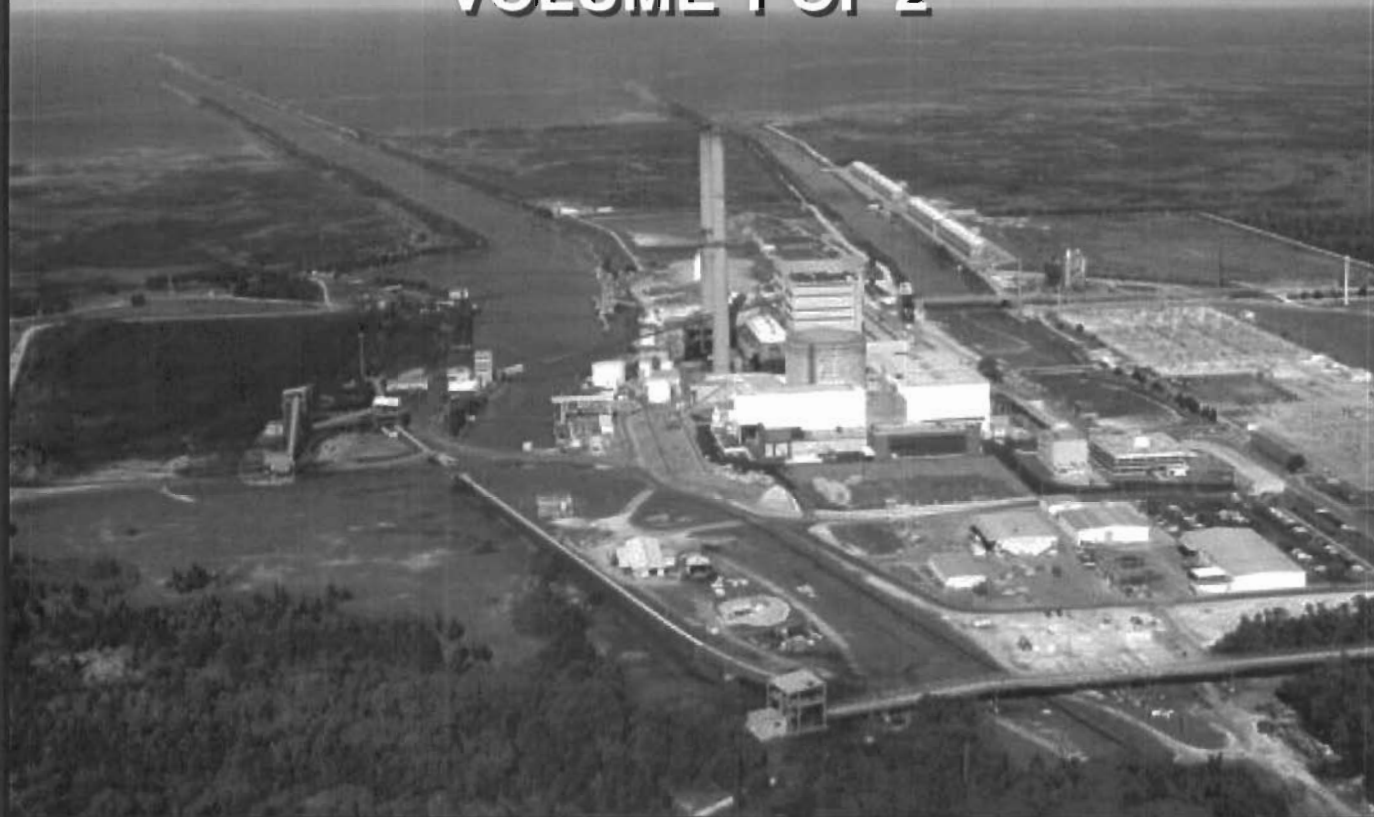




Progress Energy

SITE CERTIFICATION APPLICATION FOR CRYSTAL RIVER UNIT 3 UPRATE PROJECT VOLUME 1 OF 2



**Golder
Associates**

June 2007

07389531



Progress Energy

Dale E. Young
Vice President
Crystal River Nuclear Plant
Progress Energy Florida, Inc.

June 6, 2007
CRVP07-0011

Florida Department of Environmental Protection
Siting Coordination Office
2600 Blair Stone Road MS-48
Tallahassee, Florida 32399-2400

Attention: Mr. Mike Halpin

**RE: SITE CERTIFICATION APPLICATION FOR
PROGRESS ENERGY FLORIDA
CRYSTAL RIVER UNIT 3 UPRATE PROJECT**

Dear Mr. Halpin:

Progress Energy Florida is pleased to provide you four electronic and four hard copies of the Progress Energy Florida – Site Certification Application (SCA) for the Crystal River Unit 3 (CR3) Uprate Project.

PEF plans to add 180 MW (megawatts) of nuclear-fueled electrical generation resources to its system in order to continue to provide reliable, safe, and cost-effective service to its customers. The CR3 Uprate Project will occur over two phases; the first phase will occur during a 2009 planned refueling CR3 outage which will result in an additional 40 MW of electric generation. Phase II will take place during the 2011 planned refueling outage of CR3 and will result in an additional 140 MW of electric generation. These upgrades increase the existing CR3 steam electric output, and thus trigger the need for this SCA.

Check #166818, payable to the Department in the amount of \$200,000 for the certification of CR3 to operate at an increased capacity of 180 MW, for a total unit capacity of approximately 1,080 MW, based on Rule 62-17.293(1)(b), is enclosed. The PSD/Air Construction permit application for this project is located in Appendix 10.1.5. Four copies of the PSD/Air Construction permit application have been submitted directly to the Department's Division of Air Resource Management.

Copies of the SCA are being distributed to the individuals and agencies shown on the attached distribution list. Delivery is scheduled for June 11, 2007.

We look forward to working with you, the Department, and other agencies in the certification process. Should you, your staff, or any other agency representatives have questions regarding this application, please contact Mr. Michael Shrader at (727) 820-5588.

Sincerely,

Dale E. Young, Vice President
Crystal River Nuclear Plant

DEY/krw
Attachments

15760 W. Power Line Street
NA2C
Crystal River, FL 34428

T > 352.563.4331

DEPARTMENT OF
ENVIRONMENTAL PROTECTION

JUN 13 2007

SITING COORDINATION

**SITE CERTIFICATION APPLICATION
CRYSTAL RIVER UNIT 3 POWER UPRATE PROJECT
CRYSTAL RIVER, FLORIDA**

DEPARTMENT OF
ENVIRONMENTAL PROTECTION

JUN 11 2007

SITING COORDINATION

VOLUME 1 OF II

SUBMITTED BY:

**PROGRESS ENERGY FLORIDA, INC.
299 1ST AVENUE NORTH
ST. PETERSBURG, FLORIDA 33701**



Scott Osbourn, P.E.
Professional Registered Engineer No. 57557

Golder Associates Inc.
5100 West Lemon Street, Suite 114
Tampa, Florida 33609

June 2007



APPLICANT INFORMATION

Please supply the following information:

Applicant's Official Name **Florida Power Corporation, dba Progress Energy Florida, Inc.**

Address **299 1st Avenue North, PEF – 903, St. Petersburg, FL 33701**

Address of Official Headquarters **P. O. Box 1551, Raleigh, NC, 27602**

Business Entity (corporation, partnership, co-operative) **Corporation**

Names, owners, etc. **Progress Energy Florida**

Name and Title of Chief Executive Officer **Mr. Robert McGehee**

Name, Address, and Phone Number of Official Representative responsible for obtaining certification:

Mr. Michael Shrader, (727) 820-5588

Site Location (county) **Citrus County**

Nearest Incorporated City **Crystal River, Florida**

Latitude and Longitude **Latitude 28/57/34; Longitude 82/42/01**

UTM's Northerly (km) **3204.5**

Easterly (km) **334.3**

Section, Township, Range **Section 33, Township 17, Range 16**

Location of any directly associated transmission facilities (counties) **Not Applicable**

Name Plate Generating Capacity **838 MW(electrical)**

Capacity of Proposed Additions and Ultimate Site Capacity (where applicable)

Addition of 180 MW

Remarks (additional information that will help identify the applicant): **Addition of 180 MW to Crystal River Unit 3, an existing nuclear generating unit located within the Crystal River Energy Complex.**

EXECUTIVE SUMMARY

Progress Energy Florida (PEF), a subsidiary of Progress Energy, provides electricity and related services to more than 1.6 million customers in the state of Florida. Progress Energy's retail service area in Florida spans about 20,000 square miles in central Florida. In Florida, the company maintains more than 43,600 miles of distribution and transmission lines in serving 1.6 million customers and a population of more than five million people.

Project Description

PEF plans to add 180 MW (megawatts) of electrical generation resources to its system in order to continue to provide reliable, safe, and cost-effective service to its customers. This additional electrical generation will occur through modifications to PEF's existing nuclear-fueled Crystal River Unit 3. That existing unit has been in operation since 1977. That unit has not been previously certified under the PPSA.

The CR3 Uprate Project will occur over two phases. The first phase (Phase I) will occur during a 2009 planned refueling outage and scheduled steam generator replacement also will result in an additional 40 MW of power. Phase II will take place during the 2011 planned refueling outage of CR3. The second phase will result in an additional 140 MW of power and will require a large number of smaller yet substantial modifications to assure long term reliability of all plant systems at the conditions necessary to support this higher licensed power level.

The power level upgrades scheduled for 2009 through 2011 trigger the need for this Site Certification Application (SCA). Net environmental impacts associated with the CR3 Uprate Project are expected to be minimal and can be summarized as follows:

Land Use

CR3 has a future land use and zoning designation of Transportation, Communication, and Utilities (TCU). According to both the Citrus County Comprehensive Plan and the Land Development Code, the TCU designation allows for those uses directly related to transportation, communication, and utilities. Power generation facilities are a specified use under the TCU designation. No new lands will be required for the project.

