Other.** Where applicable, identify any special operating criteria necessary to address other conditions and concerns such as: health and welfare, mosquito control, aquatic plant management, debris control, low flow, freeze protection, special or emergency drawdown, upstream/downstream/adjacent ground water table, releases to aid construction upstream/downstream/adjacent, toxic and hazardous material spills.

8. Pre-Storm/Storm Operations

This paragraph should outline the concept of pre-storm operations such as canal or reservoir/storage area drawdown as it applies to project objectives. Provide an explanation of operating criteria related to pre-storm and storm operations, including rule curves, triggers, water surface elevations, and minimum flows to allow transfer of canal water to reservoir/storage areas. Pre-storm operations should seek to avoid negative impacts to the natural system and minimize negative impacts when they are

unavoidable. Provide discussion about how impacts to project purposes will be considered in the decision to begin pre-storm drawdowns. This paragraph should reference or describe procedures for using weather forecasting and National Weather Service broadcasts, as necessary, to determine the timing for implementation of pre-storm/storm operations. Include detailed operating criteria for pre-storm/storm operations during the iterative phases of the project as necessary: Construction Phase, OTMP, and Long-Term Operations Phase.

9. Consistency with the Identification of Water and Reservations or Allocations of Water for the Natural System

In the PIR, the PDT is required to identify the appropriate quantity, timing, and distribution of water for the natural system and other water-related needs in accordance with the process outlined in Guidance Memorandum #4. This paragraph should include a statement that the operating criteria within the POM are consistent with the operating criteria used to identify the water made available for the natural system during wet, average, and dry periods (reference the "Project Assurances" section of the PIR). This paragraph should also specifically state that the operating criteria are consistent with the water reservations or allocations for the natural system made by the State in accordance with section 601 of WRDA 2000.

10. Consistency with Savings Clause and State Assurances Provisions

The operating criteria within the POM will be consistent with those used for evaluating conformance with the Savings Clause during development of the PIR. Describe any special operating criteria that are necessary to fulfill the Savings Clause Provisions in accordance with the PIR. In addition, the operating criteria within the POM will be consistent with those used for evaluating conformance with State assurances provisions during development of the PIR

11. Drought Contingency Plan

Unless a project requires an individual DCP, the general regional DCPs located in Volumes 2 through 7 of the SOM should be utilized. If a general regional DCP is used, this paragraph should reference that specific regional DCP and volume of the SOM.. In addition, the Rules of the SFWMD Water Shortage Plan will be located with the DCP. This paragraph should include discussion on the relationship among the DCP, MFLs, regulation schedule floors, and reservations or allocations of water for the natural system and should include the process for how operations will be determined during drought.

12. Flood Emergency Action Plan

Descriptions, completion dates, and physical location of plans (can be attached as an exhibit in the POM or be a stand-alone document) if properly referenced in the POM.

13. Deviation From Normal Operating Criteria

This paragraph should describe approval and notification procedures required when deviations from the POM are necessary. The USACE District Commander is occasionally requested by the non-Federal sponsor to approve deviations from normal

operating criteria. Prior approval for a deviation is required from USACE-SAD except as noted in subparagraph "a" below. Deviation requests usually fall into the following categories:

a) **Emergencies.** Examples of emergencies that may result in a need to deviate from normal operating criteria include: drowning and other accidents; failure of the operation facilities; chemical spills; treatment plant failures; and other temporary pollution problems. Water control actions necessary to abate the problem should be implemented immediately unless such action would create equal or worse conditions. SAD must be informed of the problem and the emergency operating changes as soon as practicable. In addition, the non-Federal sponsor, the State of Florida (FDEP and SFWMD), and the Department of the Interior should be informed.

b) **Unplanned Minor Deviations.** There are unplanned instances that create a temporary need for minor deviations from the normal operating criteria, although these deviations are not considered emergencies. Construction accounts for the major portion of these incidents requiring minor deviations. Examples of activities that may require short-term deviations include construction of utility stream/canal crossings and bridge work. Deviations are also sometimes necessary to carry out maintenance and inspection of facilities. Requests for changes in release rates generally involve time periods ranging from a few hours to a few days. Each request should be analyzed on its own merits. In evaluating the proposed deviation, consideration must be given to upstream watershed conditions, potential flood threat, existing condition of the reservoir/storage area, and alternative measures that can be taken. In the interest of maintaining good public relations, requests for minor deviations are generally granted, providing that these deviations will not have adverse effects on the ability of the project (or projects) to achieve the authorized purposes. Approval for these minor deviations normally will be obtained from SAD by telephone. Written confirmation explaining the deviation and the cause will be furnished to the SAD water control manager. In addition, the non-Federal sponsor, the State of Florida (FDEP and SFWMD), and the Department of the Interior should be informed.

c) **Planned Deviations.** Each circumstance should be analyzed on its own merits. Sufficient data on flood potential, lake and watershed conditions, possible alternative measures, benefits to be expected, and probable effects on other authorized and useful purposes, together with the USACE district recommendation, will be presented by memorandum, facsimile, or electronic mail to the USACE-SAD for review and approval. In addition, the non-Federal sponsor, the State of Florida (FDEP and SFWMD), and the Department of the Interior should be consulted as part of the process of receiving approval from SAD for the deviation.

14. Rate of Release Change

This paragraph should provide the normal allowable rate of increase and decrease in releases from the project features covered by the subject POM. The rate of release change for the natural system should be designed to replicate the natural hydrologic change in the receiving basin to the extent possible.

15. Seepage Control

Provide a detailed explanation of operating criteria to be used during operation of project features for seepage control and marsh driven operations. Include conditions when operation of features for seepage control is not beneficial, such as when a reservoir or storage area is at design capacity, from beneficial seepage operations such as returning seepage water to natural areas or seepage to recharge well-fields. This discussion should include detailed operating criteria, as appropriate, for seepage control and marsh driven operations during the iterative phases of the project: Construction Phase, OTMP, and Long-Term Operations and Maintenance Phase.

16. Initial Reservoir/Storage/Treatment Area Filling Plan

Briefly describe the initial filling plan for projects involving reservoirs, impoundments, natural storage and treatment areas, and/or stormwater treatment areas (STAs). Include information on the preferred filling rate, the available options to control the filling rate, the consequences of sole purpose operation to control the rate, water quality requirements for the initial filling, and the most probable types of problems that might develop during the initial filling. Reference any documents prepared for the testing and/or initial use of project water management structures and equipment. Describe the proposed hydrologic data collection and transmission system and the plans for reading and evaluating instrument data and making visual inspections of the dam and downstream areas, both related to increments of pool level. Also describe which agency/organization will be responsible for decisions and implementation of emergency plans as necessary. Outline guidelines on conditions requiring notification of personnel in that organization and implementation of emergency plans. The final version of this paragraph will be completed before the OTMP of the project.

17. Non-Typical Operations for Reservoir/Storage/Treatment Area Performance

Describe any procedures and changes in operating criteria to be used for minimizing or avoiding dryout during a drought. Describe anticipated operations during routine maintenance or during situations where portions of the project are offline or out of service. Identify storage/treatment area refilling plan to be used following drought or offline operations. Refer to paragraph 16, Initial Reservoir/Storage/Treatment Area Filling Plan, if the refill operations are similar.

18. Aquifer Storage and Recovery System Plan

This paragraph should provide a description of how the project's water management structures will be integrated with ASR System capabilities. The paragraph should provide a general description of the ASR System, including the objectives, components, storage capacity, and pumping and discharge capabilities. The paragraph should also include a detailed explanation of typical operating criteria, as well as changes in operating criteria that may result from use of weather forecasts, for the

water management structures as the structures relate to management of water provided by and utilized by the ASR System. This discussion may include operating criteria for seasonal water storage to meet peak demands, long-term storage to meet drought demands, emergency operations for potable water, and the operations for water supply augmentation and flood damage reduction. This paragraph should also include a general explanation of the ASR System operations as related to the project's water management structures and reservoir/storage area capacity. Depending on the project, implementation of the ASR System may be an iterative process.

19. Water Control Data Acquisition System Plan (WCDASP)

Provide a statement that the WCDASP may be started during the PIR phase, will probably be completed during the Plans and Specifications Phase, and will be a subset of the Water Control Data System (WCDS) that is specific to CERP. This paragraph should provide a general description of the telemetry system, automation components, or equipment related to the project's water management structures and which will ultimately be needed to track relevant data after authorization of the Project. It should also identify the agency/organization that is responsible for operation and maintenance of the system or the system components. Include a description of the relationship between the environmental monitoring plan and the WCDASP. Equipment used in data acquisition essential to the water management function will be included in the WCDASP. This includes all hardware and software to be used for acquisition, transmission, processing, display, and dissemination of hydrological, meteorological, water quality, and project data for the purpose of supporting the water control mission. This may include, but is not limited to; uninterruptible power supplies, field data collection platforms, and data communication devices and circuits. The WCDASP will also identify site location of all hardware included within the Plan. Hardware siting and gage reference datum will be determined through coordination with appropriate agencies including the U.S. Geological Survey (USGS) and the SFWMD. If this plan is over one page in length, the plan could be referenced in this paragraph and included as an exhibit.

20. Consistency with the Adaptive Management Program and Periodic CERP Updates

This paragraph should include a statement that after long-term operations and maintenance of the project has been initiated, the POM may be further modified based on operating criteria approved by the USACE and SFWMD resulting from CERP updates and recommendations from the adaptive assessment process as outlined in Guidance Memorandum #6.

21. Interim Operations During Construction

Interim operations utilized during the construction phase will be developed in conjunction with the detailed construction schedule, if available. All interim operations will be conducted to be consistent with the Assurances of Project benefits as set forth in section 601 of WRDA 2000 and as discussed in the Programmatic Regulations and the Guidance Memoranda. Some items that may be included in this paragraph, the contents of which may change in the preliminary or Final POM, are (a)

Operational Strategy to Meet Project Objectives, (b) Project Relationships and Interactions, and (c) Major Constraints. If the detailed construction schedule is not available prior to completion of the PIR, this section can be inserted as a placeholder to be developed once the construction schedule is known. For the preliminary and Final POM, this section should be deleted since these operations would no longer be needed.

22. <u>Preliminary Operations During Operational Testing and Monitoring Phase</u>

Preliminary operations for the OTMP will be developed in conjunction with the plan for the Operational Testing and Monitoring Phase and promulgated in the Preliminary POM. All preliminary operations will be conducted so as to meet the Assurances of Project benefits as set forth in section 601 of WRDA 2000 and as discussed in the Programmatic Regulations and the Guidance Memoranda. Some items that may be included in this paragraph are (a) Operational Strategy to Meet Project Objectives, (b) Project Relationships and Interactions, and (c) Major Constraints. The assumptions and constraints may change in the Final POM.

23. Conceptual Description of Project Operations for Transition from the Initial Operating Regime to the Next- Added Increment

The Draft POM is based on the Initial Operating Regime (IOR). A conceptual discussion of how to transition from the IOR to the Next-Added Increment Conditions will be provided in this section.

NOTE: The sections below that follow the main text of the document will be preceded by individual title pages.

- **<u>Tables</u>**
- **<u>Figures</u>**
- **<u>Plates/Operational Schematics</u>**
- **<u>Exhibits</u>.** NOTE: Label the following items as exhibits instead of appendices, reserving the latter term to tie individual POMs with their respective SOMs. The number of exhibits will vary from project to project. "Standing Instructions to Project Operators" should be the last exhibit.

    - <u>Structure Descriptions and Rating Curves</u>.
    - <u>Formal Agreements</u>. Examples are:
        -Memorandums of Understanding
        -Field Working Agreement
        -Section 7 Flood Control Regulations
        -Letters from other agencies or minutes of requesting commissions acknowledging or concurring in important or unusual aspects of the operating manual. To conserve space it may be desirable to show only the portion of the contract pertinent to water management, e.g., omit payment schedules.
    - <u>Water Control Data Acquisition System Plan</u>

EXHIBIT 9

- Standing Instructions to Project Operators
- Other (e.g. supplementary pertinent data)

ATTACHMENT 5-B
FORMAT AND CONTENT OF THE SYSTEM OPERATING MANUAL

I. FORMAT OF THE SYSTEM OPERATING MANUAL

Each volume of the SOM will contain nine chapters, outlined and briefly defined in Section A of this attachment. However, the nine chapters of the System-wide, Volume 1, will be modified somewhat to address the system-wide framework, and are listed separately. The outline for Volumes 2 through 7 is modeled after page A-63 in ER 1110-2-8156, Preparation of Water Control Manuals. Volumes 2 through 7 will generally follow the original format of the Master WCMs for the existing C&SF Project, with a few exceptions to accommodate the CERP POMs. When individual pages are revised within the SOM, the pages will be clearly identified with the date of revision.

A. Chapter Outline and Annotated Descriptions

System Operating Manual
Volume 1–System-wide

I. Introduction–Discussion of purpose, scope, and operating agency.
II. Authorizations–Detailed discussion of project authorizations.
III. System-wide Watershed Description and Characteristics–Provide system-wide description and characteristics.
IV. Description of System Components–Description of the major project subdivisions as laid out in Volumes 2 through 7 of the SOM.
V. Data Collection and Communication Networks–Overview of data collection and communication networks.
VI. System Hydrologic Forecasts–Description of system-wide forecasts.
VII. System-Wide Operating Plan–Discussion of the ability of the SOM to meet project purposes. Focus on water management at the system-wide level.
VIII. Effect of System-Wide Operating Plan–Discussion of system-wide effects and benefits from the SOM.
IX. Water Management Organization–Discussion of responsibilities, organization, and interagency coordination.

- Tables
- Figures
- System-wide schematics
- Exhibits
- Appendix A–Discretionary Changes

EXHIBIT 9

System Operating Manual
Volumes 2 through 7

NOTE: As stated previously, a "History of Revisions" table will be located in the front of each of the Volumes 2 through 7 of the SOM.

I. Introduction–Discussion of purpose, scope, and operating agency.
II. Regional Description–Provide regional description.
III. Regional History–Provide general history of the region.
IV. Watershed Characteristics–Provide regional characteristics.
V. Data Collection and Communication Networks–Overview of data collection and communication networks.
VI. Hydrologic Forecasts–Description of regional forecasts.
VII. Regional Operating Manual–Discussion of the ability of the SOM to meet project purposes for that specific hydrologic region. Focus on water management at the regional level.
VIII. Effects of Regional Operating Manual–Discussion of regional effects and benefits from the SOM for that specific hydrologic region.
IX. Water Management–Discussion of responsibilities, organization, and interagency coordination.

- Tables
- Figures
- Appendix A–Structure Descriptions and Rating Curves
- Appendix B–Project Operating Manuals
- Appendix C–Drought Contingency Plan
- Appendix D–Interagency Coordination
- Appendix E–Flood Control Regulations
- Appendix F–Standing Instructions to Project Operators

ATTACHMENT 5-C
GUIDELINES AND EXAMPLES FOR OPERATING MANUAL CONTENT FOR WATER QUALITY CERTIFICATION ASSURANCES

This attachment provides general guidance on information necessary to provide reasonable assurances for water quality permitting. POMs should provide sufficient information to demonstrate that proposed operations would be consistent with applicable State water quality standards and requirements. The Draft POM will be included in the WQC application provided to the FDEP. Along with the other application materials, the Draft POM will be evaluated to determine whether the project can be constructed, operated, and maintained in compliance with applicable water quality standards and applicable WQC requirements.

This attachment provides examples of the type of information that should be furnished for most projects and some specific examples from existing operating criteria documents. It is recognized that these projects vary widely and therefore project-specific issues/concerns may need to be addressed. As a result, this guidance should not be interpreted as exhaustive or limiting in scope. Additional information may be necessary on a project-specific basis. It is also possible that the examples provided below may not be applicable to a given project and therefore would not be included in the POM.

It should be noted that depending on the activity being authorized, the required content of the POM may vary. In some cases, construction, operation, and maintenance authorization are being sought, while in others only construction authorization or O&M authorization are being sought. For instance, it should be noted that the USACE is not normally responsible for structure operations, and therefore, under most circumstances, is not the applicant for the operational authorization. However, USACE may be involved in functional testing of structures during the Construction Phase and the OTMP in order to develop the Completed Operating Manual. In this instance, the USACE would be seeking authorization of construction activities and OTMP activities, while the non-Federal sponsor would seek a separate authorization for long-term O&M of the project.

Ideally, construction, operation, and maintenance authorization will be sought concurrently, with the goal being to obtain the water quality permit following completion of the PIR. However, this is not always possible. If the permit application (including the Operating Manual) contains enough information to provide FDEP with all necessary assurances, a water quality permit may be issued at the completion of the PIR. Table 5-C-1 identifies the phase of the POM and the general content that will be necessary to demonstrate reasonable assurances for each activity:

Table 5-C-1: General Content Needed to Demonstrate Reasonable Assurances for Activities in the Project Operating Manual

Activity	Phase of Operating Manual	Content
Construction	Draft POM	Interim Operations during Construction, Preliminary information on OTMP Operations
OTMP	Preliminary POM	OTMP Operations, including Modifications Resulting from Adaptive Assessment
Operations and Maintenance	Final POM	Final Operating Criteria, including Modifications to Draft POMs

The following items and examples correspond to Sections II and III of Attachment 5-A.