Air

The CR3 Uprate Project will increase the electrical output from CR3 and the associated circulating intake water flow rate. The types and sources of air emissions associated with the CR3 Upgrade Project will consist of drift emissions from a potential new mechanical draft cooling tower to be designated the South Cooling Towers (SCT). The air emission impacts of the SCT associated with increased intake water flow (i.e., increased flow through additional new cooling towers) will trigger PSD for particulate matter (PM), but not for PM less than 10 microns (PM₁₀). Other regulated air emissions (e.g., NO_x and SO₂) will not be affected, as there will be no additional fuel combustion sources (e.g., additional diesel generator capacity) that may trigger PSD for these pollutants.

Traffic

Construction of the CR3 Uprate Project is anticipated to commence in 2009 and conclude in the 2012. The majority of construction workers are expected to commute to the CR3 site from within a distance of up to 75 miles. Peak construction employment of 650 is estimated to increase the total of onsite employees to approximately 2,950 workers in late 2009. Traffic generated during the construction activities is considered a temporary condition. No increase in operations personnel will occur beyond the conclusion of the construction activities in 2011. During the full build-out year, traffic on both West Powerline Street and U.S. Highway 19/98 are expected to increase by less than one percent and not cause unacceptable traffic conditions on area roadways.

Ecology

Due to the existing nature of the CR3 site, and limited amount of disturbance associated with the proposed uprate project, no impacts to threatened or endangered species are anticipated as a result of the CR3 Uprate Project.

Water

The CR3 Uprate Project will result in increased cooling water flow rates and a larger pumping capacity than what currently exists within the water flow system which supply the CR3 steam generators. Overall, the uprate project will result in an additional 180 MW of power and include alterations that will elevate the thermal unit's discharge.

A conceptual and conservative design plan for a new South Cooling Tower has been proposed both to offset the increased circulating water rejected heat and to replace the existing modular Helper Cooling Towers. A small portion of the increased flow associated with the uprate project will be evaporated in the recirculating portion of the new SCT, which will be used to dissipate the increase in rejected heat. The new SCT has also been designed to avoid any increase in flow into the intake canal from Crystal Bay/Gulf of Mexico, and to avoid any increase in heat load or temperature rise leaving the discharge canal to Crystal Bay/Gulf of Mexico. PEF intends to request modification of the NPDES permit to authorize the operation of the new SCT and an increase in circulating water flow at CR3. Detailed design will be addressed as part of the NPDES renewal process in 2009.

Overall, the proposed CR3 Uprate Project will not increase flow to the intake canal from Crystal Bay and there will be no net increase in the thermal discharge at the NPDES POD. The CR3 Uprate Project will not have a negative impact to fisheries or the aquatic environment.

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- Appendix 10.1.1 316 (a) and (b) Demonstrations
- Appendix 10.1.2 Crystal River Units 1, 2, and 3 NPDES Permit # FL0000159
- Appendix 10.1.5 Prevention of Significant Deterioration

Appendix 10.2 Citrus County Zoning Ordinance**Appendix 10.3 Citrus County Land Use Plan**

- Appendix 10.3-1 Cultural Resources Background Research, Supporting License Renewal, Crystal River Nuclear Plant, Citrus, and Levy Counties, Florida

Appendix 10.4 Existing Permits

- Appendix 10.4.1 Water Use Individual Permit No. 204695.03
- Appendix 10.4.2 Crystal River Units 1, 2, and 3 Wastewater Treatment Plant Permit
- Appendix 10.4.3 Crystal River Units 1, 2, and 3 IWWP #FLA01690
- Appendix 10.4.4 Crystal River 3 – Section 7 Consultation – U.S. NMFS Biological Opinion
- Appendix 10.4.5 Title V Air Operation Permit Revision – Final Permit No.: 0170004-015-AV

Appendix 10.5 Monitoring Programs

- Appendix 10.5-1 Calibration Certificates for Noise Monitoring Equipment

Appendix 10.6 Traffic Study

LIST OF ACRONYMS

µg	micrograms
µm	micrometers
AAQS	Ambient Air Quality Standards
ANSI	American National Standard Institute
bgs	below ground surface
BACT	Best Available Control Technology
BMP	Best Management Practices
Btu	British thermal units
CAA	Clean Air Act
CDS	Comprehensive Demonstration Study
CFB	circulating fluidized bed
CFR	Code of Federal Regulations
cfs	cubic feet per second
CO	carbon monoxide
CO ₂	carbon dioxide
CR3	Crystal River Unit 3
CREC	Crystal River Energy Complex
db	decibel
dba	A-weighted decibel
DMR	Discharge Monitoring Report
EMS	Emergency Medical Services
EPA	U.S. Environmental Protection Agency
ERP	Environmental Resource Permit
ESP	electrostatic precipitator
°F	Degree Fahrenheit
FAA	Federal Aviation Authority
F.A.C.	Florida Administrative Code
FAS	Florida Aquifer System
FDACS	Florida Department of Agriculture and Consumer Affairs
FDEP	Florida Department of Environmental Protection
FDOT	Florida Department of Transportation
FEMA	Federal Emergency Management Association
FEPPSA	Florida Electric Power Plant Siting Act
FES	Final Environment Statement
FGD	Flue gas desulfurization
FLUCFCS	Florida Land Use, Cover and Forms Classification System
FNAI	Florida Natural Areas Inventory
fps	feet per second
FR	Federal Register
ft	feet
FWC	Florida Fish and Wildlife Conservation Commission
gpd	gallons per day
gpm	gallons per minute
HAPs	Hazardous air pollutants
HCT	Helper Cooling Tower
HRSG	Heat Recovery Steam Generator
Hz	Hertz
IAS	Intermediate Aquifer System

kg	kilograms
kV	kilovolt
L ₁₀	sound pressure level which is exceeded ten percent of the time
L _{eq}	equivalent sound pressure level
L _n	sound pressure level which is exceeded n percent of the time
lb/MMBtu	pounds per million British thermal unit
lb/MW-hr	pounds per megawatt hour
LFA	Lower Floridan Aquifer
LNB	low-NO _x burners
MAF	minimum absolute flow
MGD	million gallons per day
m ³	cubic meter
mm	millimeter
msl	mean sea level
MW	megawatt
MWh	Megawatt hour
MWe	Megawatt electrical
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NGVD	national geodetic vertical datum
NO _x	Nitrous oxide
NO ₂	Nitrogen dioxide
NPDES	National Pollutant Discharge Elimination System
NRC	Nuclear Regulatory Commission
NSPS	New Source Performance Standards
NWA	National Wilderness Area
NWS	National Weather Service
O ₃	ozone
OFW	Outstanding Florida Waterway
Pb	lead
PD&E	Project Development and Environment
PEF	Progress Energy Florida
POD	Point of Discharge
PPSA	Power Plant Siting Act
ppt	parts per thousand
PM	particulate matter
PM ₁₀	Particulate matter less than 10 microns
PM _{2.5}	Particulate matter less than 2.5 microns
ppm	parts per million
PSC	Florida Public Service Commission
PSD	Prevention of significant deterioration
PUD	Planned Unit Development
RFP	Request for Proposal
SCA	Site Certification Application
SCR	Selective catalytic reduction
SER	significant emissions rates
SGRP	Steam Generator Replacement Project
SPCC	Spill Prevention and Countermeasure Plan
SPL	sound pressure level
SO ₂	sulfur dioxide

SO ₃	sulfur trioxide
SWFWMD	Southwest Florida Water Management District
TCU	Transportation, Communities and Utilities
TDS	Total Dissolved Solids
TMDL	Total Maximum Daily Load
TPY	tons per year
TV	Title V
UFA	Upper Florida Aquifer
U.S.	United States
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
VOC	Volatile organic compounds

1.0 NEED FOR POWER AND THE PROPOSED FACILITIES

1.1 Introduction

This section of the Site Certification Application (SCA) provides an introduction to the applicant, Florida Power Corporation, dba Progress Energy Florida, Inc. (PEF), discusses the proposed Crystal River Unit 3 Upate Project and the need to uprate the Crystal River Nuclear Unit 3 (CR3).

Progress Energy Florida, a subsidiary of Progress Energy, provides electricity and related services to more than 1.6 million customers in the state of Florida. Progress Energy's retail service area in Florida spans about 20,000 square miles in central Florida. In Florida, the company maintains more than 43,600 miles of distribution and transmission lines in serving 1.6 million customers and a population of more than five million people. In 2005, the company also received the prestigious J.D. Power and Associates Founder's Award for dedication, commitment and sustained improvement in customer service.

1.2 The Project

PEF plans to add 180 MW (megawatts) of electrical generation resources to its system in order to continue to provide reliable, safe, and cost-effective service to its customers.

Following PEF's request, the Florida Public Service Commission (PSC) has determined that a power uprate is an economical option to add capacity and power output to the existing nuclear unit, CR3. The CR3 Upate Project will result in economic benefits to customers and the community by providing additional clean energy at lower cost to consumers. An increase in the plant's gross output from 900 MW to 1,080 MW can serve the equivalent of an additional 110,700 homes. Studies have demonstrated that in order to reduce PEF's total fuel cost, increased efficiencies can be realized from technological advancements and system modifications to increase generation capacity from the company's lowest cost fuel source. The need for the project is based on an economic need to provide fuel savings for consumers. The CR3 Upate Project is expected to save customers more than \$2.6 billion in gross fuel costs through 2036.

The CR3 Upate Project will occur over two phases. The first phase (Phase I) will occur during a 2009 planned refueling outage and scheduled steam generator replacement. The improvement to the

turbine center line components will increase the efficiency of power production resulting in decreasing consumer costs. The existing steam turbines were designed in the 1960s and are less efficient than current technology. Main feed-water heat exchangers and main steam re-heaters will also be modified or replaced. The low pressure turbines and electrical generator will be replaced. The net impact of these modifications is a substantially more efficient secondary plant. Thus, while the Nuclear Regulatory Commission (NRC) licensed power level will remain constant; the net generation increase from current levels through Phase I is expected to be approximately 40 MW.

Phase II will take place during the 2011 planned refueling outage of CR3. The second phase will result in an additional 140 MW of power and will require a large number of smaller yet substantial modifications to assure long term reliability of all plant systems at the conditions necessary to support this higher licensed power level.

Leading up to 2011, CR3 will obtain modification to the NRC license to allow operation at the increased output. The higher licensed power level is currently anticipated to result in an increase in the NRC licensed net electrical generation capability of 180 MW or more above current levels.

No alternative generation option exists that can supply the benefits of additional, reliable, base load, nuclear generation at a net savings to PEF customers. The CR3 Uprate Project will also increase the level of nuclear production in the fuel supply mix of PEF's system, resulting in increased fuel diversity for PEF and the state of Florida. The total cost for the uprate is estimated to be \$427 million.

CR3 began operations in 1977. The Power Plant Siting Act (PPSA) SCA was promulgated in 1973. At that time, existing facilities or ones already in construction were not required to seek certification under the PPSA and to file an SCA. Since the uprate project will increase the electrical generating capacity of CR3, an SCA is now required. The SCA will address the layout, history, and associated facilities relevant to the current operation of CR3 as well as the impacts associated with the construction and operation of the CR3 Uprate Project.

CR3 is currently licensed by the NRC. No NRC approvals are required for Phase I of the CR3 Uprate Project. PEF plans to submit a licensed power change to the NRC for Phase II of the CR3 Uprate Project in 2009 and NRC approval for Phase II is expected in 2011. PEF also intends to file to

relicense the plant for an additional 20 years in 2009. It is anticipated that the license now set to expire in 2016 will be extended to 2036.

CR3 provides power into an existing 500 kilovolt (kV) transmission system connected to the site and uses an existing 230 kV system for onsite backup power. No transmission upgrades are required for the project.

1.3 Need for the Project

PEF's petition for a determination of need for the CR3 Uprate Project has been approved by the PSC in accordance with Section 403.519(3) (Attachment 1).

H:\PROJECTS\2007proj\073-89531 CR 3 Nuclear Uprate (SCA)\Chapter 1\Revised Chapter 1.doc

ATTACHMENT 1

BEFORE THE PUBLIC SERVICE COMMISSION

In re: Petition for determination of need for expansion of Crystal River 3 nuclear power plant, for exemption from Bid Rule 25-22.082, F.A.C., and for cost recovery through fuel clause, by Progress Energy Florida, Inc.

DOCKET NO. 060642-EI
ORDER NO. PSC-07-0119-FOF-EI
ISSUED: February 8, 2007

The following Commissioners participated in the disposition of this matter:

LISA POLAK EDGAR, Chairman
MATTHEW M. CARTER II
KATRINA J. TEW

APPEARANCES:

R. ALEXANDER GLENN, ESQUIRE, Progress Energy Service Company, LLC, 100 Central Avenue, Suite 1D, St. Petersburg, Florida 33701, and JAMES MICHAEL WALLS, and DIANNE M. TRIPLETT, ESQUIRES, Carlton Fields, P. A., Post Office Box 3239, Tampa, Florida 33601-3239
On behalf of Progress Energy Florida, Inc. (PEF).

JOHN W. MCWHIRTER, JR., ESQUIRE, McWhirter, Reeves & Davidson, P. A., 400 North Tampa Street, Suite 2450, Tampa, Florida 33601-3350
On behalf on the Florida Industrial Power Users Group (FIPUG).

ROBERT SCHEFFEL WRIGHT and JOHN R. LAVIA, III, ESQUIRES, Young van Assenderp, P. A., 225 South Adams Street, Suite 200, Tallahassee, Florida 32301
On behalf of the Florida Retail Federation (FRF).

PATRICIA A. CHRISTENSEN, and JOSEPH A. MCGLOTHLIN, ESQUIRES, Office of Public Counsel, c/o The Florida Legislature, 111 West Madison Street, Room 812, Tallahassee, Florida 32399-1400
On behalf of the Citizens of the State of Florida (OPC).

LISA C. BENNETT, and LORENA A. HOLLEY, ESQUIRES, Florida Public Service Commission, 2540 Shumard Oak Boulevard, Tallahassee, Florida 32399-0850
On behalf of the Florida Public Service Commission (Staff).

DOCUMENT NUMBER-DATE

01327 FEB-85

FPSC-COMMISSION CLERK

FINAL ORDER GRANTING PETITION FOR DETERMINATION OF NEED
FOR PROPOSED EXPANSION OF
CRYSTAL RIVER UNIT 3 NUCLEAR POWER PLANT

BY THE COMMISSION PANEL:

Background

On September 22, 2006, Progress Energy Florida, Inc. (PEF) filed a Petition (petition) for Determination of Need for Expansion of its Crystal River 3 Nuclear Power Plant (CR3) located in Citrus County, Florida. The proposed expansion is an uprate that when completed will increase the power output at CR3 by approximately 180 megawatts ("MWs"). The proposed uprate or expansion will be completed in two phases. The first phase will be accomplished during the planned 2009 refueling outage and the second phase will be completed during the 2011 planned refueling outage. Phase one will be completed during a scheduled steam generator replacement and will include modifications to the turbine line components to take advantage of greater steam efficiencies, with an expected additional 40 MW of power following work completed in phase one. Phase two consists of changes that will allow for use of more highly enriched uranium in the reactor core and will result in an anticipated additional 140 MW of power.

Included in PEF's petition was a request for exemption from Rule 25-22.082, Florida Administrative Code, and a request that PEF be permitted to recover the costs of the expansion through the fuel clause. On December 22, 2006, by Order No. PSC-06-1059-PCO-EI, the Prehearing Officer bifurcated the cost recovery issue from the need determination. A formal administrative hearing was held on January 18, 2007 to hear the issues related to the need determination and the requested exemption from Rule 25-22.082, Florida Administrative Code. Intervention was granted to the Office of Public Counsel (OPC), the Florida Industrial Power Users Group (FIPUG), the Florida Retail Federation (FRF), and AARP. AARP has subsequently been excused from this proceeding.

We approve the settlement between the parties and grant PEF's petition for determination of need. This Order reflects that decision and serves as our report under the Power Plant Siting Act, as required by section 403.507(4), Florida Statutes.

Section 403.519(3), Florida Statutes, sets forth those matters that we must consider in a proceeding to determine the need for a proposed expansion of an existing nuclear power plant:

In making its determination, the commission shall take into account the need for electric system reliability and integrity, the need for adequate electricity at a reasonable cost, the need for fuel diversity and supply reliability, and whether the proposed plant is the most cost-effective alternative available. The commission shall also expressly consider the conservation measures taken by or reasonably available to the applicant or its members which might mitigate the need for the proposed plant and other matters within its jurisdiction which it deems relevant.

Exemption from Requirements of Rule 25-22.082, Florida Administrative Code

We find that the CR3 Uprate satisfies all criteria for exemption from the Bid Rule, pursuant to Rule 25-22.082(18), Florida Administrative Code (F.A.C.). PEF has shown that the CR3 Uprate will likely result in a lower cost supply of electricity to its general body of ratepayers and will also serve the public welfare. Because the CR3 Uprate provides customers additional generation at a net savings, not a net cost, from a more environmentally beneficial source that enhances fuel diversity, no request for proposal is needed. No generation alternative can supply 180 MW of additional power at a net savings to customers comparable to the economic, environmental, and fuel diversity benefits provided by the CR3 Uprate. Other available supply-side generation alternatives will likely have higher fuel costs and, therefore, increase the net cost to customers.

In making our decision whether to grant a determination of need, we have necessarily relied on the representations of the proposed power plant's cost effectiveness made by PEF. This reliance is especially critical where, as in PEF's petition before us in this case, there are no request for proposal results or other market-based checks on the utility's representations. Accordingly, while we grant PEF's requested exemption, PEF is on notice that we will closely scrutinize the reasonableness and prudence of any capital cost greater than those represented by PEF through its testimony and exhibits.

Need for Electric System Reliability and Integrity

In determining the need for the CR3 Uprate, we have taken into account the need for electric system reliability and integrity. The need for the CR3 Uprate is an economic need, not reliability need. The CR3 Uprate will displace higher cost fossil fuel and purchased power generation with low cost nuclear generation, resulting in substantial fuel savings that provide a net benefit to customers. The CR3 Uprate's substantial economic benefits satisfy the statutory need requirements under our prior precedent and Rule 25-22.081(3), F.A.C., recognizing an economic or socio-economic need for new generation.

Need for Adequate Electricity at a Reasonable Cost

We find that the CR3 Uprate will displace higher cost fossil fuel and purchased power generation with low cost nuclear generation, resulting in substantial fuel savings that provide a net benefit to customers. Nuclear energy is the lowest cost energy available on PEF's system. Producing additional nuclear energy from the CR3 Uprate, therefore, will produce energy at the lowest possible generation fuel cost.

Need for Fuel Diversity and Supply Reliability

We find that the proposed CR3 Uprate will displace fossil fuel and purchased power generation with nuclear generation, resulting in increased fuel diversity and supply reliability. The CR3 Uprate provides a stable source of additional base load power. Nuclear generation is

not subject to the same supply interruptions or changes in price volatility that can affect generation with fossil fuels. Rather, the supply of nuclear fuel is relatively plentiful and stable in price. PEF's customers, and the State, thus, will benefit from increased price stability, enhanced fuel diversity, and decreased reliance on foreign fuel sources resulting from the addition of nuclear capacity to PEF's system.

No Mitigating Conservation Measures

We find that expanding conservation programs cannot displace the CR3 Uprate. PEF is currently exceeding its Commission-approved numeric conservation goals. Further, PEF has recently expanded its demand side management program offerings, resulting in a projected additional 388 MW of summer demand savings. The CR3 Uprate will produce more incremental energy into the system than an equivalent amount of conservation can save. If the comparison were to be done on equivalent energy alone, it would take more MWs of conservation to save an amount of energy equivalent to the energy produced by the CR3 upgrade, which would result in higher costs to customers.