Pertinent Data:

Identification of design peak flow conditions and SPF

Examples:

- STA-1W: The Standard Project Storm ([SPS]; 120% of the 100 year/24-hour storm) rainfall depth is estimated as 23.6 inches for a 24-hour duration over a 10-square mile basin area. During an SPS event, it is recommended to restrict inflow through structure G-302 to 1,110 cubic feet per second (cfs). For an SPS event, the estimated STA-1 inflow Basin maximum stage elevation was 19.4 ft., NGVD.
- Cerrillos Dam and Reservoir: The SPF was routed using the following assumptions: (1) reservoir level at the beginning of the flood would be at the top of the conservation pool, elevation 537.0 ft, NGVD; (2) outlet works would be inoperative during the flood; and (3) that the spillway would consist of a 394-foot. wide uncontrolled emergency spillway with a crest elevation of 611.3 ft., NGVD. The SPF routed maximum reservoir level is at elevation 627.6 ft., NGVD. The design discharge for the spillway is 15,190 cfs so that this flow, combined with local inflows downstream, would not exceed the SPF capacity of the Ponce channels (21,739 cfs).

Introduction:

Identification of developmental phase of POM

Examples:

- Draft POM for operations during construction
- Final phase of the POM

General Project Purposes, Benefits, Goals or Objectives:

1. Identification of any water quality purposes of the project

Examples:

- Phosphorus reduction
- Reduction of freshwater pulse releases

2. General explanation of how the proposed operations meet the water quality purposes of the project

Example:

- Preliminary Water Plan for the Ten Mile Creek Storage Area: Rapid pumping to the reservoir and slow drainage from the reservoir mimics the behavior of shallow surface storage that has been lost through development over the years. When operated correctly, the reservoir reduces runoff from most storm events and helps restore the historic flow patterns of freshwater entering the estuary.

Project Features:

1. Description of project features by basin including water control structures, reservoirs, and STAs.

Example:

- Ten Mile Creek: Water will be put into the reservoir via S-382, a 380 cfs pump station, located on the northern levee adjacent to the creek. S-382 will consist of three pumps; one 60 cfs pump and two with 160 cfs pumping capacity. In addition, the pump station will have a return bay with a 200 cfs capacity for flows from the reservoir back to the creek.

2. Identification of downstream receiving waters and the "restoration objective water body", specify flow path

Example:

- Ten Mile Creek: The immediate downstream receiving water is C-96. The water will then flow into Ten Mile Creek, downstream of the Gordy Road Structure. Ten Mile Creek then flows into the North Fork of the St. Lucie River which discharges into the Indian River Lagoon. Ten Mile Creek, St. Lucie River, and Indian River Lagoon are all considered restoration objective water bodies.

3. Description of outflow discharge scenario, including, but not limited to, point or sheetflow discharge

Example:

- Ten Mile Creek: The outflow structure will consist of a gravity control structure, which will be a point discharge into the North St. Lucie River Water Control District's Canal 96. From this point, the water will flow north in Canal 96 and discharge downstream of the existing "Gordy Road" control structure on the eastern end of Ten Mile Creek.

4. As appropriate, brief description of feature's water quality design goal-such as STAs (state target constituent level) and polishing cells (statement of no target level)

Example:

- Indian River Lagoon South Project: (Structure discharge to meet salinity envelope in the estuary.) When the daily average salinity measured at the Roosevelt Bridge in the St. Lucie Estuary is above 12 parts per thousand (ppt), pump station S-421 will be triggered when there is over 1000 cfs flow at spillway structure S-49, and 50% of the flow will be captured in the reservoir. When the daily average salinity measured at the Roosevelt Bridge in the St.

Lucie Estuary is between 12-10 ppt, pump station S-421 will be triggered when there is over 500 cfs flow at S-49, and 50% of the flow is captured up to 900 cfs full capacity.

5. Identification of storage volume and treatment area available

Example:

- Ten Mile Creek: The reservoir and treatment cell will have a total storage capacity of 6,000 acre-feet. The reservoir will have 526 acres of effective storage area and the treatment cell will have 132 acres of treatment area.

Project Relationships and Interactions:

1. Description of any structural or operational changes necessary during construction. Consideration of existing structures and structure operations, as well as temporary and new features resulting from the project's ongoing construction phase

Examples:

- Kissimmee River Restoration Project: (Relocation of a structure.) Boat launching ramps at S-65, S-65B and S-65C will be relocated to the edge of the flood plain. Ramps will be connected with the restored river by access channels.
- Kissimmee River Restoration Project: U.S. Highway 98 will be temporarily relocated to maintain traffic flow during construction of bridge openings. A temporary 840-foot bypass extending 50 feet south of the existing road will be constructed on existing spoil.

2. Consideration of interactions with operations and features of other projects existing, under construction, planned, or scheduled, that are upstream, downstream, or in the vicinity of the subject project

Example:

- STA-1West: Spillway 5AS (S-5AS) has historically been used to facilitate water supply releases from WCA-1 to the L-10, L-12, L-8, and C-51 basin for irrigation. Since the construction of the STA-1 Inflow Basin, operation of S-5AS for water supply requires reverse flows through diversion structures G-300 and G-301. This, in turn, necessitates the closing of inflow structure G-302, preventing flows from entering STA-1W until irrigation demands are met.

3. Operations to satisfy pump station warranty requirements

Example:

- STA-1West: Maintenance requirements for the G-310 discharge pump station include operation of the pumps for approximately two to four hours per month as necessary, to maintain mechanical integrity of the pumps.

Operations to Meet Project Purposes:

1. General description of movement and storage of water

2. Optimum flow and water elevations, may be season dependent

Examples:

- S-9A: Seepage from higher water levels in WCA-3A and WCA-3B flows eastward toward the Western C-11 drainage basin. The purpose of the project is to backpump seepage at S-9A into WCA-3A at the same rate that water enters the 7900 feet of C-11 Canal from the S-9A pumps to the S-381 gates. The S-381 structure acts as a canal divide to separate the urban area to the east of the structure from the mainly natural area located to the west.
- STA-1 West: Target stage/depths for both wet and dry seasons were established for the STA-1 West treatment cells. (These target depths for Cell 1 and 2, shown below in Table 5-C-2, are from Table 1, p.28, STA-1West Operation Plan.)

Table 5-C-2: Example Wet/Dry Season Target Stages from STA-1W Treatment Cells

Cell	Wet season/Target Stage (+/- .2 ft.)	Dry Season Conservation Stage/Depth when available (+/- .2ft.)	Measured at Structure	Operational Structure
1	11.9/1.8	12.4/2.3	G-253 HW	N/A
2	11.7/2.25	12.2/2.75	G254 HW	N/A

3. Maximum water elevations, may be season dependent

Example:

- STA-1 West: The maximum operational depth for treatment cells 1, 2, 3, and 4 has been established at 4.5 feet above average ground elevation.

4. Minimum water elevations, may be season dependent

Example:

- STA-1 West: To the extent practicable, operations of STA-1West will maintain stages at or above the 0.5 feet above the average ground elevation in the treatment cells to minimize potential negative effects of drought on subsequent project performance.

5. Pump station operational limitations

Example:

- Pump Station 6 (S-6): The present drawdown limit is elevation 9.0 ft., NGVD. Pumps may overheat if head is greater than (>) 7.0 feet. If, during a pumping operation, the water surface on the intake bay falls below elevation 9.0 ft National Geodetic Vertical Datum (NGVD) as indicated by the staff gauge, the speed of all pumps then operating should be reduced to not less than 500 revolutions per minute (rpm). If this does not restore the water surface in the intake pool to elevation 9.0 ft. NGVD, one or more of the pumping units should be shut down until the minimum pool elevation is re-established.

6. Statement of any operations or coordination procedures for water quality and any beneficial water quality aspects of each component

Examples:

- Algae Blooms in the Caloosahatchee River (C-43): During the seasonally dry months from December to April of each year, the Caloosahatchee River flow diminishes to the point that severe algae blooms may develop in the River above the Franklin Lock and Dam. Municipal water intakes in this area could be clogged with the algae. Short-term high rates of discharge from Lake Okeechobee are required to break up the algae bloom.
- Salinity Intrusion in the Caloosahatchee River (C-43): During the extreme dry months of April and May, the river flow may drop to near zero. When this condition prevails, navigation lockages through the W.P. Franklin Lock may allow a saltwater wedge to move upstream. Eventually, the chloride content of the water can exceed the drinking water standard of 250 parts per million (ppm). When this occurs, SFWMD requests the USACE to flush out the saltwater with a short-term high rate of discharge from Lake Okeechobee.

Flood Damage Reduction:

1. Description of areas of concern adjacent to project area

Example:

- STA-1 East: S-361 is a secondary inflow pump station that discharges directly to Cell 4S. The intent is to provide drainage and flood control service to those lands south and east of S-361 which were tributary to the C-51 West Canal, but have been hydraulically severed as a result of the construction of STA-1 East. Those lands consist of Rustic Ranches Subdivision, and agricultural lands west of Flying Cow Road and south of Rustic Ranches. In addition, seepage accumulated along the east line of STA-1East may be pumped into STA-1East by S-361.

2. Sequencing of structure operations including operating criteria-can be presented in a table, may be season dependent

3. Brief description of standard project flood used to design and operate project features

Example:

- STA-3/4: The Standard Project Storm ranges between 36.0 and 56.0 inches for a three-day duration storm depending on site-specific conditions and risk management considerations. STA-3/4 is considered low risk due to the long distance from major urban population centers. Therefore, a maximum three-day precipitation depth of 36 inches was employed in the design of STA-3/4 as described in the Plan Formulation Document.

4. Identification of operations during high flow events (or address in uncontrolled discharge section)

Example:

- S-80: During regulated maximum flood releases, the minimum headwater elevation at St. Lucie Spillway (S-80) will be operated no lower than 10.0 ft., NGVD for lake stages up to 18.5 ft., NGVD. This is to help reduce erosion upstream of the dam due to high velocities. However, past experience has

determined that an effort should be made to prevent the headwater at S-80 from receding below 12.0 ft., NGVD in order to avert problems with the nearby local irrigation pump intakes.

- STA-3/4: Summary of STA structure operations required during SPS event: maintain full pumping through Pump Stations G-370 and G-372; fully open all interior control structures; keep diversion structures G-371 and G-373 closed; operate seepage pumps within capacity to maintain 8.0 ft., NGVD within the seepage canal; and operate pump stations within capacity to maintain headwater stages of 14.0 ft., NGVD or lower.

Pre-Storm/Storm Operations:

1. Statement of project features operation initiation requirements

Example:

- Interim Operational Plan (IOP) for Protection of the Cape Sable Seaside Sparrow (IOP): Between 24 and 72 hours before tropical storm conditions in Miami-Dade, the following target water levels are set for the South Dade Conveyance System. The initiation of the pre-storm drawdown criteria will be triggered when Dade County falls within the average error forecast swath as developed by the National Hurricane Center (NHC). These pre-storm drawdown levels are not less than the level at which water supply deliveries are made during dry periods, that is 1.5 feet below optimum canal levels, except the reach north of G-211, which is 1.0 foot below current, normal operating levels.

2. Sequencing of structure operations including structure operating criteria-can be presented in a table, may be season dependent

Example:

- IOP: In an effort to achieve the specified drawdown targets, a sequence of operational actions is recommended as described in Table 5-C-3. The goal is to achieve one target before proceeding to the next sequence. However, since this goal may not always be possible to achieve the target level, operations will proceed based on the best available information at the time:

Table 5-C-3: Example Drawdown Targets for Various Reaches of L-31N and C-111

Sequence	Canal	Reach	Target Draw-Down Level (ft.)
1	L-31N	S-331 to S176	4.0
	C-111	S-176 to S-177	3.0
2	L-31N	G-211 to S-331	4.0*
	L-31N	S-335 to G-211	5.0

* If Angel's well is 5.5 ft-NGVD or below, then 4.0 would be the target, otherwise, 3.5 ft-NGVD at the headwater of S-331 will be the target.

Water Quality:

1. State operations designed to achieve water quality objectives (including water quality performance measures and minimum flow levels [MFLs]) or avoid water quality constraints

Example:

- IRL: When the daily average salinity measured at the Roosevelt Bridge in the St. Lucie Estuary is below 10 ppt, pump station S-421 will be triggered when there is over 500 cfs flow at S-49, and all flow is captured up to 900 cfs capacity.

2. Overview of coordination process to be used during the construction phase to ensure compliance with water quality standards

3. Sequencing of structure operations including structure operating criteria-can be presented in a table, may be season dependent

Examples:

- IRL: Proposed wet and dry season operations for the reservoir and STA are shown in Table 5-C-4.

Table 5-C-4: Example Wet and Dry Season Operations for IRL Reservoir and STA

Reservoir Depth (feet)	Wet Season (June to November) Discharge to STA (cfs)	Dry Season (December to May) Discharge to STA (cfs)
1	10	5
2	25	5
3	40	10
4	60	20
5	80	30
6	100	40
7	100	50
8	100	100

- When S-401 is off, STA release from structures S-482 and S-498 shall be adjusted according to the daily average salinity measured at the Roosevelt Bridge in the St. Lucie Estuary, as shown in Table 5-C-5.

Table 5-C-5: Example STA Releases at the Roosevelt Bridge

Salinity (ppt)	STA Release (cfs)
>12	600
12-10	400
10-6	200
<6	0

Water Supply:

1. Sequencing of structure operations including structure operating criteria-can be presented in a table, may be season dependent

Examples:

- IRL: During the dry season when there is a water supply demand in the C-23 basin, water stored in the southern reservoir will be discharged back into C-23 via drawdown structure S-413, at a maximum rate of 300 cfs.
- Site 1 Impoundment Project: Water supply releases are made from the Site 1 Impoundment via S-526A when the Hillsboro Canal upstream of G-56 recedes to either 6.5-6.9 ft NGVD during the wet season or 7.8-8.2 ft., NGVD during the dry season. Water supply releases from the impoundment will continue until the Hillsboro Canal reaches either 7.3-7.7 ft., NGVD during the wet season or 8.3-8.7 ft., NGVD during the dry season, or until the Impoundment falls to 10.8-11.2 ft., NGVD, whichever occurs first.

Recreation:

If applicable, state any structure operating criteria-may be season dependent

Fish and Wildlife:

1. Sequencing of structure operations including structure operating criteria-can be presented in a table, may be season dependent

Example:

- Manatee Gate Operations: Single or multiple gates at S-77: (1) to allow manatees to pass under the gates, the minimum opening for any gate under the "less than or equal to three feet of head" condition is two and a half feet; (2) if during the adjustment process, the head across the structure should exceed three feet, the gates should be closed in reverse order to openings permitted by the maximum allowable gate opening (MAGO) curves, and the operating procedures applicable to head greater than three feet should then be used.

Navigation:

If applicable, state any structure operating criteria-may be season dependent

Initial Reservoir/Storage/Treatment Area Filling Plan:

1. Identification of any water quality considerations during initial filling, pump tests, or refill event

Example:

- STA-3/4: Since some of the vegetation will not be full grown by the time of startup, certain precautions are required for storm and intra-event conditions. Operational stage elevations will necessarily be required to be lower in cells that have incomplete vegetation coverage. Once all vegetation coverage is complete, as determined by the site manager, normal STA-3/4 operations can commence.

2. State operations that include preventing discharge from storage/treatment area to avoid water quality constraints

Example:

- STA-3/4: In order to avoid the potential for initial discharges of higher concentrations of mercury following construction and initial filling (flooding) of the STA, samples will be collected to demonstrate that outflow concentrations of mercury are less than inflow concentrations, prior to initiating discharges.

Non-Typical Operations for Reservoir/Storage/Treatment Area Performance:

1. Drought Operations: Detail any procedures for minimizing or avoiding dryout (see DCP as appropriate)

Example:

- STA-1 East: The static water level within the treatment cells, to the greatest extent practicable, will be maintained to minimize potential negative effects of drought on subsequent project performance. All treatment cell interior structures will be operated to maintain the best distribution of available inflows. Outflow structures S-365, S-369, and S-372 will be closed to detain available water within the treatment cells. All treatment cell interior structures will remain open. Outflow pump station, S-362, will not discharge until desirable water levels and vegetative conditions within the treatment cells have improved, allowing for treatment cell discharge.

2. Treatment Cells Out of Service: Describe anticipated operations during routine maintenance or during situations where portions of the project are offline/out of service

Example:

- STA-1 West: Treatment cells and/or flow-ways may be isolated or "taken off-line", when deemed necessary. Treatment Cells 5A and 5B can be taken off-line by closing structures G-304 A-J and G-306 A-J. Treatment Cells 1 through 4 can be taken off-line by closing G303. Treatment flow-ways 1/3 and 2/4 also have the capability of being taken off-line independently through manipulation of various inflow and outflow structures.

3. Storage/Treatment Area Refill: Identify storage/treatment area refilling plan to be used following drought or offline operations. If refill operations are similar to Initial Storage Area Filling Plan, refer to Item 17 in Section III of Attachment 5-A.