Most Cost-Effective Alternative Available

We find that the CR3 Uprate displaces higher cost generation on PEF's system, yielding substantial fuel savings to the net benefit of PEF's customers. PEF's customers will receive additional generation at a net savings of approximately \$327 million on a cumulative net present value basis. This means that no entity offering a supply-side generation alternative can likely propose a lower cost alternative for the same amount of power, and certainly not from relatively clean nuclear power. The CR3 Uprate, because of the net fuel savings benefits driving the project, is the lowest cost supply of electricity for PEF's customers.

Conclusion

Based on the foregoing, we grant PEF's petition for a determination of need for the proposed expansion of the Crystal River Unit 3 Nuclear Power Plant because it fills an economic need. It will provide adequate electricity at a reasonable cost to customers. CR3 will displace higher cost fossil fuel and purchased power generation with low cost nuclear generation, resulting in substantial fuel savings that provide a net benefit to customers. Although it is not needed for reliability it does meet the need for fuel diversity and supply reliability. The proposed CR3 Uprate will displace fossil fuel and purchased power generation with nuclear generation, resulting in increased fuel diversity and supply reliability. PEF's customers, and the State, thus, will benefit from increased price stability, enhanced fuel diversity, and decreased reliance on foreign fuel sources resulting from the addition of nuclear capacity to PEF's system. There are no cost-effective demand-side management measures available to offset the need. Because the CR3 uprate displaces higher cost generation on PEF's system, yielding fuel savings to the net benefit of PEF's customer, there can be no less costly supply-side generation alternative available.

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DOCKET NO. 060642-EI
PAGE 5

Upon further consideration, we exempt PEF from the requirements of Rule 25-22.082, (F.A.C.), as it applies to CR3 uprate. In granting the exemption, we do so upon the considerations listed above.

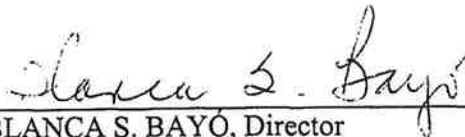
Based on the foregoing, it is

ORDERED by the Florida Public Service Commission that Progress Energy Florida's petition for determination of need for its proposed expansion of Crystal River Unit 3 nuclear power plant is granted. It is further

ORDERED that Progress Energy Florida is exempted from the requirements of Rule 25-22.082, Florida Administrative Code. It is further

ORDERED that this docket shall be closed.

By ORDER of the Florida Public Service Commission this 8th day of February, 2007.



BLANCA S. BAYÓ, Director
Division of the Commission Clerk
and Administrative Services

(SEAL)

LCB

NOTICE OF FURTHER PROCEEDINGS OR JUDICIAL REVIEW

The Florida Public Service Commission is required by Section 120.569(1), Florida Statutes, to notify parties of any administrative hearing or judicial review of Commission orders that is available under Sections 120.57 or 120.68, Florida Statutes, as well as the procedures and time limits that apply. This notice should not be construed to mean all requests for an administrative hearing or judicial review will be granted or result in the relief sought.

Any party adversely affected by the Commission's final action in this matter may request:

- 1) reconsideration of the decision by filing a motion for reconsideration with the Director, Division of the Commission Clerk and Administrative Services, 2540 Shumard Oak Boulevard, Tallahassee, Florida 32399-0850, within five (5) days of the issuance of this order in the form prescribed by Rule 25-22.060, Florida Administrative Code; or
- 2) judicial review by the Florida Supreme Court in the case of an electric, gas or telephone utility or the First District Court of Appeal in the case of a water and/or wastewater utility by filing a notice of appeal with the Director, Division of the Commission Clerk and Administrative Services and filing a copy of the notice of appeal and the filing fee with the appropriate court. This filing must be completed within thirty (30) days after the issuance of this order, pursuant to Rule 9.110, Florida Rules of Appellate Procedure. The notice of appeal must be in the form specified in Rule 9.900(a), Florida Rules of Appellate Procedure.

2.0 SITE AND VICINITY CHARACTERISTICS

2.1 Site and Associated Facilities Delineation

2.1.1 Site Location

Progress Energy Florida's CR3 is part of the larger Crystal River Energy Complex (CREC) located in Citrus County, Florida. The CREC is comprised of 4,738 acres and includes a single nuclear unit (CR3) and four coal-fired units, CR 1, 2, 4, and 5. CR3 and the four coal-fired units lie in the developed area of the site.

CR3 is in the southern (and center) part of CREC and comprises approximately 26.86 acres. This 26.86 acre site and certain related facilities are the subject of this application. These CR3 facilities are shown on Figure 2.1.2-2. CR 1 and 2 are located along the southern boundary of the CREC in between the intake and discharge canals. CR 4 and 5 are located approximately 0.5 mile north of CR3. CR 1, 2, 4 and 5 are not affected by this application.

The CREC is located in all or portions of Sections 31, 32, 33, 34, and 35, Township 17, Range 16. CR3 is located in Section 33, Township 17, Range 16 (Figure 2.1.1-1). CR 1 and 2 are located in Section 33, Township 17, Range 16, and CR 4 and 5 are located in or portions of Sections 28 and 33, Township 17, Range 16.

2.1.2 Existing CREC Site Uses

CR3 is an 838 MW pressured water reactor which began commercial operation in 1977. CR3 is not currently certified under the PPSA. CR 1 and 2 were built in the 1960s and produce 379 and 486 MW, respectively. CR 4 and 5 were built in the early 1980s and produce 717 and 720 MW, respectively. CR 4 and 5 were certified under the PPSA in 1980. The CREC also contains office buildings, warehouses, coal storage areas, ash storage, transmission, and substation facilities which support the various units (Figure 2.1.2-1).

Cooling water for CR 1, 2, and 3 is withdrawn from an intake canal which connects to Crystal Bay and the Gulf of Mexico (Figure 2.1.2-2). Florida Department of Environmental Protection (FDEP) National Pollution Discharge Elimination System (NPDES) permit FL0000159 (Appendix 10.1.2)

limits the combined condenser flow from CR 1, 2, and 3 to 1,898 million gallons per day (MGD) during the period of May 1 through October 31, and 1,613.2 MGD during the remainder of the year.

CR 1 and 2

The cooling water intake structures for CR 1 and 2 are located on the north bank of the intake canal. The design intake flow for CR 1 and 2 is 638,000 gallons per minutes (gpm), or 919 MGD.

CR3

The cooling water intake structure for CR3 is located approximately 400 ft east of the intake for CR 1 and 2. A chain link fence extends across the entire width of the intake canal upstream of the intakes for CR 1 and 2. The fence restricts access to CR3 and collects floating or partially submerged debris. CR3 has four pump bays and seven traveling screen bays separated from the pump bays by a common plenum. An eighth traveling screen bay provides service water. Similar to CR 1 and 2, the traveling screen trays are three meters wide and have 9.5 millimeter (mm) (3/8 inch) mesh. They are operated once every eight hours and cleaned by a front spray wash system. The screenwash trough slopes to the west where material is collected in a sump prior to discharge to the intake canal. The trough receives combined wash water from all screens.

CR3 operates with four circulating water pumps, each rated 170,000 gpm. The design intake flow for CR3 is 680,000 gpm or 979 MGD. The three units have a maximum permitted flow of 1,898 MGD and a total nameplate rating of 1,854.8 MW. Additionally, CR3 has a low flow nuclear services water pumping capacity of 10,000 to 20,000 gpm, depending on system demand.

Cooling water for CR 1, 2, and 3 is withdrawn by a common intake canal south of the units that extends into the Gulf of Mexico. The 14-mile-long intake canal is dredged to a depth of approximately 20 feet (ft) to also accommodate coal barges which unload and dock on the south side of the canal, just west of the intakes for CR 1 and 2 (Figure 2.1.2-2). The intake canal is defined by northern and southern dikes. The northern dike continues along the channel for another 5.3 miles. There are openings in the dikes at irregular intervals to allow north-south boat traffic in the area of CREC. Movement of water into the canal is tidally influenced; at the mouth of the canal, current velocities ranged from 0.6 to 2.6 feet per second (fps) when last measured in 1983-1984 (Golder 2005).

The head of the common discharge canal for all units is located just north of the discharge from CR3. The canal extends west for approximately 1.6 mile to the point of discharge, where it opens into a bay. The dredged channel, bordered to the south by a spoil bank, continues for another 1.2 miles. Water in the discharge canal is maintained by dredging to a depth of approximately 10 ft.

Helper cooling towers currently line the northern bank of the discharge canal and receive a portion of the circulating water flow from CR 1, 2, and 3 including cooling tower blowdown from CR 4 and 5. The helper cooling towers are operated as necessary to ensure that the discharge temperature does not exceed 96.5°F (as a three-hour rolling average) at the point of discharge into the Gulf of Mexico. In February 2006, PEF received approval from the state of Florida to install modular cooling towers which CR 1 and 2 operate during the warmest times of the year. CR 4 and 5 are closed-cycle units that withdraw water for cooling tower makeup from the discharge canal, downstream of CR 1, 2, and 3 and discharge cooling tower blowdown to the discharge canal (Figure 2.1.2-2).

CR 1, 2, and 3 are authorized to operate via several common environmental permits issued by the FDEP and other agencies (Appendices 10.1.2 and 10.4). Figure 2.1.2-1 depicts the site layout and Figure 2.1.2-2 is an aerial photograph of CR3.

2.1.3 Adjacent Properties

CR3 is located within the CREC and is adjacent to CR 1 and 2. The intake canal is located south of CR3 and the discharge canal is located north of CR3. PEF operates a mariculture center approximately one mile east of CR3. The Crystal River Mariculture Center is a multi-species marine hatchery originally established in the early 1990s to mitigate fisheries impacts related to the once-through cooling water system at Crystal River Units 1, 2, and 3. The Mariculture Center operations focus on the successful husbandry, culture, grow-out, harvest, and release into local waters of those selected species. Land use surrounding the CREC is predominantly undeveloped land. Active mines are located to the north and east of CREC.