ASR System Plan:

1 General description of ASR system including objectives, components, storage capacity, and pumping and discharge capabilities

2. Description of relationship between existing water management structure operating criteria and operating criteria of the ASR system

3. State operations affecting interaction of project features and ASR

Example:

- Temperature equilibration

Exhibits:

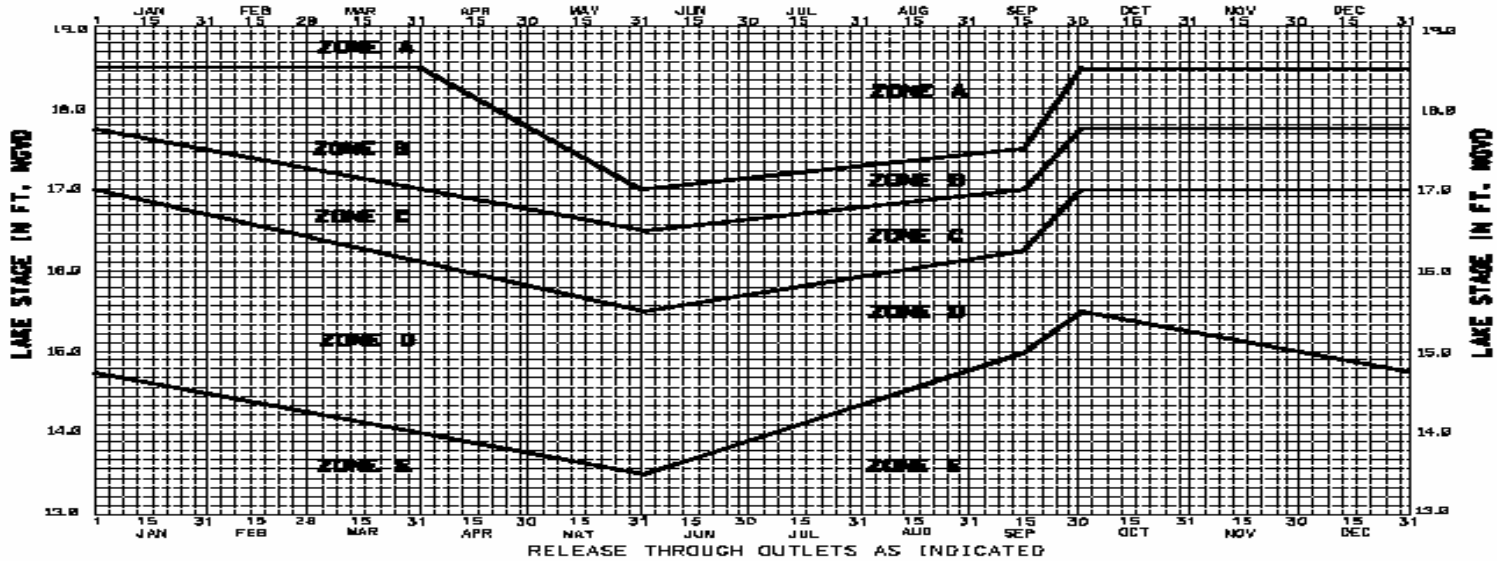
1. Stage-duration curves
2. Discharge rating curves

ATTACHMENT 5-D
EXAMPLES OF OPERATIONAL SCHEMATICS AND FIGURES

Reference the following examples when developing operational schematics and other figures for inclusion in the POMs. In order, the examples are:

- Figure 5-D-1: Lake Okeechobee WSE Regulation Schedule
- Figure 5-D-2: WSE Operational Guidelines Decision Tree, Part 1
- Figure 5-D-3: WSE Operational Guidelines Decision Tree, Part 2
- Figure 5-D-4: Indian River Lagoon South: C-25 Basin Operations
- Figure 5-D-5: Indian River Lagoon South: C-23/C-24 Basin Operations
- Figure 5-D-6: Site 1 Impoundment Project Site Layout
- Figure 5-D-7: Example of Structure Description and Operating Criteria Table
- Figure 5-D-8: Example of Structure Rating Curve
- Figure 5-D-9: Example Monthly Inflow Volumes

EXHIBIT 9



ZONE	AGRICULTURAL CANALS TO WCAs (1,2)	CALOOSAHATCHEE RIVER AT S-77 (1,2,4)	ST. LUCIE CANAL AT S-80 (1,2,4)
A	PUMP MAXIMUM PRACTICABLE	UP TO MAXIMUM CAPACITY	UP TO MAXIMUM CAPACITY
B (3)	MAXIMUM PRACTICABLE RELEASES	RELEASES PER DECISION TREE (THESE CAN RANGE FROM MAXIMUM PULSE RELEASE UP TO MAXIMUM CAPACITY)	RELEASES PER DECISION TREE (THESE CAN RANGE FROM MAXIMUM PULSE RELEASE UP TO MAXIMUM CAPACITY)
C (3)	MAXIMUM PRACTICABLE RELEASES	RELEASES PER DECISION TREE (THESE CAN RANGE FROM NO DISCHARGE UP TO 6500 CFS)	RELEASES PER DECISION TREE (THESE CAN RANGE FROM NO DISCHARGE UP TO 3500 CFS)
D (3,5)	AS NEEDED TO MINIMIZE ADVERSE IMPACTS TO THE LITTORAL ZONE WHILE NOT ADVERSELY IMPACTING THE EVERGLADES. (SEE NOTE 5.)	RELEASES PER DECISION TREE (THESE CAN RANGE FROM NO DISCHARGE UP TO 4500 CFS)	RELEASES PER DECISION TREE (THESE CAN RANGE FROM NO DISCHARGE UP TO 2500 CFS)
E	NO REGULATORY DISCHARGE	NO REGULATORY DISCHARGE	NO REGULATORY DISCHARGE

NOTES: (1) SUBJECT TO FIRST REMOVAL OF RUNOFF FROM DOWNSTREAN BASINS
(2) GUIDELINES FOR WET, DRY AND NORMAL CONDITIONS ARE BASED ON: 1) SELECTED CLIMATIC INDICES AND TROPICAL FORECASTS AND 2) PROJECTED INFLOW CONDITIONS. RELEASES ARE SUBJECT TO THE GUIDELINES IN THE WSE OPERATIONAL DECISION TREE, PARTS 1 AND 2.
(3) RELEASES THROUGH VARIOUS OUTLETS MAY BE MODIFIED TO MINIMIZE DAMAGES OR OBTAIN ADDITIONAL BENEFITS. CONSULTATION WITH EVERGLADES AND ESTUARINE BIOLOGISTS IS ENCOURAGED TO MINIMIZE ADVERSE EFFECTS TO DOWNSTREAM ECOSYSTEMS.
(4) PULSE RELEASES ARE MADE TO MINIMIZE ADVERSE IMPACTS TO THE ESTUARIES
(5) ONLY WHEN THE WCAs ARE BELOW THEIR RESPECTIVE SCHEDULES

CENTRAL AND SOUTHERN FLORIDA
INTERIM REGULATION SCHEDULE
LAKE OKEECHOBEE

DEPARTMENT OF THE ARMY, JACKSONVILLE DISTRICT
CORPS OF ENGINEERS, JACKSONVILLE, FLORIDA
DATED: 5 NOVEMBER 1999

WSE (WITH CLIMATE OUTLOOK)

Figure 5-D-1: Lake Okeechobee WSE Regulation Schedule

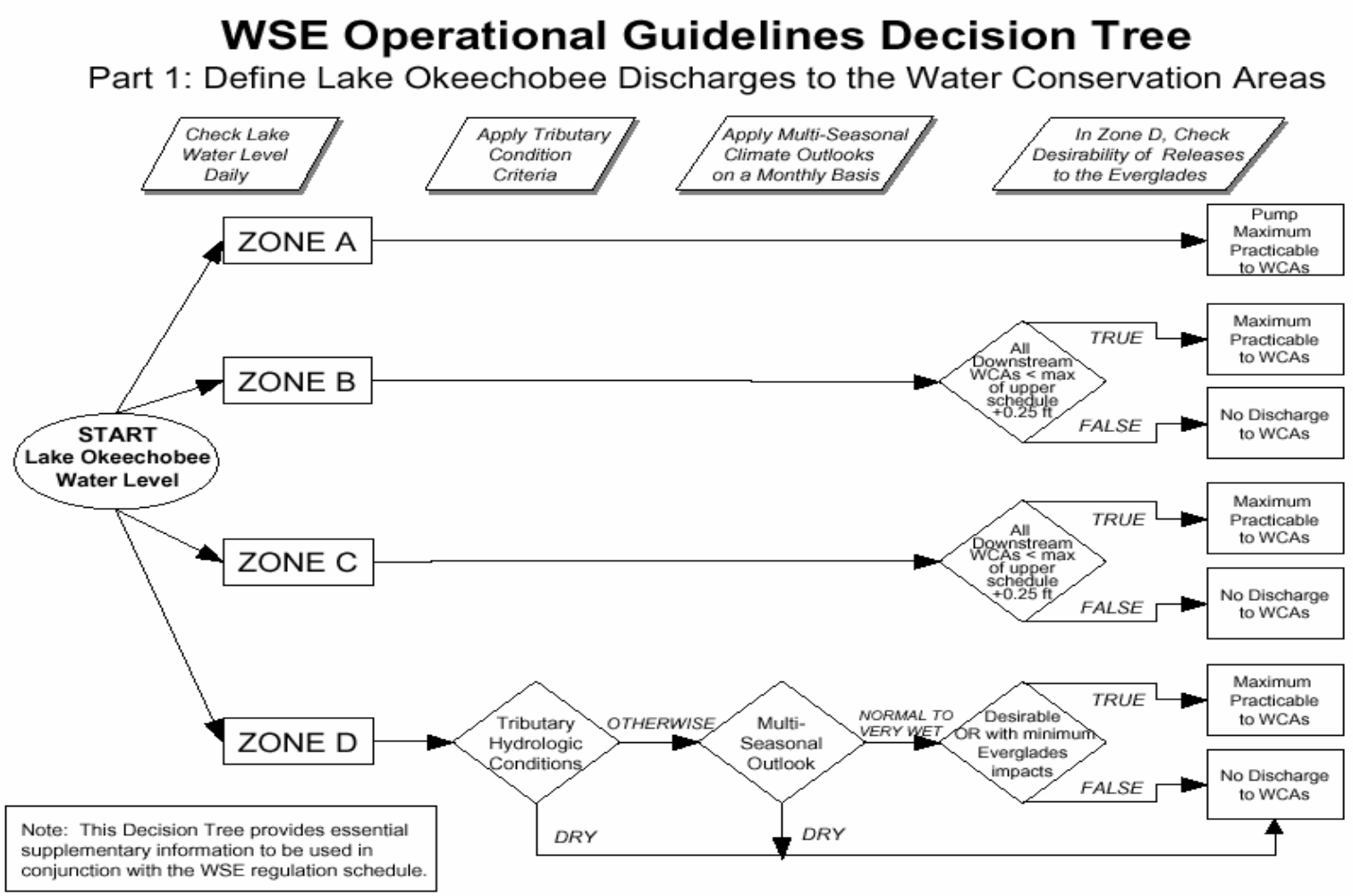


Figure 5-D-2: WSE Operational Guidelines Decision Tree Part 1

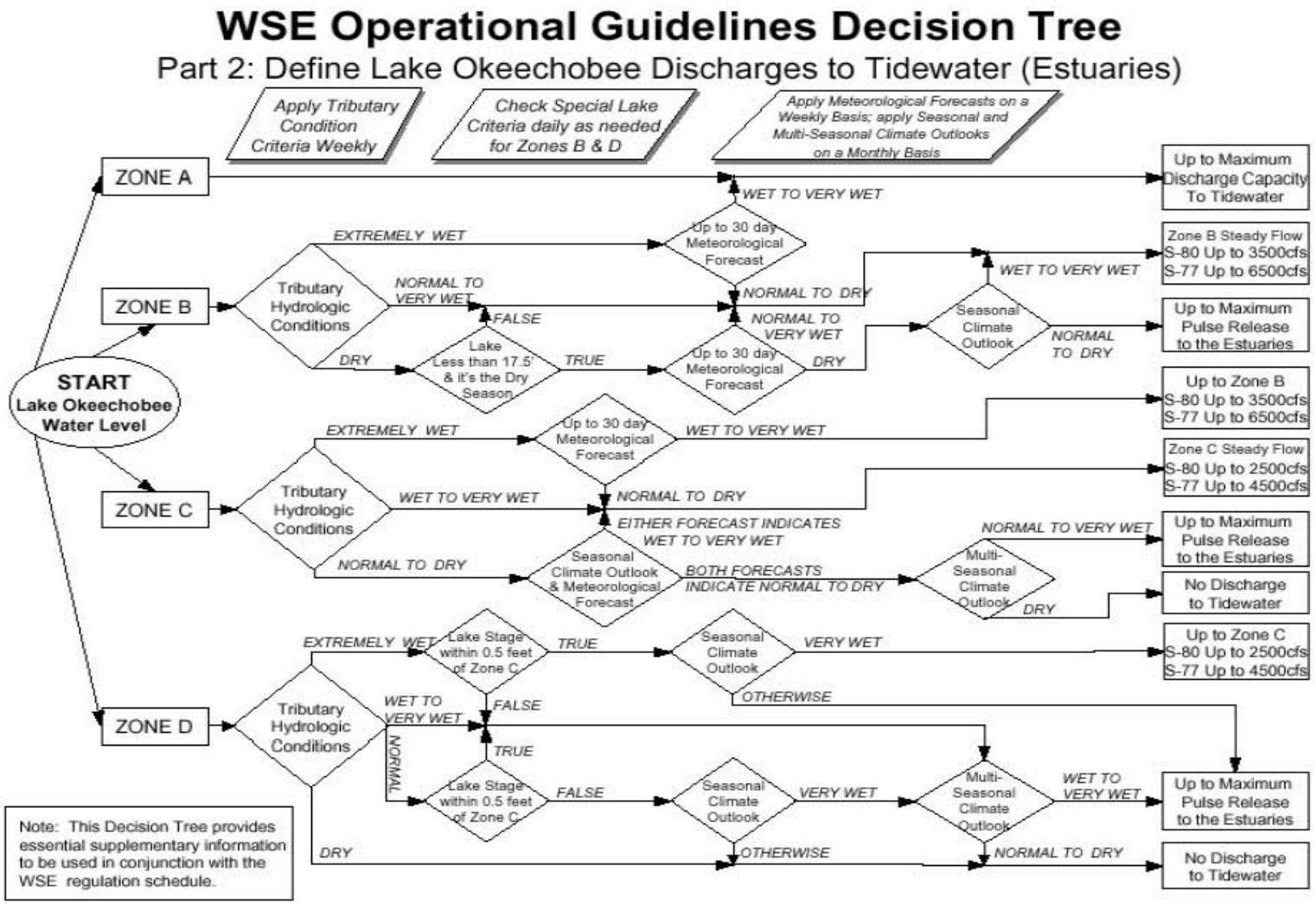


Figure 5-D-3: WSE Operational Guidelines Decision Tree Part 2

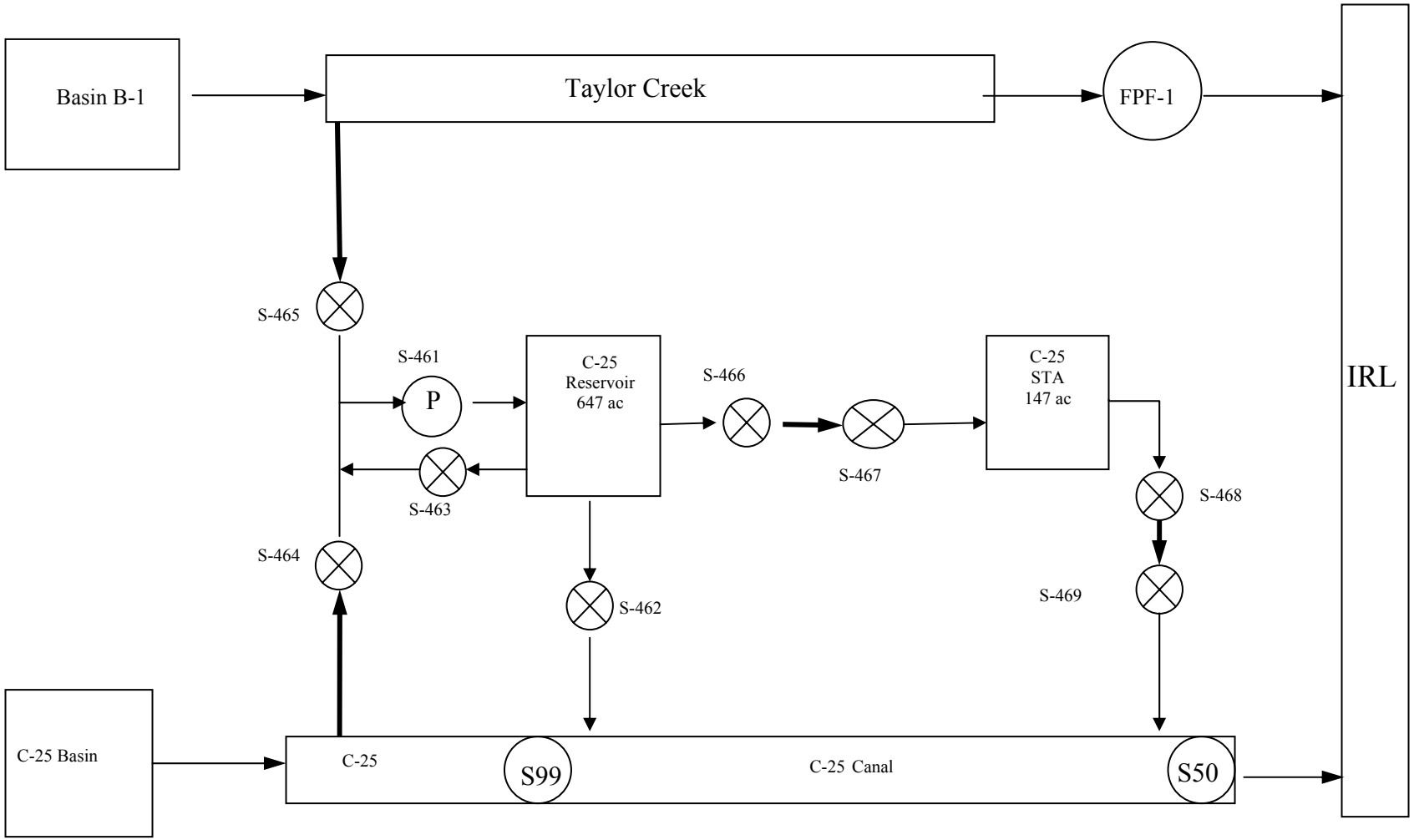


Figure 5-D-4: Indian River Lagoon South: C-25 Basin Operations

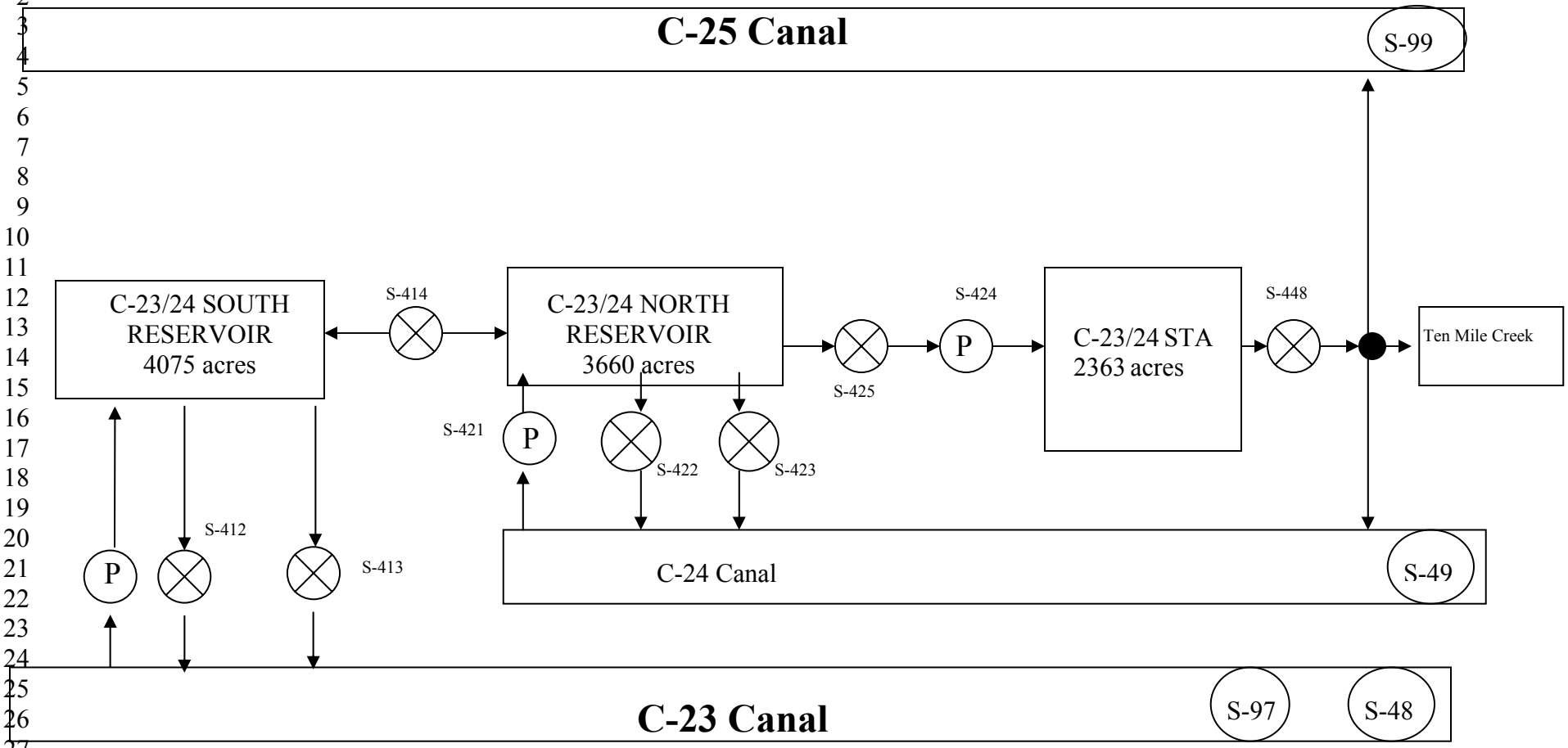


Figure 5-D-5: Indian River Lagoon South: C-23/C-24 Basin Operations

EXHIBIT 9

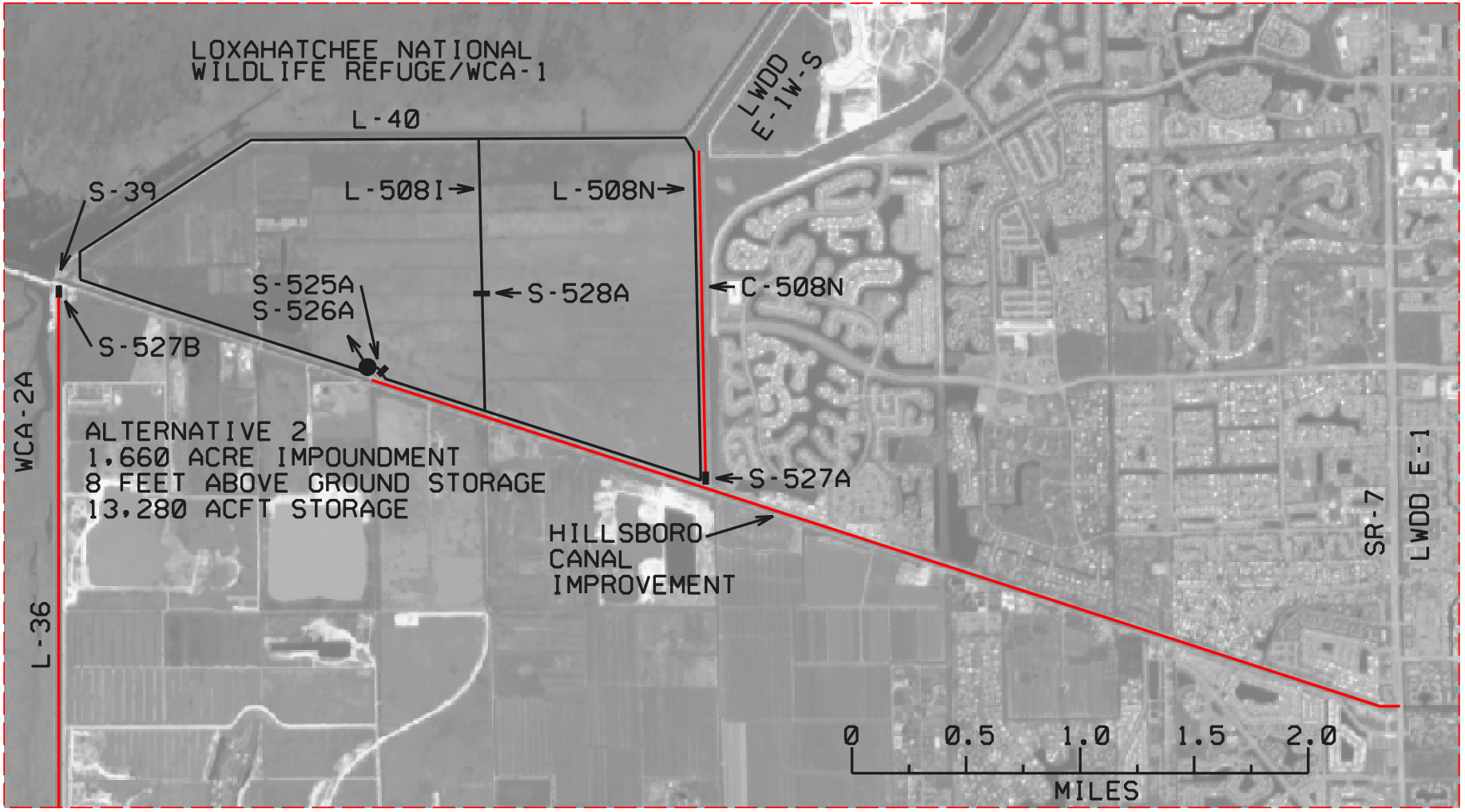


Figure 5-D-6: Site 1 Impoundment Project Site Layout

Hydraulic Design Data for S-367

Description	Design Data
Location	Cell 3 Outlets/Cell 4N Inlets
Static Water Level, Headwater (ft.)	16.25
Structure Geometry	
Inlet Structure Type	Headwall/slide gates
Number of Barrels	1
Barrel Dimension	8’ x 8’ RCB
Culvert Length (ft)	806
Invert Elevation (ft.)	7.00
Outlet Structure Type	Projecting
Number of Structure	5(A,B,C,D&E)
Total Peak Design Discharge (cfs)	1,540
Design Discharge Conditions	
Rating Curve	Figure X
Normal Operation	
Discharge per Structure (cfs)	0-308
Headwater Elev. (ft.)	15.50-19.46
Tailwater Elev. (ft.)	15.00-18.85
Peak Flow	
Discharge per Structure (cfs)	308
Headwater Elev. (ft.)	19.46
Tailwater Elev. (ft.)	18.85

Figure 5-D-7: Example of Structure Description and Operating Criteria Table

Structure 84

Location. S-84 is located on C-41A about 12 miles downstream from S-83 and about a mile upstream from the junction of C-41A with C-38, near Lake Okeechobee.

Purpose. The structure maintains optimum upstream water control stages in Canal 41A; it passes the design flood (30% of the Standard Project Flood) without exceeding the upstream flood design stage and restricts downstream flood stages and channel velocities to non-damaging levels; and it prevents backflow from Lake Okeechobee through C-38 during excessive stages in the lake resulting from floods or wind tides.

Description. The structure is a 2-bay spillway with vertical lift gates and a crest elevation of 13.2 ft., NGVD. The structure was designed to pass the 30-percent SPF (10-year) discharge of 5,670 cfs at a design headwater and tailwater of 24.5 and 19.3 ft., NGVD, respectively.

Operation. Normal headwater elevation is 25.0 ft., NGVD. Optimum water control is maintained between 24.3 and 25.2 ft., NGVD with automatic gate controls. The automatic controls restrict discharge to design flow by incremented gate openings for inflows greater than design flow. There should also be a description of how these operations contribute towards achieving benefits. Special operational rules for water delivery to natural areas should be included when appropriate.

For more information on this structure refer to the Kissimmee–Lake Istokpoga Water Control Manual.

Figure 5-D-7: Example of Structure Description and Operating Criteria Table (continued)