. The Central Florida Barge Canal is located approximately 3.2 miles north of CR3. There is relatively low-density residential housing north of the Central Florida Barge Canal and east of U.S. Highway 19

Uses within the Project Area

Figure 2.1.2-1 provides the site layout for the facilities that support the operation of CR3 (identified within the red boundary) and the facilities that are located adjacent to CR3. The existing CR3 facilities and their approximate land areas are shown in Figure 2.1.2-1.

2.1.4 100-Year Flood Zone

According to the Federal Emergency Management Agency (FEMA) and the FDEP, CR3 and CREC are located within Zone VE. VE is an area inundated by 100-year flooding with velocity hazard (wave action) in which base flood elevations have been determined (Figure 2.1.5-1). The main CR3 power block is located on a concrete berm with wave steps to mitigate flood and wave impacts.

2.2 **Socio-Political Environment**

2.2.1 Governmental Jurisdictions

CR3 is located in unincorporated northwest Citrus County, Florida. Yankeetown, Inglis, and the city of Crystal River are municipalities located within five miles of CR3. Yankeetown is located approximately four and a half miles northwest of CR3 in Levy County and Inglis is located approximately five miles northeast of CR3 in Levy County. The city of Crystal River is located approximately four miles southeast of CR3 in Citrus County (Figure 2.2.1-1).

There are three state parks (Crystal River Preserve State Park, Crystal River Archeological State Park, and Felbrun Park Trailhead/Withlacoochee Bay Trail), one aquatic preserve (St. Martin's Marsh Aquatic Preserve), and two outstanding Florida waters (Crystal River and Withlacoochee River System) within five miles of CR3 (Figures 2.2.1-2, 2.2.1-3, and 2.2.1-4). There are no national parks within five miles of CR3. The mouth of Crystal River is located within two miles of CR3 (Figure 2.2.1-3). These properties are discussed further in Section 2.2.5.

2.2.2 Zoning and Land Use Plans

2.2.2.1 *Zoning*

The Citrus County Land Development Code (Code) has been adopted to implement the policies and objectives of the Citrus County Comprehensive Plan and to regulate land development within the

unincorporated portions of Citrus County. The Code incorporates a zoning map that depicts the zoning categories of lands lying within unincorporated Citrus County. CR3 and CREC are zoned as a Transportation, Communication, and Utilities (TCU) (Figure 2.2.2-2) (Appendix 10.2).

The TCU category is described in the Code Chapter 4 (4634) as follows:

This category allows for those uses directly related to transportation, communications, and utilities. It also accommodates service, repair, maintenance, and storage related facilities necessary to support such uses.

Electrical power plants are an allowed use in this zoning district.

2.2.2.2 Future Land Use

CR3 is located in unincorporated Citrus County, Florida. The county has adopted a comprehensive plan, which is updated on a periodic basis. The county comprehensive plan incorporates a future land use map that depicts the future land use categories of all property falling within the unincorporated portions of the county.

CR3 and CREC Future Land Use category is designated as TCU according to the Citrus County Future Land Use Map (Figure 2.2.2-1). The TCU category is described in the Citrus County Comprehensive Plan Future Land Use Element (II)(3)(d) as follows (Appendix 10.3):

This land use category comprises three types of uses: Transportation, Communication, and Utilities (TCU). Transportation land uses include airports, railroad lines, and major shipping channels. Communication land uses include telephone, radio, and television facilities, including transmission towers. Public utilities include major utility transmission rights-of-way (230 KV or greater), water supply plants, sewage treatment plants, and electrical power facilities. There are 5,416 acres designated as TCU in Citrus County. This land use category comprises 1.42 percent of the County land area. The majority of this allocation consists of Florida Power's Crystal River Power Plant, the major transmission lines, the Crystal River Airport, and the Inverness Airport.

CR3 is an allowed use under this land use designation.

2.2.3 Demography and Ongoing Land Use

CR3 and CREC are located in a rural unincorporated area of Citrus County. Yankeetown, Inglis, and the city of Crystal River are incorporated municipalities located within five miles of the CR3 (Figure 2.2.1-1).

According to the University of Florida's 2006 Florida Statistical Abstract, Citrus County was estimated to have 132,635 residents in 2005, a 12.32 percent increase from 2000. The medium population projections for all of Citrus County depict continued growth, with an estimated population of 184,600 in 2025. Census counts and population estimates for the three municipalities within five miles of CR3 are listed below:

Municipality	Census 2000	Estimates 2005	Percentage Change
Crystal River	3,485	3,710	6.46
Yankeetown	629	743	18.2
Inglis	1,491	1,676	12.41

University of Florida's 2006 Statistical Abstract Table 1.25

Existing land use patterns near CR3 are depicted on Figure 2.2.3-1. The predominant existing land uses within the vicinity of CR3 are undeveloped and industrial. This pattern of land use is anticipated to remain the same for the current planning period as reflected in the county's Future Land Use Map. Policy 17.3.24 of the Citrus County Comprehensive Plan Future Land Use Element discourages new residential development in the vicinity of the CREC and no increase in residential density shall be approved within five miles of the nuclear power plant facility. The code shows a five mile overlay zone around the nuclear power plant in which further residential density increases are prohibited. Scattered residential clusters are located north of the Central Florida Barge Canal and east of U.S. Highway 19.

2.2.4 Easements, Title, Agency Works

No easements, titles, or agency works are required for the CR3 Uprate Project.

2.2.5 Regional Scenic, Cultural and Natural Landmarks

Crystal River Preserve State Park is approximately one and a half miles southeast of CR3 and adjacent to CREC's southern boundary. The park borders 20 miles of the northern Gulf Coast between the two cities of Yankeetown and Homosassa. Crystal River Preserve State Park offers hiking, bicycling, kayaking, and canoeing. The park is located west of U.S. Highway 19 in the city of Crystal River.

The Crystal River Archaeological State Park is approximately five miles southeast of CR3. The park is a 61-acre pre-Columbian and Native American National Historic Landmark. The park has burial mounds, temple/platform mounds, a plaza area, and a substantial midden. The six-mound complex is one of the longest continuously occupied site in Florida. The park is also a part of the Great American Birding Trail and offers boat tours of Crystal River.

The Feldburn Park Trailhead (Withlacoochee Bay Trail) is managed as a unit of the 90,000 acre Marjorie Harris Carr Cross Florida Greenway located approximately 4.32 miles northeast of CR3. Felburn Park was formerly a approximately 140-acre limerock mine. Remnants of the mining activity include the 40-acre Phil's Lake that was formed as a result of the mining activity intersecting the water table. The Withlacoochee Bay Trail traverses five miles west from the Felburn Park Trailhead to the Gulf of Mexico along the southern side of the former Cross Florida Barge Canal. The trail offers hiking, biking, rollerblading, horseback riding, bird watching, and fishing. The park is a part of the FDEP Greenways and Trails program.

The St. Martin's Marsh Aquatic Preserve is approximately four miles south of CR3. The aquatic preserve covers open water areas from Crystal River to the Homosassa River in coastal Citrus County. Adjacent roads to the preserve include U.S. Highway 19, State Route 44, and County Route 488. The St. Martin's Marsh Aquatic Preserve is composed of open water, several inlet bays, tidal rivers and creeks, salt marshes, and adjoins upland hammock islands. Species found in the preserve include amphibians, fish, birds, mammals, plants, and reptiles. The preserve is also a protected area for many commercially, recreationally, and important species.

The Crystal River and Withlacoochee River System are designated as Outstanding Florida Waters (OFW). They are waters designated worthy of special protection because of their natural attributes. This special designation is applied to certain waters and is intended to protect existing, good, water quality, and is managed by state or federal governments. Crystal River is located approximately two

miles south of CR3. The Withlacoochee River System is located approximately four miles northwest of CR3. CREC does not interact directly or indirectly with these OFWs.

The CR3 Uprate Project will not directly or indirectly impact these regional scenic, cultural, and natural landmarks.

2.2.6 Archaeological and Historic Sites

In December 2006, New South Associates conducted a background search on behalf of Tetra Tech NUS to support the license renewal for CR3 (Appendix 10.3-1). A review of the relevant data was conducted in order to provide a synthesis of known archaeological sites within a six-mile radius of the facility. According to the report, the Florida Master Site File data indicates that there are currently 195 archaeological sites, nine structures, and three cemeteries within a six-mile radius of the 4,738-acre CREC. Of these, Citrus County contains 174 of the known sites, eight of the known structures, and two recorded cemeteries. The Levy County portion of the six-mile radius includes 21 known sites, one recorded structure, and one recorded cemetery. Only two sites are listed in the National Register of Historic Places and both are prehistoric: the Crystal River Indian Mound site complex (8CI00001) and Mullet Key (8CL00022) (New South Associates 2006). The NRC license renewal includes no plans for new construction and therefore will have no effect on the cultural resources in the identified review area.

The Crystal River Indian Mound site complex (8CI00001) is two miles northwest of the city of Crystal River on U.S. Highway 19 and is classified as prehistoric. The ceremonial center site contains two temple mounds, a conical burial mound, a shell midden ridge, and a shell midden mound. On September 29, 1970, it was added to the U.S. National Register of Historic Places. The site was excavated by C.B. Moore in 1903, 1906, and 1917; Florida State University in 1951; and Florida State Museum in 1964 (National Register Information Systems 2007).

The Mullet Key is a historic island near the city of Crystal River. It is located three miles south of the main mouth of the Crystal River, and was inhabited by Native Americans in pre-Columbian times. On July 3, 1986, it was added to the U.S. National Register of Historic Places. Mullet Key is located approximately 5.27 miles southwest of CR3.

No archaeological or historical sites are located within the CR3 project area.

2.2.7 Socioeconomics and Public Services

2.2.7.1 *Labor Force*

The total labor force in Citrus County for 2005 was 49,093 with employment of 47,136. Unemployment in 2005 was 1,957 or 4.0 percent in Citrus County. For the state of Florida, the unemployment rate was 3.8 percent and the U.S. unemployment rate was 5.1 percent (University of Florida 2006).

Average monthly private-sector employment by major industry group in Citrus County for September 2006 is depicted below:

Major Industry Group	Employment
Agriculture, Forestry, Fishing and Hunting	92
Mining	57
Utilities	Not Available
Construction	4,334
Manufacturing	934
Transportation and Warehousing	162
Wholesale Trade	594
Retail Trade	5,500
Finance and Insurance	775
Information	532
Real Estate and Rental and Leasing	551
Professional Scientific and Technical Services	1,020
Management Companies and Enterprises	35
Administration and Support and Waste Management and Remediation Services	2,043
Educational Services	125
Health Care and Social Assistance	6,405
Arts, Entertainment & Recreation	491
Accommodation and Food Services	2,796
Other Services	1,440
Unclassified	29

Source: State of Florida, Labor Market Statistics, "Quarterly Census of Employment and Wages" (ES-202), Annual NAICS files.

The health care and social assistance groups and retail trade industry provided the most employment in Citrus County with about 43 percent of the total employment between the two groups. The construction industry provided about 4,334 jobs.

Employment projections for construction and extraction trades in Florida have been estimated for the year 2013. Statewide, construction employment is estimated to increase from 546,810 in 2005 to 660,509 in 2013 (University of Florida 2006).

2.2.7.2 *General Income*

Citrus County had a per capita personal income of \$24,278 for 2004 compared to state of Florida and U.S. per capita personal income of \$31,469 and \$33,050, respectively (U.S. Department of Commerce, Bureau of Economic Analysis, Regional Economic Information 2004). This income level ranked 35 out of the 67 counties in Florida.

The median household income in Citrus County was \$31,895 in 2003. When compared to the 2000 median household income, this income level is a 1.7 percent increase. Florida had a median household income of \$38,985 in 2003, which was an increase of 0.5 percent from 2000 (University of Florida 2006). The average wage and salary earnings in Citrus County in 2004 were \$28,343, approximately 19 percent lower than the statewide average of \$34,935 (BEA 2004).

2.2.7.3 *Housing*

The table below identifies the total number of housing units in Citrus County by occupancy type according to the U.S. Census Bureau:

Renter Occupied	11,301
Owner Occupied	46,530
Total Occupied	57,831

The average, house purchase-price in Citrus County in 2005 was \$196,322 (University of Florida 2006).

A total of 71 licensed lodgings existed in 2006, representing 2,259 lodging units. This includes 1,001 apartment building units, nine rooming house units, 140 rental condominiums, and 117 transient apartment building units (University of Florida 2006).

2.2.8 Area Public Service and Utilities

2.2.8.1 *Education*

Primary public education in Florida is operated on a countywide basis. Each county's respective school district establishes educational policies and staffing requirements. According to the Florida Department of Education, Statistical Brief, Citrus County had a total student membership in preschool

through twelfth grade of 16,077 in the fall of 2006. Citrus County schools employed approximately 1,028 teachers in the fall of 2005.

There are seven schools located in the city of Crystal River and one school located in Yankeetown. The Academy of Environmental Science is located five miles southeast of CR3 and the Marine Science Station is located 5.1 miles southeast of CR3 (Figure 2.2.8-1). The Academy of Environmental Science is a charter school focused on environmental and natural resource education. The Marine Science Station provides marine education to students through the county and state.

2.2.8.2 Transportation

U.S. Highway 19 is the major north-south route in the western portion of the County, traveling through the city of Crystal River and Homosassa Springs, connecting Levy County to the north with Hernando County to the south. In the area of the CREC, U.S. Highway 19 is a four-lane divided arterial (Citrus County 2006).

The main entrance to the CR3 is West Powerline Street, located off U.S. Highway 19, approximately 3.7 miles west of U.S. Highway 19/U.S. Highway 98. All CREC employees use Powerline Street to enter and exit the facility (Figure 2.2.8-2). The existing peak hour traffic volumes are presented in Figure 2.2.8.3 for the a.m. and p.m. peak hours.

U.S. Highway 19/U.S. Highway 98 is a state maintained, northbound-southbound principle rural arterial. At the intersection with West Powerline Street, the U.S. Highway 19/U.S. Highway 98 northbound approach consists of one exclusive left lane, and two through lanes and the southbound approach consists of two through lanes and one dedicated right turn lane. The traffic signal control at the intersection with West Powerline Street is actuated-uncoordinated with a variable cycle length.

West Powerline Road is an eastbound-westbound local roadway and is used exclusively for access to and from the existing power plant. At U.S. Highway 19/U.S. Highway 98, the West Powerline Street eastbound approach consists of one left turn and one right lane. The traffic signal control at the intersection with U.S. Highway 19/U.S. Highway 98 is actuated-uncoordinated with a variable cycle length.

There is one railroad serving Citrus County, the Seaboard Coast Railroad, owned by CSX Transportation. A spur from this line runs just south of West Powerline Street, the CR3 access road and terminates on the CR3 property.

There are two public and six private airports within Citrus County. The CREC has its own private heliport onsite. The Crystal River Airport is the closest public airport to CR3, which is approximately 9.95 miles from CR3. J.R.'s Stolport Airport is the closest private airport to CR3, which is approximately 9.18 miles from CR3.

The Florida Department of Transportation (FDOT) is currently conducting a Project Development and Environment (PD&E) study in support of a new four-lane (toll) turnpike. The new Citrus County portion of the Suncoast Parkway turnpike will extend from U.S. Highway 98 to U.S. 19 Highway, alleviating congestion along U.S. Highway 19 and around the city of Crystal River and other towns along the west coast of Citrus County.

2.2.8.3 Medical Facilities

Citrus County has two hospitals, which contain approximately 326 licensed beds. Licensed medical practitioners in Citrus County include 200 physicians, 180 dentists, dental hygienists, and dental radiographers, 268 health practitioners, 1,929 registered and practical nurses, 23 opticians, and 96 pharmacists and pharmacist interns (University of Florida 2006).

The closest medical facility to CR3 is Seven Rivers Regional Medical Center, located approximately four miles east of CR3. Seven Rivers Regional Medical Center services include an ambulatory surgery center, cardiovascular care, the Dunnellon Diagnostic Center, emergency services, endoscopy services, imaging services, inpatient services, an intensive care/coronary care unit, laboratory services, an orthopedic center of excellence, rehabilitation services, the Seven Rivers Rehab & Wound center, a sleep disorder center, surgical services, a women's and family center, wound care and hyperbaric medicine services. If Seven Rivers Regional Medical Center is not available for emergency care, Citrus Memorial Hospital in Inverness, Florida is located approximately 23 miles southeast of CR3.

The Nature Coast Emergency Medical Services (EMS) provides emergency medical transportation within Citrus County. EMS is licensed to operate by the Office of Emergency Medical Services, Florida Department of Health and Rehabilitative Services and functions according to Chapter 401,

F.S., and Chapter 10D-66, Florida Administrative Code (F.A.C). EMS operates the county rescue units.

2.2.8.4 Firefighting Facilities

Citrus County Fire Rescue is responsible for providing fire rescue, fire prevention, hazardous materials, and technical rescue services to Citrus County. The Citrus County Fire Rescue has over 200 career and volunteer members working out of 22 fire and rescue stations.

CR3 has an onsite fire brigade that provides onsite response in the event of an emergency. Additionally, numerous response organizations and sub-organizations are available to respond to emergencies. These emergency response organizations may be drawn from local, state, federal, and private sectors.

2.2.8.5 Police Protection

The Citrus County Sheriff's Office serves a population of about 132,635 people (University of Florida, 2006). The Citrus County Sheriff's Office provides law enforcement in the vicinity of CR3. The Florida Highway Patrol provides service to U.S. Highway 19.

During an emergency at CR3 in which all available assistance is required, numerous response organizations and sub-organizations are available. These emergency response organizations may be drawn from local, state, federal, and private sectors. They are cited in Table 2.2.8-1 (RERP 2007).

2.2.8.6 Emergency Response and Preparedness

PEF has developed an integrated preparedness program to respond to potential emergencies at CR3. The plan has been developed to 1) provide reasonable assurance that appropriate measures can and will be taken to protect health and safety in the event of an emergency; 2) assure that CREC personnel are protected to the maximum extent practicable; and 3) to provide timely dissemination of accurate information to local, State and Federal authorities and to the public (Progress Energy, Radiological Emergency Response Plan, 2007).

2.2.8.7 Recreation Facilities

There are four known public recreation areas within five miles of CR3 located in Citrus and Levy Counties (Figure 2.2.8-1).

Fort Island Gulf Beach is located approximately 3.3 miles south of CR3 off west Fort Island Road. Fort Island Gulf Beach amenities include barbecue grills, beach, boat ramp, fishing pier, lighting detector, parking, picnic tables, restrooms, showers (outdoor), and swimming.

Bird Creek County Park is approximately five miles northwest of CR3 located in Yankeetown at the end of U.S. Highway 40. Bird Creek Park is a little park located where the Withlacoochee River flows into the Gulf of Mexico in Levy County, providing both freshwater and saltwater fishing. It also offers activities and facilities such as canoeing, swimming, fishing, picnic sites, and boat ramps.

Wilderness Addition Park and Masnola Park/Garden Club are local recreation facilities located in Yankeetown approximately five miles north of CR3.

2.2.8.8 Electricity and Gas

PEF and Withlacoochee River Electric Coop, Inc. provide electricity to Citrus County businesses and residents. Central Florida Gas provides natural gas service in the area.