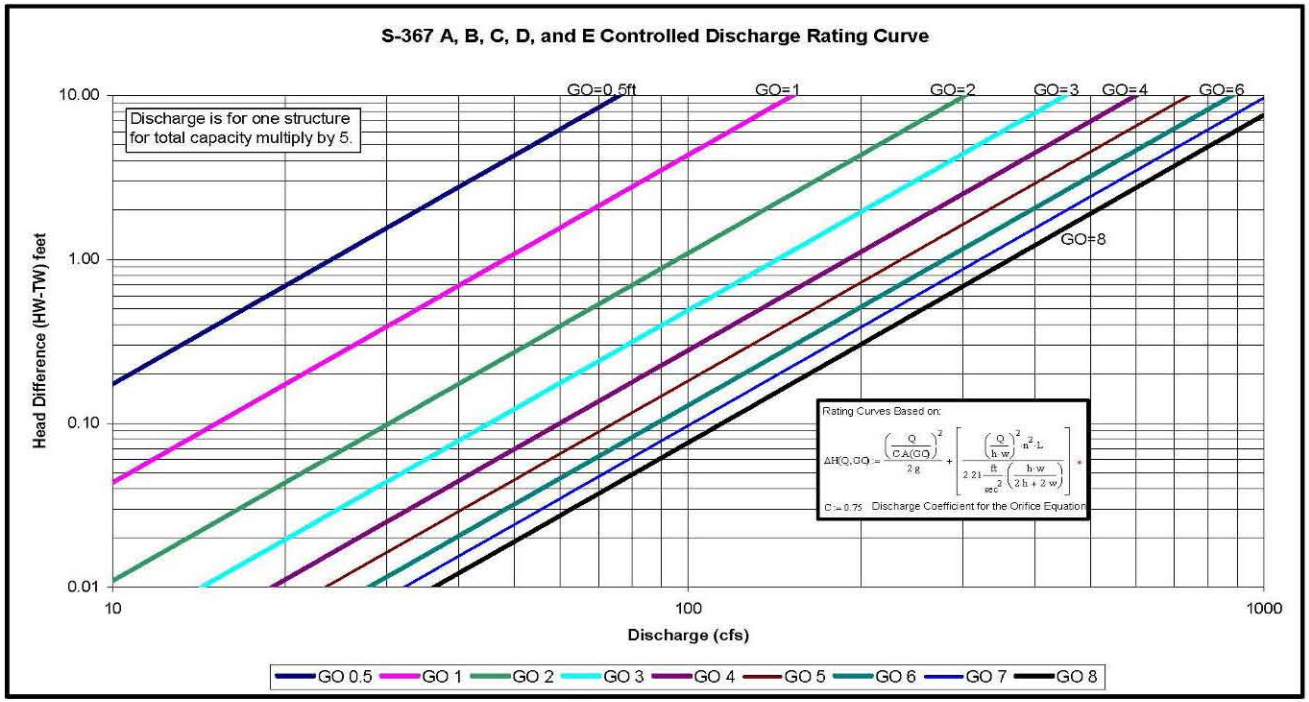


Figure 5-D-8: Example of Structure Rating Curve

EXHIBIT 9

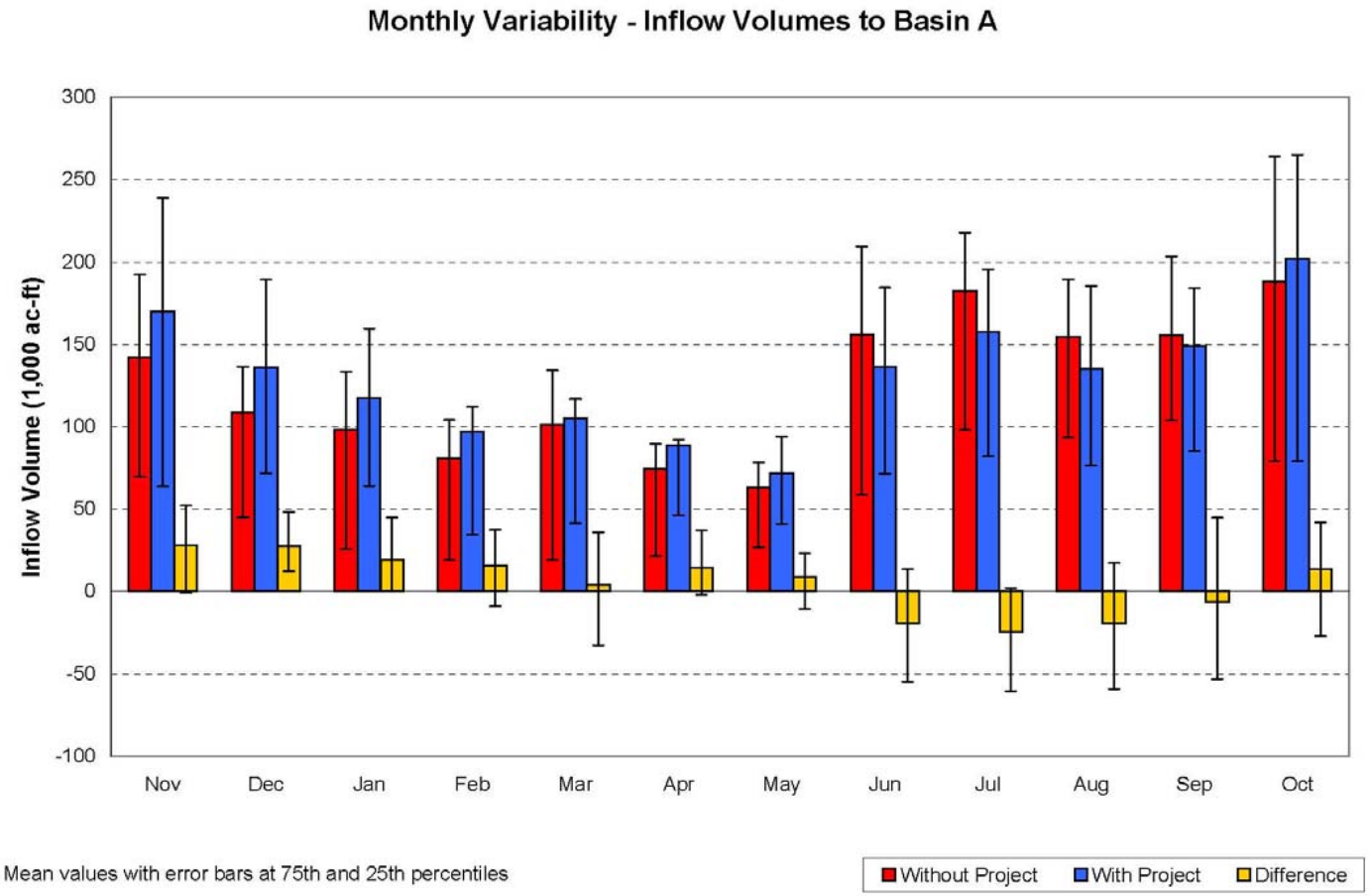


Figure 5-D-9: Example of Monthly Inflow Volumes

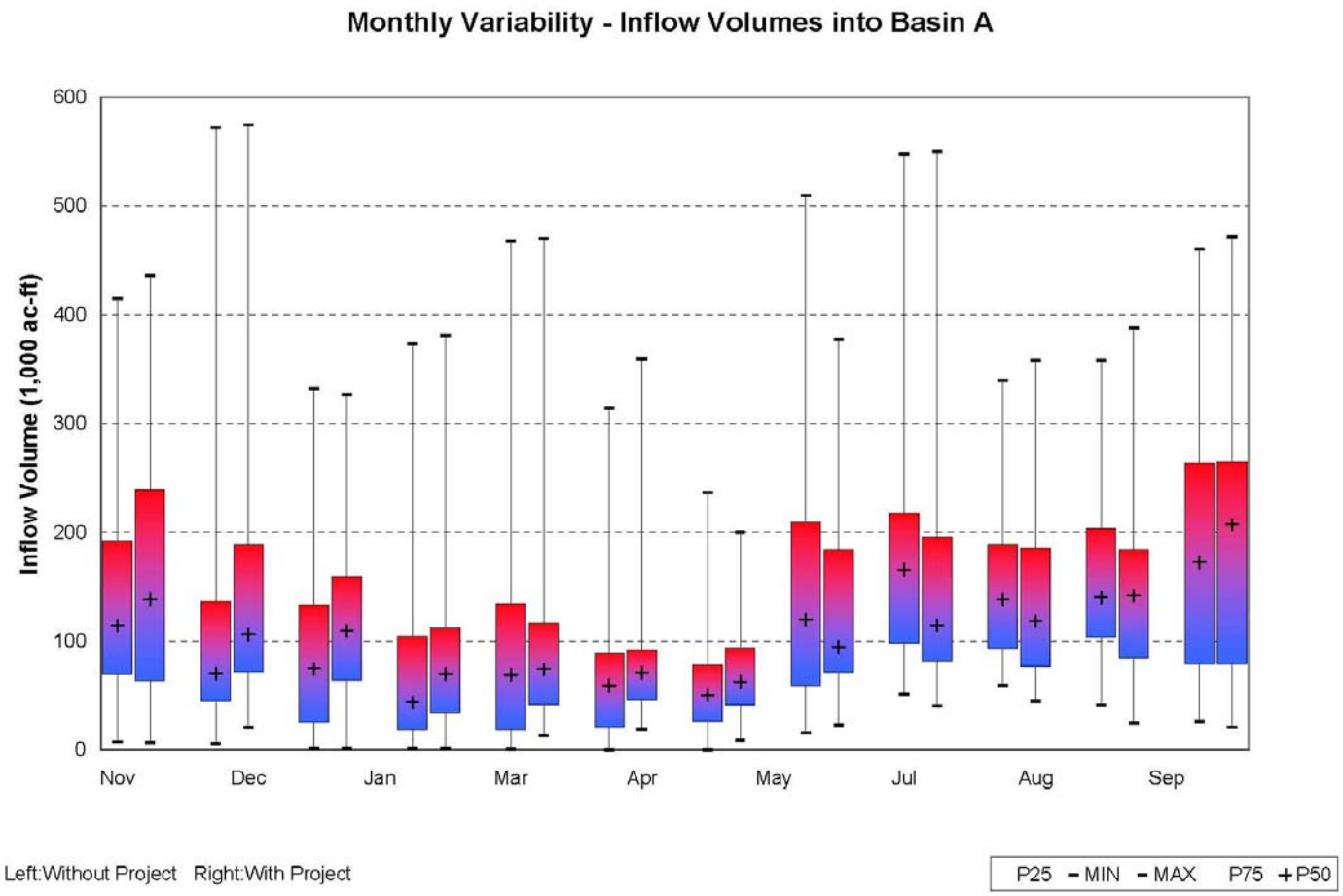


Figure 5-D-9: Example of Monthly Inflow Volumes (continued)

SECTION 6: GUIDANCE MEMORANDUM #6
ASSESSMENT ACTIVITIES FOR ADAPTIVE MANAGEMENT

6.1 PURPOSE

This Guidance Memorandum provides general direction for the conduct of the adaptive management program and the assessment activities of RECOVER. RECOVER is a system-wide program of CERP that is responsible for the organization and application of scientific and technical information to ensure that the system-wide goals and purposes of the Plan are achieved. RECOVER is charged with implementing the Plan's assessment activities composed of four basic components: (1) development of a system-wide monitoring program for the South Florida ecosystem; (2) design and implementation of data management and analysis protocols; (3) interpretation of ecosystem responses to the Plan; and (4) identification of opportunities for making changes to the Plan that would improve performance and/or cost-effectiveness.

A critical element of the Plan's adaptive management program is the development and application of a scientifically rigorous assessment program to analyze and understand the responses of the South Florida ecosystem to the implementation of the Plan. This Guidance Memorandum describes the strategy for conducting credible scientific assessments of the Everglades ecosystem to facilitate understanding of how the Plan is affecting the South Florida ecosystem. Specifically, these assessments address hydrological, biological, ecological, water quality, water supply, and other responses to the Plan. This Guidance Memorandum does not provide complete guidance on how to conduct assessments. RECOVER is developing a separate document "Assessing the Response of the Everglades Ecosystem to Implementation of the Comprehensive Everglades Restoration Plan" that provides more complete technical guidance for the conduct of assessments. This technical guidance serves as the foundation for the development and subsequent revision of the assessment portion of the Monitoring and Assessment Plan (MAP).

section 601 of WRDA 2000 establishes an integrated framework to ensure that the goals and purposes of the Plan are achieved. Integral to this framework is the establishment of interim goals and interim targets. The establishment of interim goals allows for assessment of progress towards achieving the natural system restoration goals of the Plan and provides a key feedback mechanism as ecosystem responses to implementation of the Plan are monitored to ensure that the goals and purposes of the Plan are being achieved. Similarly, establishment of interim targets allows for assessment of progress towards achieving other water-related needs of the region.

6.2 APPLICABILITY

This Guidance Memorandum applies to all individual projects of CERP as well as to the integration of CERP projects into the comprehensive plan. This Guidance Memorandum also provides specific direction to RECOVER, particularly the Assessment Team of RECOVER responsible for assessment activities.

6.3 ADAPTIVE MANAGEMENT

6.3.1 Introduction

Development of an adaptive management program is a critical element of CERP. Adaptive management for the Plan is defined in the Programmatic Regulations as "the continuous process of seeking a better understanding of the natural system and human environment in the South Florida ecosystem, and seeking continuous refinements in and improvements to the Plan to respond to new information resulting from changed or unforeseen circumstances, new scientific and technical information, new or updated modeling; information developed through the assessment principles contained in the Plan; and future authorized changes to the Plan in order to ensure that the goals and purposes of the Plan are fulfilled." The adaptive management program is intended to guide the implementation of the Plan and will be used to assess the responses of the South Florida ecosystem to the Plan and to determine whether these responses match expectations, including expected performance levels. Figure 6-1 outlines the adaptive management framework for implementing CERP.

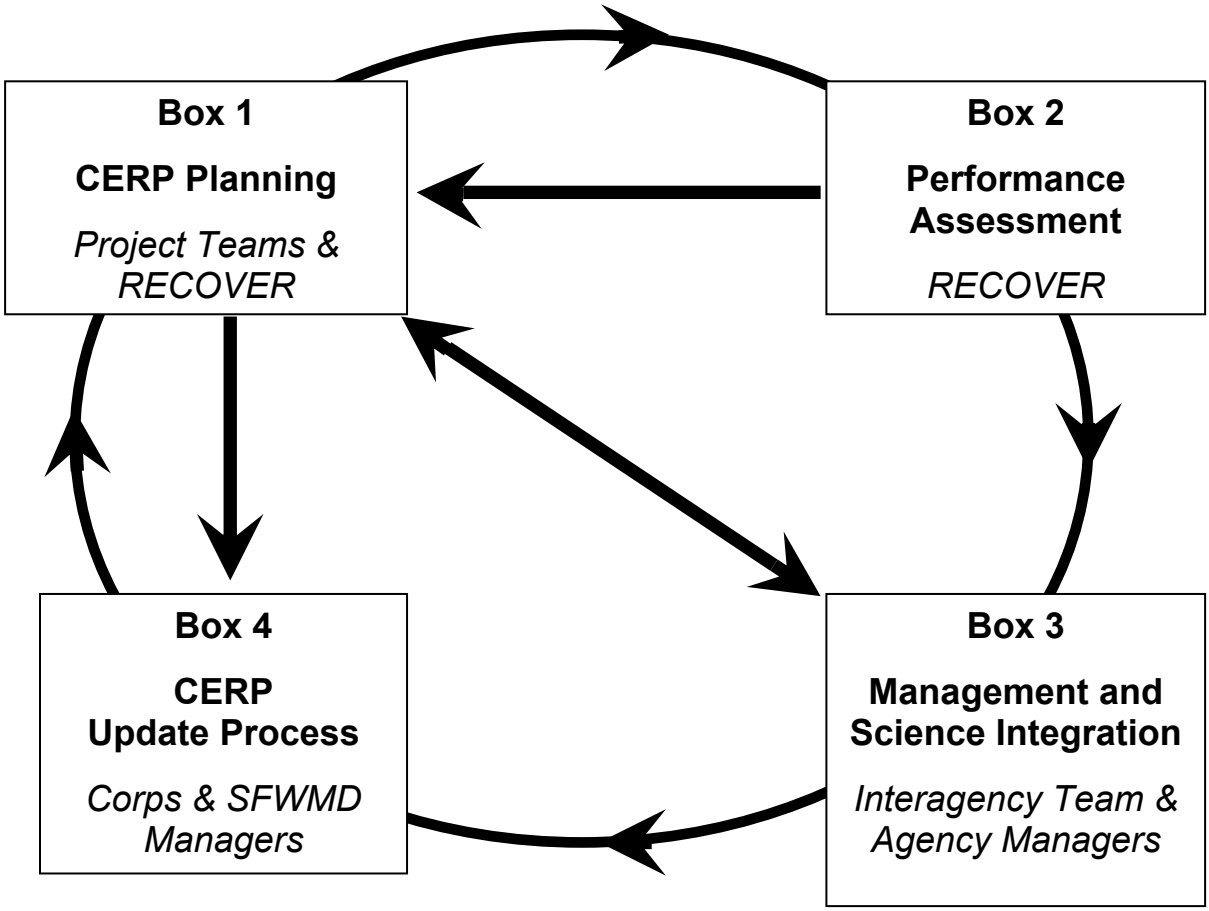


Figure 6-1: CERP Adaptive Management Framework Overview

6.3.1.1 Box 1: CERP Planning

The principles of adaptive management should be applied during CERP planning activities at both the system-wide and project-levels in order to anticipate and plan for performance uncertainties and incorporate performance-based versatility into project designs and recommended Plan improvements. There are several ways of addressing uncertainty: (1) anticipate uncertainty and build performance-based versatility or robustness into the design of the Plan and each individual project; or (2) detect and correct errors after project construction and make adjustments as they arise to ensure restoration goals are achieved. The former incorporates adaptive management principles into the planning process while the latter option represents the traditional approach to planning activities.

The concept of **robustness** is important to the adaptive management strategy and can be defined as the sensitivity of key design parameters to operate effectively given the variability and uncertainty of future events. The use of robust alternatives addresses the dilemma of making rational decisions today even though future conditions may be uncertain. Robustness is the ability of the Plan or individual project components to accommodate surprise and to perform well even under shifting conditions.

System-wide Planning - RECOVER will conduct periodic updates of CERP as required by the Programmatic Regulations to ensure that the system-wide goals of the Plan are being achieved. These updates are scheduled to occur at least every five years and will include evaluation of the Plan using new and/or updated modeling, which utilizes the latest scientific, technical, and planning information. The incorporation of an adaptive management approach into the framework for restoration of the Everglades supports the improvement of system-wide performance as learning and knowledge about the ecosystem improves. Broad planning scenarios addressing new and/or updated modeling or information (e.g., sea-level rise or updated modeling assumptions) are examples of new information to be evaluated at the system-wide scale. Based on predicted Plan performance incorporating these scenarios, it will be determined whether the Plan is still able to meet its goals and objectives. When appropriate, results of these system-wide evaluations will be used to initiate management actions within Box 3 (Management and Science Integration) that are necessary to adjust the Plan.

Project-Level Planning - Each CERP project is developed by a PDT (PDT) responsible for guiding the project through the planning process for CERP projects. Adaptive management principles can be applied during development and formulation of alternatives and during the detailed development of the selected alternative plan.

6.3.1.2 Box 2: Performance Assessment

An essential element of adaptive management is the development and execution of a scientifically rigorous monitoring and assessment program to analyze and understand responses of the system to implementation of the Plan. This assessment program relies heavily on the implementation of the integrated system-wide monitoring plan for CERP, entitled the Monitoring and Assessment Plan (MAP), but also would include new

information that is developed through improved models or scientific research. The scientific and technical information generated from the implementation of the monitoring program and from other sources will be organized to provide a process for RECOVER to assess CERP performance and system responses and to produce system status reports describing and interpreting the responses. Additionally, in accordance with the Programmatic Regulations, RECOVER is required to prepare a technical report at least once every five years; this report presents a system-wide assessment of whether the goals and purposes of the Plan are being met, including whether the interim goals and interim targets are being achieved or are likely to be achieved. Where appropriate, project-level data will also be incorporated into the assessment of system performance.

Monitoring and Assessing System Performance - Implementation of the MAP allows natural and human system responses to be assessed relative to stated hypotheses for these ecosystems and evaluated relative to the trends or targets established for the Plan through approved performance measures and targets. The MAP is a key component of the system-wide adaptive management strategy and is essential for the success of CERP by supplying the data necessary to assess system performance and modify the Plan to improve performance, if necessary.

RECOVER will use a hypothesis-based approach for assessment of system performance, which will provide a more robust and flexible approach than assessing individual performance measures. The hypothesis-based approach uses the best available science and models and recognizes the complexities of the ecological responses being detected by the MAP and CERP project-level monitoring. The approach attempts to capture the mechanistic interactions of multiple stressors rather than relying on a single metric to characterize ecological complexity. Furthermore, the hypothesis-based approach is scientifically robust and incorporates adaptive management principles such that it increases the likelihood of detecting undesired and unexpected responses of the ecosystem to CERP implementation and non-CERP activities.

Interim Goals and Interim Targets - Although the assessment performance measures provide targets for pre-drainage restoration, the Programmatic Regulations require that the incremental progress toward achieving CERP expectations be reported on a regular basis. To fulfill this need and determine if CERP performance is progressing as expected, interim goals and interim targets are being established to document the Plan's expected performance at five-year increments throughout the implementation of the Plan. The technical reports provided by RECOVER will help provide the means to determine if actual CERP performance is reaching the level described in the interim goals and interim targets. The utility of employing interim goals and interim targets lies in its ability to help detect whether the Plan is performing as expected so that refinements can be made. Additionally, as predictive capabilities improve and ecosystem relationships are better understood, the interim goals and interim targets will be fine-tuned to more accurately reflect CERP expectations. This incorporation of new information and subsequent refinement of the Plan to improve performance embodies the ongoing responsiveness of the adaptive management process.

RECOVER Technical Report - The final product resulting from Box 2 is the RECOVER Technical Report. The Programmatic Regulations state that "whenever it is deemed necessary, but at least every five years, RECOVER shall prepare a technical report that presents an assessment of whether the goals and purposes of the Plan are being achieved, including whether the interim goals and interim targets are being achieved or are likely to be achieved." The Technical Report represents RECOVER's system-wide science-based assessment of CERP performance toward achieving the goals and purposes of the Plan and will be used along with policy, legal, and cost considerations under Box 3 activities to produce the Assessment Report.

6.3.1.3 Box 3: Management and Science Integration by RECOVER and Agency Managers

Box 3 represents the phase of the adaptive management process in which scientists and managers collaborate in understanding the challenges and opportunities presented by new knowledge about, or unexpected events within, the south Florida ecosystem. Activities encompassed within Box 3 are triggered by new knowledge that reveals a potential opportunity to improve conditions in the South Florida ecosystem or a problem that could require a change to CERP implementation. The products of Box 3 are issue identification and an Assessment Report prepared by the USACE and SFWMD in accordance with section 385.31(b) of the Programmatic Regulations.

Overview of Box 3 Actions - The Box 3 process is comprised of two basic activities: issue identification and Assessment Report. The objectives of issue identification are to recognize whether implementation feedback is significant enough to trigger a Box 4 CERP update process by the USACE and SFWMD. The issue identification is accomplished via a structured dialogue involving scientists and managers. The goal of the dialogue is for scientists and agency managers to develop a common interpretation of the scientific and technical information which may have implications for management decisions affecting the CERP program. The issue identification may involve a strategic search for useful ideas, management measures, and more effective management approaches. The second activity is Assessment Report. In accordance with the Programmatic Regulations, the Assessment Report will be developed by the USACE and SFWMD, based on the Technical Report prepared by RECOVER, as well as the information developed from the issue identification accomplished through the structured dialogue among scientists and managers.

6.3.1.4 Box 4: CERP Update Process

The final element of the adaptive management framework involves the USACE and SFWMD jointly deciding on a course of action based on the information provided by the issue identification conducted under Box 3. Courses of action include investigating structural or operational changes to the Plan or alterations to the sequencing of projects. The actions encompassed within Box 4 will occur under the guidance of senior management within the USACE and SFWMD in consultation with other agencies, tribal governments, and stakeholders.. The selection of the preferred course of action by senior management from

USACE and SFWMD will be considered the course of action for improving performance that best represents societal values, scientific input, and the policies of USACE and SFWMD.

Modification of CERP - If decision-makers determine that modification of the CERP is required to improve Plan performance, in general there are three alternatives available to decision-makers:

(1) Consider altering the sequencing of project implementation to adjust the storage, treatment or delivery of water to improve interim performance;
(2) Consider operational changes to improve existing project performance, or
(3) Consider adjustments to the Plan. These changes could include adding, deleting or modifying individual project components.

If the USACE and SFWMD determine that modifications to the Plan are necessary to achieve the goals and objectives of the Plan, USACE and SFWMD will prepare a Comprehensive Plan Modification Report using the formal process outlined in the Programmatic Regulations. The report will contain appropriate NEPA documentation to supplement the Programmatic Environmental Impact Statement included in the "Final Integrated Feasibility Report and Programmatic Environmental Impact Statement" dated April 1, 1999. Minor adjustments to the Plan, including operational changes, may be made through individual PIRs or changes to the System Operating Manual and would include appropriate NEPA processes.