2.2.8.9 Water Supply Facilities

The Citrus County Utilities Division is responsible for the operation of six county owned water facilities. The Division supplies potable water directly to over 5,000 customers and to the Ozello Water Association and Apache Shores through bulk water agreements. Agreements have also been made to supply potable water to the city of Crystal River and Beverly Hills/Rolling Oaks Utilities during emergency situations. The Charles A. Black II (aka Meadowcrest Water Treatment Facility) is located in the city of Crystal River, which is the closest water treatment facility to CR3.

There are seven active freshwater groundwater wells located on PEF's CREC property. Three of the seven groundwater wells supply an existing water treatment plant. CR3 receives and meters its intake supply from this existing water treatment plant. This facility is capable of serving the CR3 Uprate Project.

2.2.8.10 Sewage Treatment Facilities

The Citrus County Utilities Division is responsible for the operation of four, county-owned wastewater treatment facilities and provides wastewater treatment for over 2,000 customers.

One of the following types of wastewater facilities serves Citrus County businesses and residents: septic tanks, package plants, or regional facilities. Septic tanks provide service to individual residences or small businesses within unincorporated Citrus County. Regional facilities are large systems that serve areas of densely populated developments. The Brentwood Wastewater Treatment Facility located in Lecanto is the closest facility to CR3.

The existing CR3 is not connected to the regional wastewater system. The CR3 Uprate Project will be self-sufficient and facility-specific sanitary and process wastewater collection, treatment, and disposal needs will be met by the existing and permitted CR 1, 2, and 3 wastewater treatment plant (Appendix 10.4.2).

2.2.8.11 Solid Waste Disposal

The Citrus County Solid Waste Management Division is responsible for solid waste collection, transport, and disposal in unincorporated portions of the county. It operates the central landfill that accepts household, commercial, and industrial waste. Over 104,000 tons of material per year is buried, and approximately three million gallons of leachate is treated annually at a specialized facility on-site.

CREC currently provides for facility-specific solid waste collection and disposal. No change in solid waste management and disposal practices are anticipated.

2.3 Bio-Physical Environment

2.3.1 Geohydrology

The information presented in this section draws upon previous information submitted in the CREC CR 4 and 5 SCA (March 1979) and provides a brief summary of the geohydrologic baseline information applicable to the CR3 Uprate Project.

The general geology of Citrus County was derived from the "Text to Accompany the Geologic Map of Florida" (Scott 2001). Site-specific, subsurface information was obtained by a geotechnical investigation performed within the CREC site as referenced in Dames and Moore 1995.

2.3.1.1 Geologic Description of the Site Vicinity

The generalized geology and hydrogeology for northern Florida, in the vicinity of the site, is shown in Figure 2.3.1-1. Based upon review of the U.S. Geological Survey (USGS) map for Red Level, Florida, dated 1954 and revised 1992; the area in the vicinity of the CREC has a natural ground surface elevation less than five feet (ft) above mean sea level (msl) with respect to the National Geodetic Vertical Datum (NGVD) of 1929. CREC was occupied by Ocala Limestone prior to development. Under natural conditions, the water table (i.e., absent drainage improvements) was near the ground surface. Geologic structures in the state of Florida are shown in Figure 2.3.1-2.

The primary geomorphologic feature located within the area of the site is coastal swamp (Florida Geologic Survey 1992) (Figure 2.3.1-3). Seismic activity near the site is minimal. There is 0.04 g (gravitational force) of peak ground acceleration with a two percent probability of exceedance in 50 years (Figure 2.3.1-4).

Rock units ranging in age from Paleocene to late Eocene age underlay the site. Formations and groups discussed in this report include (from oldest to youngest): the Cedar Keys Formation of Paleocene age, Avon Park Formation of middle Eocene age, and Ocala Limestone of late Eocene age (Scott et al. 2001). Figure 2.3.1-5 depicts a stratigraphic column showing lithostratigraphic units for the state of Florida. Figure 2.3.1-6 depicts a regional geologic cross section.

The Cedar Keys Formation is subdivided by lithologic character and corresponding geophysical log characteristics into six units (Winston 1994). In descending order, they are:

- Unit A, characterized by a preponderance of anhedral and cryptocrystalline dolomite, euhedral dolomite is subordinate;
- Unit B, characterized by the presence of numerous relic grain textures in chalky to microcrystalline euhedral dolomite;
- Unit C, predominately anhydrite, with subordinate chalky to very fine microcrystalline euhedral dolomite;
- Unit D, characterized by a predominance of relic grains in a chalky to very fine

microcrystalline euhedral dolomite, with few thin-bedded anhydrites; and

- Units E and F, similar in texture to Unit D, but contain fewer beds of relic grain texture.

The Avon Park Formation contains carbonate sediments of peninsular Florida. The formation consists of cream to light-brown or tan, poorly indurated to well indurated, variably fossiliferous limestone. The limestone is interbedded with dolostones (Scott 2001).

The Ocala Limestone consists of nearly pure limestone with occasional dolostones. The formation can be subdivided into two facies on the basis of lithography. The lower consists of white to cream colored, fine to medium grained, poor to medium indurated, and fossiliferous limestone. The upper facies consist of a white, poor to well indurated, poorly sorted, fossiliferous limestone. The permeable, highly transmissive carbonates of the Ocala Limestone form an important part of the Floridan Aquifer System (Scott 2001)

2.3.1.2 Detailed Site Lithologic Description

Detailed site lithology is available for the CREC Groundwater Monitoring Plan (Dames and Moore 1995). A generalized stratigraphic column for the site is shown on Figure 2.3.1-7.

Soils on and around the site are nearly level and poorly drained. The eastern portion of the site is comprised mainly of the Broward-Boca association. These are sandy soils underlain by limestone. To the west, the soils are extremely wet and classified as freshwater or saltwater swamp (FPC 1979). The property is underlain by poorly graded sand five ft below ground surface (bgs). The sand is underlain by limestone.

The site is located in the Ocala Uplift District, Big Bend Karst Division and the Chassahowitzka Coastal Strip Subdivision physiographic division (Brooks, 1981). The Ocala Uplift District is the "Lime Sink Region" of the pioneers. Early Tertiary limestones are at or near the surface in most places. Structurally, this is a broad uplift that occurred in Middle and Late Tertiary time. The most distinctive features of the Ocala Uplift District are the low-rolling limestone plains, but the landscape is varied. The Big Bend Karst Division is an erosional limestone plain with some low hills consisting of surficial sand. Beaches are rare; salt marshes give way to the open water of the Gulf of Mexico. Some mangroves occur southward of the Cedar Keys. The low coastal plain is comprised predominantly of flatwoods and swamps. The Chassahowitzka Coastal Strip Subdivision is a very low coastal strip of limestone rocklands, mostly covered by hardwoods and swamps; there are some

flatwoods. Elevations are typically 10 ft and less. Mangroves become increasingly significant along the rocky, flat coast.

2.3.1.3 Bearing Strength

The generalized profile consists of 5-10 ft of unconsolidated sediments over limestone. The overburden shows a “draped” effect in the area. There are three, broad, geotechnical layers. The first is a sand extending to approximately 5 ft bgs. The second is a very porous, limestone layer. The third is a very dense, impervious layer.

The CREC is suitable for the CR3 Uprate Project from a geotechnical standpoint. Lightly loaded structures can be supported on shallow foundations. Since the groundwater table is relatively high and upper sand is highly permeable. Major excavation will not be required for the CR3 Uprate Project.

2.3.2 Subsurface Hydrology

2.3.2.1 Subsurface Hydrologic Data

The CREC site is underlain by one principal hydrogeologic unit, the Floridan Aquifer System (FAS). In the vicinity of the site, the Floridan Aquifer is unconfined.

Floridan Aquifer

The FAS within the CREC site consists of the Upper Floridan Aquifer (UFA), middle confining unit, and Lower Floridan Aquifer (LFA). The UFA is approximately 10 ft bgs and 600 ft thick (FGS 1991) and consists mainly of limestone (calcium carbonate). Included at its top is Ocala Limestone, with the majority of the aquifer comprised of the Avon Park and Oldsmar Formations (FGS 1992). Groundwater storage and movement in the Floridan aquifer occurs through a complex network of fractures, solution cavities, and secondary porosity. Therefore, aquifer properties – such as hydraulic conductivity and transmissivity – are non-homogeneous and anisotropic.

Brackish groundwater is expected to be found in the coastal portion of the Floridan aquifer in the vicinity of the CREC site. The sub-Floridan confining unit occurs within the Cedar-Keys Unit.

2.3.2.2 Karst Hydrogeology

Karst terrains develop in areas underlain by carbonate rocks such as limestone. They often have drainage systems that are reflected on the surface as sinkholes, springs, disappearing streams, or even caves (<http://www.dep.state.fl.us/geology/geologictopics/sinkhole.htm>).

According to Map Series No. 110, "Sinkhole Type, Development, and Distribution in Florida," (William C. Sinclair and J. W. Stewart USGS), the site is located in Area I, where sinkholes are few, generally shallow and broad, and develop gradually. Shallow-solution sinkholes are the type of sinkholes found in this area (Figure 2.3.2-1). The FDEP's sinkhole database lists 334 sinkholes in Citrus County with the nearest one greater than three miles from the site.

2.3.3 Site Water Budget and Area Users

2.3.3.1 Site Water Budget

Below is a table summarizing the USGS Estimated Use of Water in the U.S. County-Level Data for 2000 for Citrus County (<http://water.usgs.gov/wateuse/>).