No Modification to CERP - If performance expectations are being met, then no changes to the Plan would be required.

6.3.2 Initiating Adaptive Management Activities

There are a number of factors or events that will occur during the implementation of CERP that may trigger the initiation of the adaptive management process. This section describes these factors and events.

6.3.2.1 Periodic CERP Updates

The Programmatic Regulations require that the Plan be evaluated periodically using new or updated modeling that includes the latest scientific, technical, and planning information. As appropriate, the results of this evaluation may be used to initiate adaptive management activities, as described in Boxes 2, 3, and 4 of Figure 6-1 including the consideration of a Comprehensive Plan Modification Report, consistent with section 385.32 of the Programmatic Regulations.

6.3.2.2 Shortfalls in Project Performance

In the event that a Plan project does not perform as planned and designed because there is a "shortfall" in the quantity or quality of water that the project produces or if the restoration benefits are not produced, the USACE and the SFWMD will initiate adaptive management activities, including preparation of an assessment by RECOVER (Box 2) as described in this Guidance Memorandum.

6.3.2.3 Achievement of Interim Goals and Interim Targets

The interim goals provide a means by which the restoration success of the Plan may be evaluated at specific points throughout the overall planning and implementation process of CERP and are established to facilitate inter-agency planning, monitoring, and assessment. Similarly, the interim targets provide a means by which the Plan's progress towards providing for other water-related needs of the region may be evaluated. If the USACE and SFWMD find that the interim goals or interim targets are not met or are unlikely to be met, then corrective actions would be initiated in accordance with the Programmatic Regulations, including consideration of adaptive management actions.

6.3.2.4 Required Periodic Assessments

In accordance with the Programmatic Regulations, RECOVER is required to prepare a technical report, not any less often than every five years, that presents an assessment of whether the goals and purposes of the Plan are being achieved, including whether the interim goals and interim targets are being achieved or are likely to be achieved.

6.4 ASSESSMENT ACTIVITIES

6.4.1 Background Information

The Programmatic Regulations provide authorization for, and requirement of, an adaptive management program to continuously seek a better understanding of the natural system and the human environment in the South Florida ecosystem and to provide a basis for making refinements to the Plan. Adaptive management is a critical element of the Plan as a response to new information to ensure that the goals and purposes of the Plan are fulfilled and that the benefits to the natural system and the human environment are achieved. An essential element of adaptive management is the development and conduct of a scientifically rigorous assessment program to analyze and understand responses of the system to implementation of the Plan. In the context of CERP, the overall adaptive management program includes four basic components and steps (Figure 6-1). Collectively, these components and steps are necessary to design and implement the system-wide MAP, to design and activate a data management and data analyses protocol, to interpret and report system responses, and to identify opportunities for making improvements to the Plan.

The module-level and system-wide assessments of natural and human system responses to the CERP projects will provide the primary basis for conducting an adaptive management strategy. Interpretations of system responses provided by these assessments will be used to identify potential refinements and improvements in the design and operation of the Plan, in the context of the overall adaptive management strategy.

6.4.2 Applied Science Strategy in RECOVER

RECOVER is responsible for the coordination and application of an Applied Science Strategy (Ogden and Davis, 1999) during Plan implementation. This strategy outlines a process for organizing current scientific understanding of wetland and estuarine ecosystems into interrelated components that can effectively support restoration efforts. The major components of the Applied Science Strategy are the development of regional and total system conceptual ecological models, identification of performance measures and targets, development and implementation of a system-wide monitoring program, and development of an assessment strategy. Natural and human system responses will be assessed relative to stated hypotheses for these systems and evaluated relative to the trends or targets established for the Plan through performance measures and objectives outlined in the MAP.

6.4.3 Conceptual Ecological Models

Conceptual ecological models are the scientific foundation for a majority of performance measures for the natural system used in the development of CERP (Ogden and Davis, 1999). The conceptual ecological models illustrate the links among societal actions, environmental stressors, and ecological responses (USEPA, 1998) and provide the basis for selection and testing the set of causal hypotheses that best explain how the natural systems in South Florida have been altered (Gentile et al., 2001). Developed as a planning and design tool, conceptual ecological models are used in ecological risk assessment analysis worldwide (Rosen et al., 1995; Gentile et al., 2001) and are one of the major components of the Applied Science Strategy of RECOVER.

The conceptual ecological models, developed for 11 physiographic regions defined in the MAP and a total system model (in preparation), provide the scientific basis for development of the CERP system-wide monitoring design and assessment process. The conceptual ecological models are a planning tool for translating the overall restoration goals of the Plan into the specific performance measures that will be used to plan, design, and assess the success of the Plan. In addition to illustrating the ecological links between the physical, chemical and biological elements in specific physiographic regions of South Florida, conceptual ecological models provide the scientific foundation for: (1) developing causal hypotheses linking the most important hydrologic and chemical stressors with the major ecological effects, thus forming the basis for predicting responses to CERP projects and other restoration efforts, and (2) creating sets of measurable indicators of success (e.g., performance measures) as the basis for assessing how well the projects achieve the broad, policy-level goals that have been established for CERP.

6.4.4 Performance Measures

Performance measures consist of ecological attributes or environmental stressors (e.g., hydrology, water quality, and habitat alteration) that are indicators of conditions in natural and human systems. Performance measures, developed in large part from the conceptual ecological models, have been integrated into hypotheses at a module scale (section 6.4.2.1), which provide a framework for interpreting the system-wide performance of the Plan.

Additional performance measures are derived from Federal and State law or policy (e.g., water supply and flood protection). Indicators for the interim goals and interim targets will also be incorporated into the system-wide performance assessment.

RECOVER has defined "assessment" and "evaluation" performance measures. Assessment measures are those that can be directly measured during implementation of CERP projects in order to track changes in the state of the natural and human systems. Evaluation measures are used to predict system-wide performance as determined through simulation modeling of the Plan. As understanding of the ecosystem increases, and model development continues, it is expected that a more unified set of performance measures will be developed and used for both evaluation and assessment. Performance measures include hydrology, water quality, biological measures, water supply, and flood protection measures. Some performance measures relate directly to the level of particular stressors (e.g., rate of nutrient input, degree of alteration of salinity, depth of water), whereas others relate to key attributes of the ecosystem (e.g., fish population size, oyster health, seagrass spatial extent). Achieving the targets (or trajectories towards the targets) of a well-selected set of performance measures is expected to result in system-wide sustainable restoration, as described in the Plan. To optimize the assessment and adaptive management process, a single integrated set of performance measures with both predictive (evaluation) and assessment elements should be considered for RECOVER system-wide tasks including project alternative evaluation, assessments, and the interim goals and interim targets. The application of an integrated set of performance measures fosters clear assessment of targeted system responses and allows project planning to be guided by the same indicators and endpoints as will be used to monitor progress during the implementation of the Plan. Performance measures for CERP are identified in the Plan's System-Wide Performance Measure Documentation Report.

6.4.5 MAP Module Groups

The MAP modules represent four geographical regions of the South Florida landscape, with additional modules for hydrology monitoring (to assist in evaluating water supply and flood protection performance measures) and mercury bioaccumulation. These modules function as the basic organizing elements and research units of the MAP and form the basis for the scientific teams that interpret and analyze monitoring data. These modules include:

- Greater Everglades
- Southern Estuaries (Florida and Biscayne Bays, Southwest Florida Coast)
- Northern Estuaries (St. Lucie Estuary/Southern IRL, Caloosahatchee Estuary, Lake Worth Lagoon, and Loxahatchee River Estuary)
- Lake Okeechobee
- South Florida Hydrology Monitoring (Water Supply and Flood Protection)
- South Florida Mercury Bioaccumulation

The four geographic modules encompass one or more of the conceptual ecological models described above. Each module contains a sampling network designed by a module group, with consideration of compatibility and efficiency that was derived from coordination with the other modules.

Module Groups are teams of scientists and technical experts with expertise in ecology, hydrology, and water quality, and who have experience relative to the natural or human systems described in the MAP modules. Module Groups combine the senior scientists of the agencies participating in the development and implementation of the MAP with other leading scientists who are widely recognized in their fields and are actively working in South Florida ecosystems.

The Module Groups and associated Principal Investigators are responsible for coordinating the implementation and quality assurance of the MAP monitoring and research projects for each of the modules. Module Groups ensure that implementation of specific monitoring components follows the overall program sequencing developed by the Assessment Team of RECOVER. Module Groups are also responsible for comparing the MAP monitoring data requirements to the non-MAP data already being collected to identify where existing efforts can be incorporated or modified to meet MAP monitoring and assessment guidance criteria.

6.5 GUIDANCE FOR THE CONDUCT OF ASSESSMENT ACTIVITIES OF RECOVER

Assessment activities are organized into three major themes: (1) the efficacy of monitoring components and research activities implemented as part of the system-wide monitoring program, including review of reports from project-level monitoring; (2) the implementation of the Plan in terms of regional and system-wide performance and the progress toward meeting long-term objectives and interim goals and interim targets; and (3) the capture and assessment of additional information that may be subsequently identified as relevant to system-wide responses, including new model results. General guidance for the process of conducting assessments follows in this Guidance Memorandum.

The strategy developed for assessing measurable changes in system responses is a multi-step process consisting of monitoring design analysis, data acquisition, data analysis, interpretation, integration, and assessment of system-wide performance. This strategy is designed to address, but is not limited to, the following types of questions: (1) has the indicator changed from the pre-CERP condition; (2) is the change in the desired direction and magnitude; and (3) is the change consistent with expected responses described in the Plan's hypotheses as identified in section 3 of the MAP, Part 1. This Guidance Memorandum also addresses the strategy for determining if the measured responses are achieving the interim goals and interim targets established according to section 385.38 of the Programmatic Regulations.

A key part of this strategy is determining pre-CERP variability and establishing reference conditions for each of the hydrologic, water quality, and ecological indicators. Background variability and spatial patterns will be the emphasis of this effort for the first five years before the implementation of specific Plan projects that are expected to influence the ecosystem. A fundamental concept underlying the assessment strategy is the ability to detect measurable change of individual and aggregated performance measures. Measurable change is defined as the magnitude and direction of change of a performance measure from the pre-CERP reference condition (i.e., environmental baseline).

Another approach for analyzing trends in ecological systems is to study the changes in the response of ecological attributes along a known stressor gradient (e.g., hydrologic, water quality). This approach may be particularly suited for cases where the temporal extent of a database is not sufficient to detect statistically significant trends and changes beyond the limits of background variability. This methodology, which would incorporate sampling along environmental stressor gradients, can be used to supplement other approaches to evaluate CERP induced changes.

Critical to the success of implementing any assessment is the ability of the sampling designs for the RECOVER MAP, Part I monitoring components to have the power to detect measurable change in hydrologic (including water supply and flood protection), water quality, and ecosystem indicators. The organization of the MAP attempts to reflect the stepwise scientific process required to detect and measure variability, status and trends in individual performance measures by Principal Investigators. This process is followed by the integration of multiple performance measures at the module level. Finally, some combination of integrating performance across modules and assessment of system-wide hypotheses from the Total System Model will be used to provide a system-wide assessment of hypotheses.

6.5.1 Integrative Assessment Strategy and Process

A multi-step process for detecting and assessing changes in performance measures called the Integrative Assessment Guidance (IAG) process, has been established for assessing progress toward achieving interim goals and interim targets, and evaluating the status of module and system-wide hypotheses (Figure 6-3). The guidance is comprised of three sections. The first addresses assessments at the MAP component level (i.e. specific monitoring and supporting research projects), the second at the module level, and the third at the system-wide level. The assessment process, outlined in Figure 6-2, applies specifically to the natural system and will be modified, as necessary, to address water supply and flood protection.

6.5.2 MAP Component-Level Module Level

The MAP component-level guidance is directed at the Principal Investigators working on specific monitoring and supporting research projects within a Module Group. The assessment guidance at the MAP component-level has three parts: (1) estimating the ability to detect change; (2) establishing reference conditions; and (3) measuring changes from reference conditions. At this level, the assessments focus on: (1) selecting the analysis tools necessary to measure the magnitude and direction of change in the performance measures; (2) determining whether changes are consistent with desired trends or targets and MAP hypotheses; and (3) determining if there are indications of unanticipated events that affect desired outcomes (Figure 6-2).

6.5.3 Module Level

Module-level analyses focus on the integration of multiple performance measures in the assessment of specific hypotheses. These module-level analyses cumulate data for trend

analysis. At this level, Module Groups integrate and interpret the annual reports prepared by each Principal Investigator, evaluate the relevance and utility of non-MAP data and consider any other information relevant to the assessment. Module-level assessments are conducted to determine the direction and magnitude of change in the integrated performance measures to determine if the changes are consistent with expected responses described in causal hypotheses. If the trends do not correspond to the expected responses, the Module Groups must provide plausible scientific explanations (Figure 6-2). Finally, the Module Groups will contribute interpretations of progress toward achieving interim goals and interim targets, identify unexpected results, and address episodic events.

6.5.4 System-Wide

System-wide analysis performed by the RECOVER Assessment Team addresses the synthesis of findings across modules and across years to provide a comprehensive description of the status of the system. While the final approach to the system-wide level assessments remains to be clarified, it is important for the integrative assessment process to allow for flexibility and not be too prescriptive or too limiting in the approach at the system-wide level, including consideration of the Total System Conceptual Model as an additional tool. This assessment will include an evaluation of progress toward achieving system-wide interim goals and interim targets. A summary assessment report is prepared in order to determine whether system responses are consistent or inconsistent with the system-level restoration goals and hypotheses. Assessments will also be conducted to determine whether corrective actions might be necessary to improve performance.

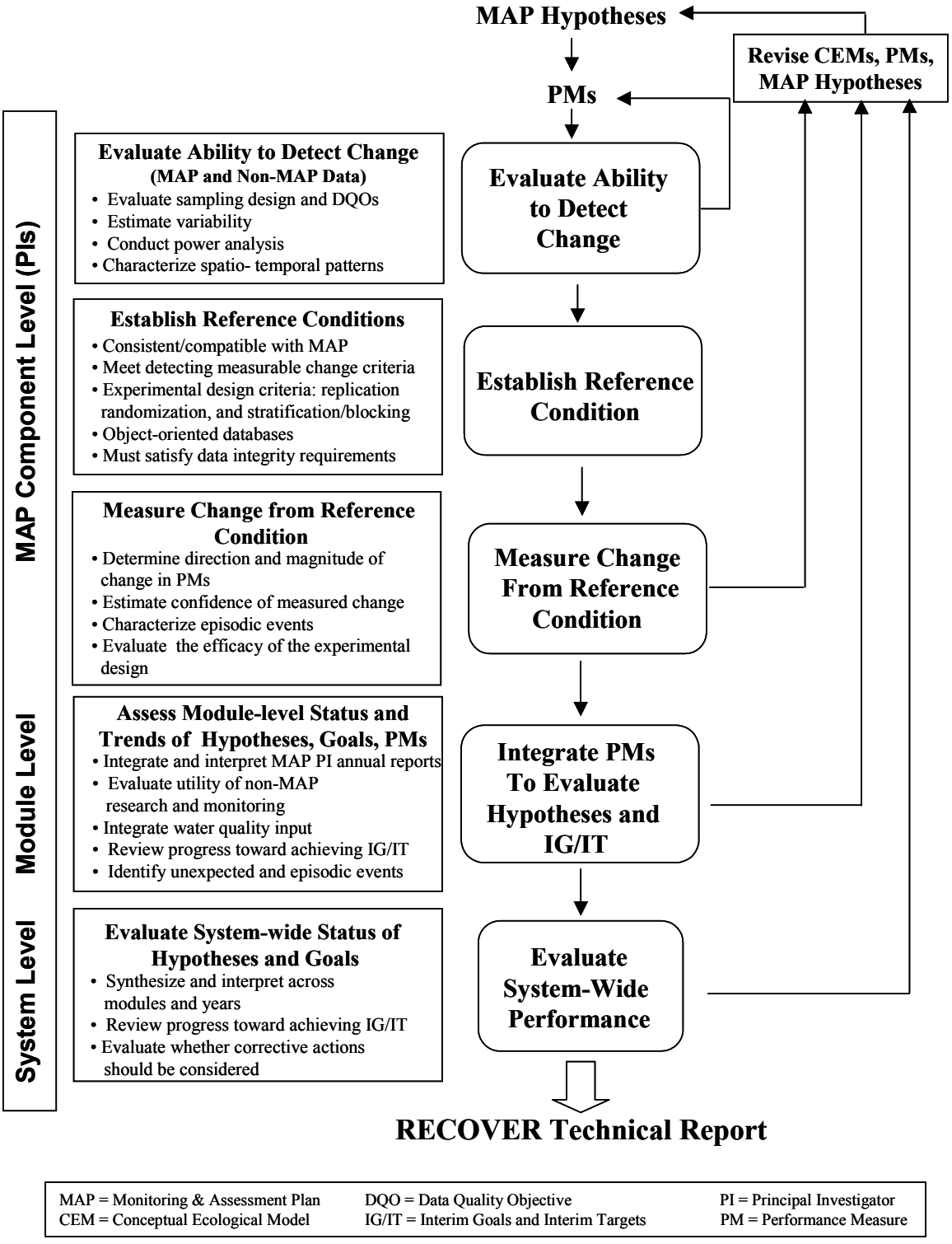


Figure 6-2: MAP Technical Assessment Process

6.5.5 Identification of Need for MAP Changes or Adaptive Management Actions

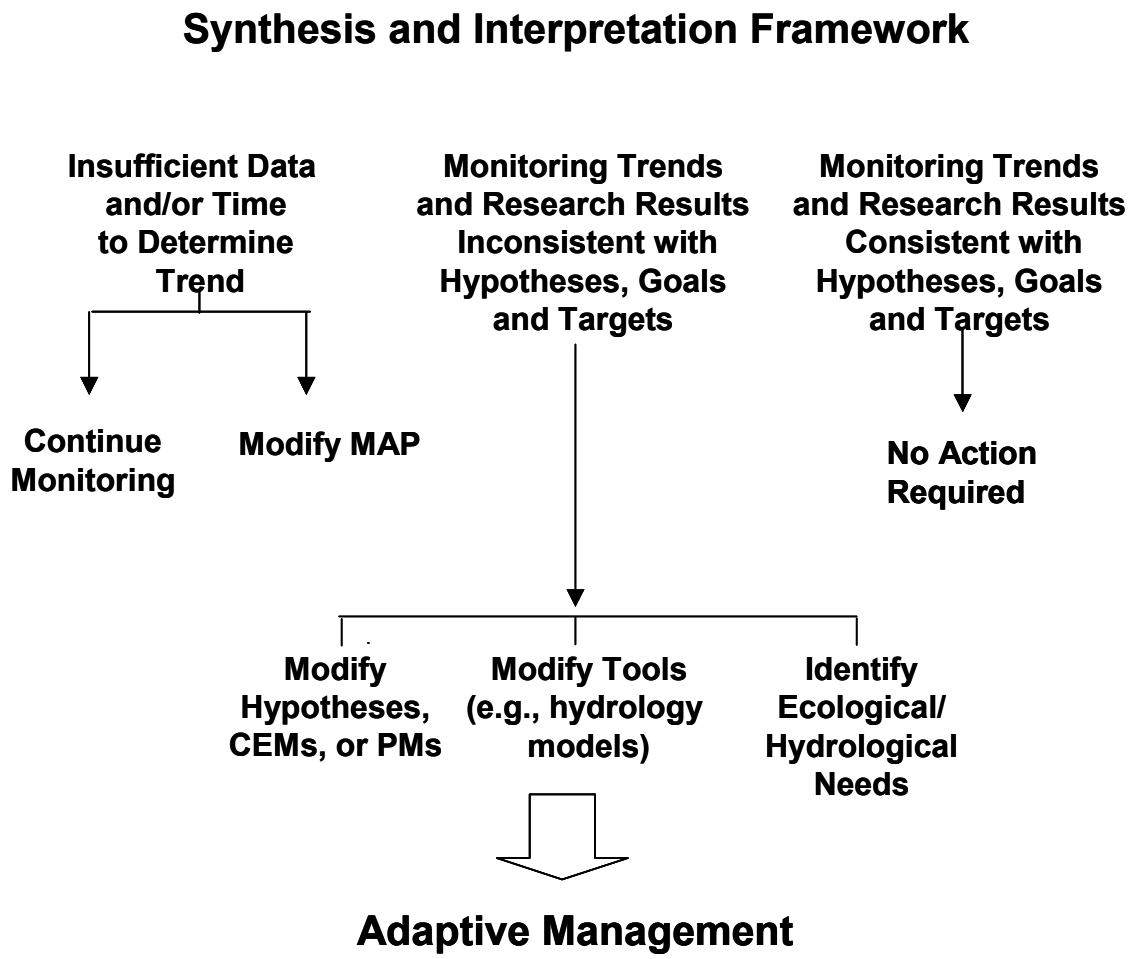
The results from the system-wide analysis may result in the need for the RECOVER Assessment Team to address a suite of options. The intent of this section is to provide guidance on the possible decision alternatives that could result from the assessment of individual or multiple performance measures and MAP hypotheses within and across modules. A fundamental assumption is that this guidance has been applied to analyzing and integrating the performance measures within a module.

There are three plausible alternatives for how to interpret system-wide assessments as illustrated in Figure 6-3. The first alternative recognizes that there was insufficient data or time to determine a pattern or trend. In this case, two possible explanations can be postulated: (1) insufficient time for either the performance measure or the system to respond in a manner allowing for the MAP hypothesis to be critically examined; or (2) the wrong metrics are being measured and reported. In the former case, the monitoring should continue until the performance measure being assessed is able to express itself fully. In the latter case, the option is to modify the MAP.

The second alternative is that the monitoring trends and research results are inconsistent with and/or do not support the hypotheses or the interim goals and interim targets. This scenario could result in the following options: (1) modify the hypotheses, conceptual ecological models and/or the associated performance measures; (2) modify the tools (i.e., hydrologic models); and/or (3) identify system-wide hydrological and/or ecological needs to improve performance of the Plan. This last option would provide the basis for initiating the next phase of the adaptive management process (see Figure 6-1) that would address alternatives for modifying water management operations and/or the Plan.

In the third alternative, a trend is detected that is consistent with the hypotheses and the interim goals and interim targets. No action would be needed in this case.

The RECOVER technical report (section 6.6.3) will use this framework in describing its system-wide assessment and will base its conclusions based on the best available science. These conclusions may include whether changes to the MAP are needed or if adaptive management actions to improve Plan performance should be considered.



CEM = Conceptual Ecological Model
MAP = Monitoring and Assessment Plan
PM = Performance Measure

Figure 6-3: Decision Framework for Interpreting System-Wide Assessments

6.6 TECHNICAL ASSESSMENT REPORTING FRAMEWORK

6.6.1 Strategy and Purpose

The Plan's Technical Assessment Reporting Framework (Figure 6-4) places considerable emphasis on the analysis, synthesis and interpretation of the monitoring and research data. Further, the new data that are acquired annually are combined with previous years' trend data to provide a comprehensive and timely synthesis of all the available data. In so doing, this framework assures the early identification of potentially unexpected results and an assessment of the magnitude and direction of change in ecosystem responses, including indicators of interim goals and interim targets and the basic information required to produce the RECOVER Technical Report.

The Technical Assessment Reporting Framework (Figure 6-4) illustrates the process proposed for analyzing, integrating, and interpreting the MAP and other monitoring and research data in a comprehensive, systematic, and logical manner. Two principles underlie this framework: (1) an emphasis on the importance of conducting annual assessments of the monitoring data, and (2) the assumption that the technical foundation for the MAP resides with the Principal Investigators and Module Groups. After having completed several reporting cycles, the timeline will be evaluated based on its ability to: (1) assess the efficacy of the sampling designs; (2) capture trends in system responses; (3) detect unexpected responses; (4) assess progress toward achieving interim goals and interim targets; and (5) determine whether corrective actions need to be considered.

6.6.2 Reporting Framework

The Technical Assessment Reporting Framework identifies the types of reports that contribute to the RECOVER Technical Report. The Principal Investigator Report, prepared by the Principal Investigators, is the first level of the MAP and non-MAP data analysis and interpretation. The Principal Investigators Report will be required annually. This report will cumulate new data annually and combine it with previous years' data to provide a "running" status of the performance measures of interest at the MAP component and module level. Data used in these reports must meet data quality objectives and adhere to Quality Assurance Systems Requirements. In addition, databases used in the reports must comply with data validation and standardization requirements for CERP.

Each of the Principal Investigator Reports for a module will contribute to the preparation of the MAP Module Group and Assessment Team (AT) System Status reports. The objectives of these reports are to integrate and interpret the information in each of the Principal Investigator Reports, review non-MAP data for inclusion in the assessment and provide a module-level (Module Group Report) and system-wide (AT System Status Report) status of the hypotheses, restoration goals, and performance measures based on a multi-year analysis of trends. These reports will also review progress toward achieving interim goals and interim targets. Finally, the integration of all module data will afford the opportunity to identify unexpected or episodic events.

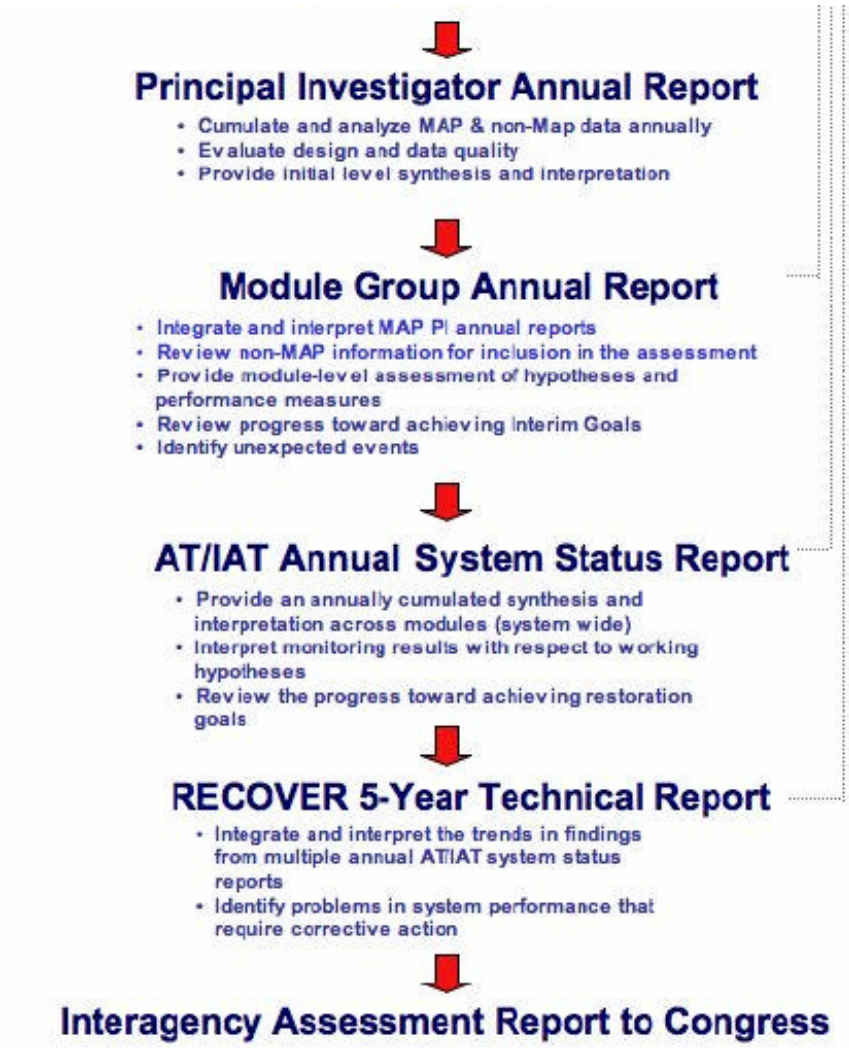


Figure 6-4: Assessment Reporting Framework

Each of the MAP-Principal Investigator Reports for a module will be used in the preparation of the MAP Module Group Report. The objectives of the MAP Module Group Report are to integrate and interpret the information in each of the Principal Investigator Reports, review non-MAP data for inclusion in the assessment and provide a module-level status of the hypotheses, restoration goals, and performance measures based on a multi-year analysis of trends. This report will also review progress toward achieving module-level interim goals and interim targets. Finally, the integration of all module data will afford the opportunity to identify unexpected or episodic events.

6.6.3 RECOVER Technical Report

The RECOVER technical report will provide a system-wide integration of all current and past hydrologic, water quality, and ecological data, synthesized across modules. The RECOVER technical report provides an assessment of whether the goals and purposes of the Plan are being achieved, assessing progress towards achieving system-wide interim goals and interim targets, and provides an assessment of system-wide hypotheses. The report will specifically identify those system responses that are inconsistent with the goals and purposes of the Plan, and will evaluate whether corrective actions should be considered based on scientific findings of system-wide or regional ecological needs. In accordance with section 385.31(b)(4) of the Programmatic Regulations, the technical report will be prepared at least every five years. However, preparation of RECOVER technical reports more frequent than a five-year interval will occur as appropriate, in response to specific, system-wide technical and scientific issues, the magnitude and frequency of undesirable or unexpected responses, in response to new scientific understandings of the natural systems, and as improved understanding of the rates of ecological responses may influence reporting rates.

6.6.4 Integrative Assessment Reporting Timeline

The reporting structure and timelines, outlined in Figure 6-5, provides guidance for the production of annual reports by MAP Principal Investigators, Module Groups, and the AT/Integrative Assessment Team (IAT). This guidance does not identify fixed reporting dates because of variations in starting times for different MAP Principal Investigator contracts. However, over time, it is anticipated that reporting timelines at the MAP Principal Investigator Reports will become more synchronized. At such time, the reporting timelines should follow the sequence specified for each block in Figure 6-5.

At the MAP Principal Investigator level, data will be collected and processed on an annual basis. After each 12-month data collection/processing period, the Principal Investigators will prepare an analysis and interpretation of each year's new data plus previous year's data (MAP Principal Investigator Annual Report). This analysis should be complete within nine months from the end of the 12-month data collection period. This analysis phase will include incorporation of physical (e.g., hydrology and geomorphology) and chemical (e.g., water quality and contaminants) data where appropriate. Encompassed within the nine-month analysis period is a six-month time lag in availability of physical and chemical data because of Quality Assurance/Quality Control and data management requirements. The time lags in accessing some data sets do not allow the Principal Investigators to meet the reporting

milestones established in this guidance. In these cases, time lags must be shortened to no more than six months in order to meet reporting milestones. Additionally, multi-agency physical and chemical data have inherent issues such as consistent reporting mechanisms, data formatting and data availability. These issues create constraints on incorporation of physical and chemical data for the MAP analysis that must be resolved.

The individual MAP Principal Investigator Annual Reports, which will eventually include several years of data that has been accumulated and analyzed annually, are then synthesized at the Module Group level to address the Module hypotheses, relevant performance measures and interim goals. The Module Group Annual Reports will include a compilation of the individual Principal Investigator Annual Reports plus a synthesis section that synthesizes, assesses, and interprets the status of the relevant Module hypotheses and interim goals. It is envisioned that the annual analysis of hydrology and water quality status and trends will be cumulative, integrating historical (pre-MAP) databases and the annually acquired MAP databases and provide the interpretative context for assessing the status of Module level hypotheses. Each year the Module Group Annual Reports will be summarized and accumulated every year (i.e., rolled up) to create an Annual System Status Report that will address the overall status of the system relative to system level hypotheses, performance measures and restoration goals.

There are three functions for the Annual Assessment Team System Status Reports. First, at least every two years, the current Annual System Status Report, which represents the accumulation of multiple years of information, will be used to provide information to the National Academy of Sciences and for the CERP Report Card. There are no new analyses involved in this activity. Second, at least every five years, the current cumulated Assessment Team Annual System Status Report, which represents multiple years of data “rolled up” into one report, will be peer-reviewed. This peer review process will be completed before being used as one of the major components of the RECOVER Technical Report which is mandated by the Programmatic Regulations to provide an assessment of the Interim Goals. In addition, this edition of the Annual System Status Report will provide the following: 1) a synthesis of findings across modules and across years to provide a holistic description of the status of the system; 2) an evaluation of the results in relationship to supporting system-level hypotheses and achieving system-wide Interim Goals; 3) a summary of those changes that are consistent with goals and hypotheses and those that are not; 4) a discussion of why the goals and hypotheses are not being achieved; and 5) an identification of those issues relevant to adaptive management.

The third use of the Annual Assessment Team System Status Report is to identify and report major unanticipated findings that may need attention and correction that have been identified and “flagged” by the Module Group Annual Reports. The module groups would include, as appropriate, these “red flags” as the module groups synthesize the Principal Investigator Reports and prepare the Module Group Annual Reports. If an unexpected and undesirable response, with respect to the goals of CERP or the hypotheses, is detected at the module or system scale, a technical report can be generated immediately.

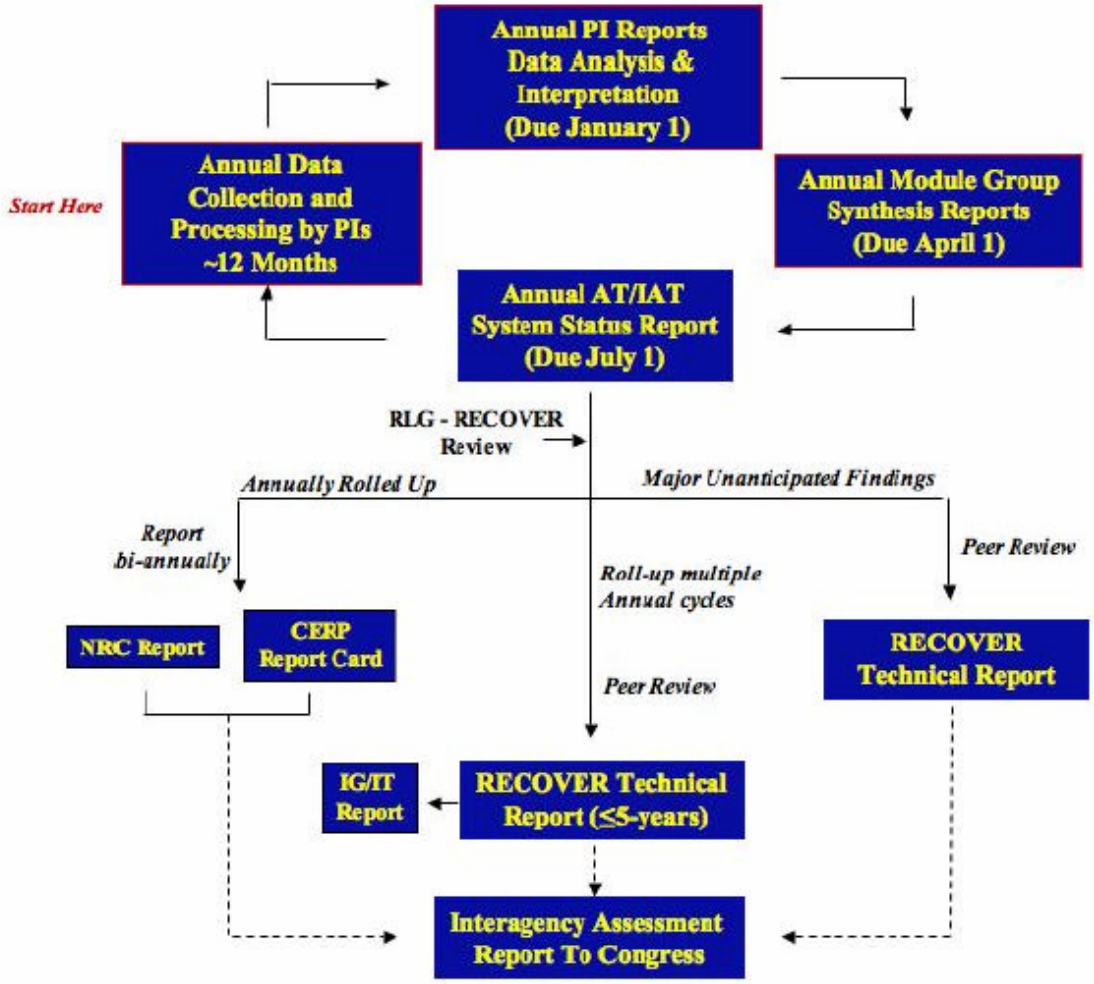


Figure 6-5: Reporting Timeline

6.7 PEER REVIEW OF ASSESSMENT DOCUMENTS

The peer review process enhances the scientific credibility of assessment documents by providing a means for independent experts to offer constructive criticism and scientific and technical advice. Currently, peer review of RECOVER documents is discussed at length in CERP Guidance Memorandum 27.00 and will be followed for peer review requirements in this Guidance Memorandum. Although the Programmatic Regulations only specify the necessity of external peer review for the draft assessment report produced by the USACE and the SFWMD, other assessment documents and processes may also benefit from external peer review.

The assessment process is divided into logical progression levels (Figures 6-1 and 6-3). Peer review should be considered at several of these levels as described below.

6.7.1 Principal Investigator Level

This level of external peer review would primarily consist of that associated with drafted journal articles that relate to completed studies and other research associated with Plan activities. As appropriate, these activities will be identified in individual scopes of work for individual MAP components.

6.7.2 Module Group (Module Group Report) and System Level (AT System Status Report)

External peer review should occur on a case-by-case basis as deemed appropriate by the RECOVER Assessment Team. These may include situations such as when the assessment indicates that: (1) changes in the MAP components (e.g. conceptual ecological models, performance measures or MAP hypotheses) are warranted; (2) there are unresolved and significant technical disputes; or (3) there are significant new findings that are relevant to ecosystem responses.

6.7.3 RECOVER Technical Report Level

The RECOVER Technical Report will contain scientific information and interpretations and will potentially present scientifically and technically controversial issues and findings. The process leading to the report involves a large, long-term investment and multiple projects. Therefore, peer review at this level should be consistent with peer review guidance (currently CERP Guidance Memorandum 27.00).

Once completed, the comments, feedback and other information (constructive criticism and scientific and technical advice) resulting from peer review must be adequately considered and documented. This information should be included as an attachment or appendix to the final version of the report. The report should also include a section addressing how the peer review comments were incorporated, including an explanation and rationale for not incorporating specific suggested changes if this is the case, as well as making any recommendations for inclusion or consideration in following report iterations. The peer reviewers should be included in the distribution list for the report to allow the reviewers to see how their comments or input were addressed.

EXHIBIT 9

ATTACHMENT 6-A
MINIMUM REPORTING GUIDANCE

The following is minimum reporting guidance for Principal Investigators, Module Groups, and the RECOVER Assessment Team that parallels the assessment process discussed in this Guidance Memorandum and Figure 6-3 of this Guidance Memorandum. This minimum reporting guidance applies specifically to the natural system and can be modified, as necessary, to address water supply and flood protection.

A. Evaluate Ability To Detect Change–Principal Investigator Level

- Describe and discuss the results of the power analysis for the sampling design.
- Determine the minimum detectable difference of the power analysis and associated confidence and uncertainty.
- Describe any suggested changes in the MAP sampling design and implications of those changes for the power analysis and the minimum detectable difference.

B. Establish Reference Condition–Principal Investigator Level

- Describe non-MAP monitoring and research data sources used in the assessment. If non-MAP data were used, did the data meet the criteria outlined in this guidance? If non-MAP data were used and did not meet the guidance criteria, provide a rationale to justify the inclusion of the data.
- Describe how representative the data are in space and time.
- Describe the approaches used to address measuring variability.
- Enter the data into a system-wide data management system.

C. Measure Change From Reference Condition–Principal Investigator Level

- Describe the methods used to estimate the direction and magnitude of change in performance measures from the reference state both annually and cumulatively for multiple years.
- Compare current status of the performance measure with the performance measure's desired trend or target.
- Evaluate consistency of monitoring results with the MAP hypotheses.
- Determine if there are indications of unanticipated events and describe how the events may be affecting the desired outcome.
- External peer review will be conducted as appropriate.

D. Integrate Performance Measures To Evaluate Module Hypotheses-Module Group Level

- Integrate multiple performance measures to provide an assessment of module-level hypotheses.
- Describe the direction and magnitude of change in the integrated performance measures and determine if the changes are consistent with expected responses described in the Plan's hypotheses.

- If trends do not correspond to expected responses, provide a probable rationale or explanation for the findings.
- Evaluate progress toward achieving module-level interim goals and interim targets.

E. System-Wide Performance Evaluation–Recover Assessment Technical Team Level

- Synthesize findings across modules and across years to provide a holistic description of the status of the system.
- Evaluate the results in relationship to supporting system-level hypotheses and achieving system-wide interim goals and interim targets.
- Summarize those changes that are consistent with the interim goals and interim targets and hypotheses and those that are not.
- Provide a discussion of why the interim goals and interim targets and hypotheses are not being achieved.
- Provide a discussion of adaptive management issues.
- The system-wide Technical Report will be peer reviewed, consistent with the Programmatic Regulations and the appropriate CERP guidance on peer review.

APPENDIX A
DEFINITIONS

In addition to those terms already defined in the Programmatic Regulations, the following terms are defined for these Guidance Memoranda:

Acceler8 means the program of the State of Florida to implement certain features of the Plan using State resources and financing.

Alternative Formulation Briefing (AFB) means the meeting held to discuss the results of the formulation and evaluation process and to obtain approval of the tentatively selected plan, as described in USACE regulations and policy.

Assessment Report means the report prepared by the USACE and the SFWMD, in consultation with Federal, Tribal, State, and local agencies and tribal governments, as part of the adaptive management program, in accordance with the Programmatic Regulations.

Assessment Team means the RECOVER team that is responsible for conducting assessment activities under the adaptive management program.

Comparable source means a source that is sufficiently similar to or equivalent to the existing legal source in terms of quantity and quality.

Design Coordination Team (DCT) means the team established pursuant to the design agreement between the Corps of Engineers and the non-Federal sponsor.

Elimination or transfer means the reduction of all or a portion of an existing legal source of water caused by implementation of one or more CERP projects and/or the sending of all or a significant portion of an existing legal source of water from its original location to another location within the South Florida ecosystem caused by implementation of one or more CERP projects.

Existing Conditions Baseline means the hydrologic conditions in the South Florida ecosystem as modeled by using a multi-year period of record based on assumptions such as land use, population, existing legal uses of water quality and assumed operations of the C&SF Project that includes authorized CERP projects with approved operating plans and non-CERP activities with approved operating plans at the time the tentatively selected plan is identified.

Existing legal use means a water use that is authorized under a SFWMD or FDEP consumptive use permit under Part II of Chapter 373, F.S., or is existing and exempt from consumptive use permit requirements under Chapter 373, F.S., such as domestic uses of water.

Existing legal source means the quantity and quality of water available within a water basin (including seepage, surface water, direct rainfall, and groundwater) used for a water supply, which is legally protected by Federal or State law, including the quantity and quality necessary for protection of the source of supply, consistent with State and Federal law, as of December 11, 2000, for:

(i) An agricultural or urban water supply;
(ii) Allocation or entitlement to the Seminole Indian Tribe of Florida under Section 7 of the Seminole Indian Land Claims Settlement Act of 1987 (25 U.S.C. 1772e);
(iii) the Miccosukee Tribe of Florida;
(iv) water supply for Everglades National Park; or
(v) water supply for fish and wildlife."

Future Without CERP Baseline means the hydrologic conditions in the South Florida ecosystem as modeled by using a multi- year period of record based on assumptions such as land use, population, water demand, water quality, and assumed operations of the C&SF Project that includes projected conditions at the end of the period of analysis for the Plan and specifically excludes any CERP projects.

Indicator means an element or component of the natural or human system that is expected to be influenced by the Plan, and has been selected to be monitored as representative of a class of system responses.

Initial Operating Regime means the hydrologic conditions in the South Florida ecosystem at the time that a CERP project becomes operational as modeled by using a multi-year period of record based on assumptions such as land use, population, water demand, and water quality and assumed operations of the C&SF Project that includes authorized CERP projects with approved operating plans and non-CERP activities with approved operating plans at the time that the tentatively selected plan is identified.

Intervening Non-CERP activities means changes in permitted demands and structural or operational changes to the C&SF Project or other water resources systems in the South Florida ecosystem that are made by Federal, State, tribal, and local governments and which not included in the Plan.

Monitoring and Assessment Plan (MAP) means the plan prepared by RECOVER that describes the system-wide monitoring program to be implemented by RECOVER that is designed to measure status and trends towards achieving the goals and purposes of the Plan and the activities that assess if measured responses are desirable and are achieving the interim goals and interim targets or the expected performance level of the Plan.

MAP Module Group Report means the report prepared by RECOVER that integrates and interprets the information in each of the Principal Investigator reports, reviews non-MAP data for inclusion in the assessment report and provides a module-level status of the hypotheses, restoration goals, and performance measures based on a multi-year analysis of

trends. The MAP Module Group Report also reviews progress at a module-level towards achieving the interim goals and interim targets.

Next-Added Increment Baseline means the hydrologic conditions in the South Florida ecosystem as modeled by using a multi- year period of record based on assumptions such as land use, population, water demand, water quality and assumed operations of the C&SF Project that includes projected conditions at the end of the period of analysis for the Plan and includes only those approved CERP projects at the time that the tentatively selected plan is identified.

Other water-related needs means Federally authorized purposes of the Central and Southern Florida Projects, including water supply, saltwater intrusion prevention; water quality protection, protection of wetland systems within urban areas, navigation, and recreation.

Principal Investigator Annual Report means the report prepared annually by Principal Investigators conducting MAP monitoring activities that presents the first level of data analysis and interpretation for a specific MAP component (and relevant additional information). As part of this report, the Principal Investigator will estimate the ability to detect change, establish reference conditions, and measure change from reference condition.

Quality Review Board (QRB) means the periodic meetings chaired by the Jacksonville District Commander and the Executive Director of the South Florida Water Management District to discuss the status of the CERP program.

RECOVER System Status Report means that report prepared by RECOVER that provides a synthesis of findings across MAP modules and across years to provide a comprehensive description of the status of the system. This report will include an evaluation of progress toward achieving system-wide interim goals and interim targets to determine whether system responses are consistent or inconsistent with the system-level restoration goals and hypotheses.

Reference Condition means the hydrological, water quality, and/or ecological state of the system or a specific indicator, which encompasses spatial and temporal background variability, prior to implementation of a CERP project that may be modified by the condition.

Selected alternative plan means the plan selected by the USACE and the non-Federal sponsor for further design and presentation to the public as the result of completing technical analyses of the no-action alternative and other alternative plans formulated and evaluated for a PIR.

South Florida Water Management Model (SFWMM) means the regional hydrologic model developed by the SFWMD that is used to simulate hydrologic conditions in the South Florida ecosystem using a multi-year period of record.

Stage-duration curve means the curve that plots the estimate of the elevation that water reaches in a specific area or region as a function of the amount of time that that elevation is equaled or exceeded. The curve describes, in a graphical form, the water elevation that may be expected based on a range of hydrologic conditions as a result of a set of assumed conditions, projects, and operations.

Target means a measure of change by an indicator that is expected or desired as the result of implementation of the Plan.

Technical Report means the report prepared by RECOVER as part of the adaptive management program and provided to the USACE and the SFWMD for use in preparing the assessment report as required by the Programmatic Regulations. The technical report presents RECOVER's assessment of whether the goals and purposes of the Plan are being achieved, including whether the interim goals and interim targets are being achieved or are likely to be achieved.

Tentatively selected plan (TSP) means the plan selected by the District Engineer and the non-Federal sponsor for further design, pending approval of the plan at the AFB meeting held in accordance with USACE regulations and policies.

Volume-probability or flow-probability curve means the curve that plots the estimate of quantities of water produced in one or more water basins (usually expressed as acre-feet or million/billon gallons) as a function of the percentage of time the quantity is equaled or exceeded. The curve describes, in a graphical form, the water quantities that may be expected in one or more water basins for a range of hydrologic conditions as a result of a set of assumed conditions, projects, and operations.

Water control plan means the document that includes coordinated regulation schedules for project/system regulation and such additional provisions as may be required to collect, analyze and disseminate basic data, prepare detailed operating instructions, assure project safety and carry out regulation of projects in an appropriate manner.

Water basins means the major hydrologic regions that comprise the South Florida ecosystem.

Water shortage means the situation when insufficient water is available to meet the present and anticipated needs of the users, or when conditions are such as to require temporary reduction in total use within a particular area to protect water resources from serious harm. A water shortage typically occurs due to drought conditions.

APPENDIX B
ACRONYM LIST

AFB	Alternative Formulation Briefing
A&R	Authorities and Responsibilities
ASA(CW)	Assistant Secretary of the Army (Civil Works)
ASR	Aquifer Storage and Recovery
AT	Assessment Team
BA	Biological Assessment
BO	Biological Opinion
CAR	Coordination Act Report
CERP	Comprehensive Everglades Restoration Plan
CE/ICA	Cost Effectiveness/Incremental Cost Analysis
CFR	Code of Federal Regulations
cfs	Cubic feet per second
C&SF	Central and Southern Florida
CPMR	Comprehensive Plan Modification Report
CSOP	Combined Structural and Operating Plan
DCP	Drought Contingency Plan
DCT	Design Coordination Team
DOI	Department of the Interior
EA	Environmental Assessment
EFH	Essential Fish Habitat
EIS	Environmental Impact Statement
EM	Engineering Manual
ENP	Everglades National Park
ER	Engineering Regulation
ERDO	Everglades Rainfall Driven Operations
ESA	Endangered Species Act
ETL	Engineering Technical Letter
FDEP	Florida Department of Environmental Protection
F.S.	Florida Statutes
FSM	Feasibility Scoping Meeting
ft	foot/feet
FWC	[Florida] Fish and Wildlife Conservation Commission
FWCA	Fish and Wildlife Coordination Act
FWS	[U.S.] Fish and Wildlife Service
GM	Guidance Memorandum[a]

HQ	Headquarters
HQUSACE	Headquarters, U.S. Army Corps of Engineers
IAG	Integrative Assessment Guidance
IAT	Integrative Assessment Team
ICA	Incremental Cost Analysis
IOP	Interim Operational Plan
IOR	Initial Operating Regime
IPR	In-Progress Review
ISOP	Interim Structural and Operational Plan
ITR	Independent Technical Review
LERRD	Lands, easements, rights-of-way, relocations, and disposal
MAGO	Maximum Allowable Gate Opening
MAP	Monitoring and Assessment Plan
M-CACES	Micro-Computer Aided Cost Engineering System
MFL	Minimum Flows and Levels
MISP	Master Implementation Sequencing Plan
MPMP	Master Program Management Plan
MRA	Miccosukee Reserved Area
MRAA	Miccosukee Reserved Act Area
MRP	Master Recreation Plan
NAI	Next-added increment
NEPA	National Environmental Policy Act
NER	National Ecosystem Restoration
NGVD	National Geodetic Vertical Datum
NHC	National Hurricane Center
NMFS	National Marine Fisheries Service
NRC	National Research Council
O&M	Operation and Maintenance
OASA(CW)	Office of the Assistant Secretary of the Army (Civil Works)
OMRR&R	Operation, Maintenance, Repair, Rehabilitation, and Replacement
OTMP	Operational Testing and Monitoring Phase
PAL	Planning Aid Report
PCA	Project Cooperation Agreement
PDT	Project Delivery Team
PIR	Project Implementation Report
ppm	parts per million
ppt	parts per thousand
POM	Project Operating Manual
QRB	Quality Review Board

RECOVER	Restoration Coordination and Verification
rpm	Revolutions per Minute
SAD	South Atlantic Division
SAP	Selected Alternative Plan
SDF	Standard Design Flood
SFWMD	South Florida Water Management District
SFWMM	South Florida Water Management Model
SOM	System Operating Manual
SPF	Standard Project Flood
SPS	Standard Project Storm
STA	Stormwater Treatment Area
TSP	Tentatively Selected Plan
USACE	United States Army Corps of Engineers
USGS	U.S. Geological Survey
WCA	Water Conservation Area
WCDSAP	Water Control Data Acquisition System Plan
WCDS	Water Control Data System
WCM	Water Control Manual
WRDA	Water Resources Development Act
WSE	Water Storage and Environmental
WQC	Water Control Certification

EXHIBIT 9

APPENDIX C
LIST OF REFERENCES

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EXHIBIT 9

APPENDIX D
LETTERS OF CONCURRENCE

[To be provided]