Water Use	Million Gallon per Day
Public supply, ground-water withdrawals, fresh	13.97
Public supply, surface-water withdrawals, fresh	0.00
Public supply, total withdrawals, fresh	13.97
Total, ground-water withdrawals, fresh	29.99
Total, ground-water withdrawals, saline	0.00
Total, ground-water withdrawals, total	29.99
Total, surface-water withdrawals, fresh	1.30
Total, surface-water withdrawals, saline	393.90
Total, surface-water withdrawals, total	395.20
Total withdrawals, fresh	31.29
Total withdrawals, saline	393.90
Total withdrawals, total	425.19

2.3.3.2 Water Supply

Groundwater is withdrawn regionally from the Surficial, Intermediate, and UFA for various purposes, including industrial, agricultural and potable/public supply. Water for public supplies in the vicinity of Crystal River and most of the water used by municipalities and industries in the area are obtained

from wells in the Floridan aquifer. Recharge to the groundwater table occurs as a result of approximately 55 inches of annual rainfall, most of which occurs during the summer months. At the plant site, the groundwater table is approximately 10 feet bgs and is influenced by tidal variations. Numerous springs, lakes, and ponds exist in the area of the CREC. The primary uses for these waterbodies are fresh water sport fishing and water livestock.

2.3.3.3 *Area Users*

The Southwest Florida Water Management District (SWFWMD) through the issuance of water use permits and well construction permits regulates ground water use in the vicinity of the CREC (Appendix 10.4.1). CREC is authorized to withdraw brackish and fresh groundwater from the UFA via 12 production wells; nine are active and three are currently inactive (Appendix 10.4.1).

The CREC maintains nine active production groundwater wells located linearly eastward away from the complex. The closest of the fresh water production wells is approximately three miles east of the complex. These wells provide raw water to the water treatment plants which serve CR 1, 2, and 3 and CR 4 and 5. CR 1, 2, and CR3 are served by the five most western wells (PW1-A, PW1-B, SPW-3, SPW-4, and SPW-5). Wells SPW-3, SPW-4, and SPW-5 are permitted to withdraw an average of 380,000 gpd, 285,000 gpd, and 285,000 gpd, respectively. The brackish water wells, PW1-A and PW1-B are permitted to withdraw an average of 25,000 gpd. The wells are installed in the Floridan aquifer at depths ranging from 42 to 125 feet.

Figures 2.3.3-1 provides the location of the permitted water use wells within five miles of the CREC.

2.3.4 Surficial Hydrology

2.3.4.1 *Site Description*

The CREC is located on Crystal Bay, a shallow embayment of the Gulf of Mexico and midway between the Withlacoochee/Cross Florida Barge Canal and Crystal River, and approximately four miles from each.

As far out as Fisherman's Pass, approximately three miles west of the site, the depth of the Crystal Bay is less than 10 ft (SWEC 1985 page 3-1). Shallow inshore areas are characterized by oyster bars (or oyster "reefs") oriented parallel to shore that are visible at low tide and covered by water at high

tide. These oyster bars, composed mostly of broken shell, create numerous small basins with north-south orientation in the area of the intake and discharge canals.

The Withlacoochee River watershed covers approximately 2,100 square miles. The 157 mile long Withlacoochee River originates in the Green Swamp in Polk County and extends northward, discharging into the Gulf of Mexico near Yankeetown, Florida. In 1989, the river was designated an OFW by the Florida Department of Environmental Regulation. Connected lakes and tributaries are also included in this designation. It traverses eight counties (Polk, Lake, Sumter, Pasco, Hernando, Citrus, Marion, and Levy counties), with a watershed in six physiographic regions. Within the Green Swamp, at a location near U.S. Highway 98, the Withlacoochee River runs close to the headwaters of the Hillsborough River. A natural saddle occurs between the two rivers at an elevation of 78.5 ft. The Withlacoochee River can discharge to the Hillsborough River during high flows, but overflow seldom occurs. West of Lake Rousseau, the Withlacoochee River flows to the Gulf of Mexico where it discharges into the Withlacoochee Bay estuary. The area of the river from Inglis to the mouth has been greatly altered by the construction of the lock, dam, and bypass canal.

The Cross-Florida Barge Canal located south of the Levy/Citrus County border was originally constructed as a transportation waterway that would connect the Gulf of Mexico on the west coast to the Atlantic Ocean on the east coast. The original project was constructed and managed by the Army Corps of Engineers prior to the cancellation of the project. The Florida Board of Trustees now owns the unfinished portions of the project and the land. The 100-mile corridor is now designated as the Marjorie Harris Carr Cross-Florida Greenway. The greenway is administrated by the Board of Trustees as conservation and recreation lands.

Crystal River is located in Citrus County and runs from the city of Crystal River west seven miles toward the Gulf of Mexico. Crystal River Springs is a cluster of 30 springs and is the second largest springs group in Florida. Many of the river's springs are 20 to 30 ft deep. The tidally influenced Kings Bay is the headwater of Crystal River that forms at the northwest corner of the bay.

The CREC is served by an intake and a discharge canal, both of which were constructed with CR 1, 2, and 3. The intake canal is approximately 20 ft deep, and is diked westward on both sides for approximately 3.4 miles. The north dike extends for another 5.3 miles, but has openings for navigation. Velocities in the intake canal, assuming CR 1, 2, and 3 are all operating their cooling water systems at maximum pumping capability (1,318,000 gpm or 1897.9 MGD), are estimated to be

about 1.3 fps at low tide. The discharge canal is approximately 14 ft deep, and is diked approximately 1.6 miles west-northwest to the designated NPDES point of discharge (POD). The discharge canal was dredged for about another 1.2 miles offshore (Figure 2.3.4-1).

Velocities in the discharge canal when CR 1, 2, and 3 are all operating at maximum pumping capability are estimated to be about 2.4 feet per second at low tide. CERC performs cooling water flow monitoring as part of its NPDES permit, and reports the data as part of its Discharge Monitoring Reports (DMRs). The current permit, which was issued on May 9, 2005, limits this flow to 1,897.9 MGD during the period from May 1 through October 31 each year and to 1,613.2 MGD during the remainder of the year. Figure 2.3.4-5 shows the reported C.W. rates for CR 1, 2, and 3 during the period January 2003 through January 2007.

2.3.4.2 *Streamflow Data*

Monthly average streamflow for the Withlacoochee River at the Inglis Dam (USGS Station #02313230) for the period of record (1969 to 2006) ranges from 178 cubic feet per second (cfs) to 698 cfs. Daily flows for the same period of record range from 70 to 2,000 cfs. Mean annual streamflow for Withlacoochee River can be found in Table 2.3.4-1.

Streamflow data is not available for the Cross-Florida Barge Canal; however, water supply is inherently reliable and resistant to drought. Mean annual streamflow for Withlacoochee River can be found in Table 2.3.4-1.

Monthly average streamflow for Crystal River near Crystal River, Florida (USGS Station # 02310750) for the period of record (1964 to 1977) ranges from 801 cfs to 1,180 cfs. Daily flows for the same period of record range from -1,520 to 4,340 cfs. Mean annual streamflow for Crystal River can be found in Table 2.3.4-1.

2.3.4.3 *Water Quality*

Surface water quality standards for the state of Florida consist of designated uses for waterbodies, numerical and narrative criteria that correspond with the designated uses, and various policies, including moderating provisions.

Crystal Bay, the only designated water body affected by plant operations, is designated as a Class III Coastal Water. The corresponding uses are shellfish propagation or harvesting. Water Quality data in the vicinity of the site is available from U.S. Environmental Protection Agency's (EPA's) STORET Database (Figure 2.3.4-2). In general, the Crystal Bay has good water quality near the site. Water quality data near the intake canal and near the discharge canal from the site are listed in Table 2.3.4-2.

CREC performs Total Dissolved Solids (TDS) monitoring of the cooling water and reports the data as part of its NPDES permit. Figure 2.3.4-6 shows TDS measured in the discharge canal from October 2005 through February 2007. Values ranged between 24 and 31 parts per thousand. Because of the station's large flow rate, and the much smaller flow rates of added waste streams, the chemical concentrations in the discharge canal are not significantly different than those in the intake canal.

There are no anticipated changes in the chemical concentrations in the intake and discharge canal as a result of the CR3 Uprate Project.

Thermal

Based on EPA data, the average annual temperature in the Crystal Bay near the intake canal is 71.2 °F. The water temperature ranges from a minimum of 43.0 °F to a maximum of 94.6 °F in the summer.

CR 1, 2, and 3 currently withdraw condenser cooling water from the intake canal and discharge it to the discharge canal at the following rates, temperature rises, and heat loads, under design conditions:

Unit	CR1	CR2	CR3	Total
Condenser cooling water flow - gpm	310,000	328,000	680,000	1,318,000
Condenser temperature rise – degrees F.	14.9	16.9	17.5	
Condenser cooling system Heat rejection rate – Billion Btu/hour	2.28	2.74	5.88	10.91

In order to mitigate the thermal impacts to Crystal Bay, the CREC is also equipped with two types of Helper Cooling Towers (HCT), designated Permanent and Modular (Figure 2.3.4-3). These HCT are designed to allow CREC to meet NPDES permit limits on the absolute temperature of the facility

discharge of 96.5° F as a rolling three-hour average. The HCT are operated between May 1 and October 31 in order to achieve those limits.

The design characteristics of the HCT are as follows:

	Permanent HCT	Modular HCT
Design Wet Bulb Temperature – Degrees F.	81	81
Flow rate - gpm	684,600	180,000
Design Heat Dissipation Rate – Billion Btu/Hour	4.569	1.317

CREC performs temperature monitoring of the cooling water as part of its NPDES permit, and reports the data as part of its DMRs. Figure 2.3.4-7 shows the recorded intake and discharge temperatures for the period January 2003 through February 2007.

Although the dominant characteristic of the CREC discharge is once-through cooling water, there are other wastewater streams currently permitted by the CR 1, 2, and 3 NPDES Permit Number FL0000159. These waste streams are shown in the plant water use diagram (Figure 2.3.4-4).

2.3.4.4 Existing CREC Effects

Domestic/Sanitary Wastewater

Showers, lavatories, sinks, toilets, urinals and drinking fountains generate plant domestic/sanitary wastewater. These wastewaters are collected and treated in an on-site domestic/sanitary waste treatment facility.

FDEP Permit FLA118753-001-DW3P (Appendix 10.4.2) authorizes PEF to operate a 0.030 MGD Type III extended aeration domestic wastewater treatment plant. The wastewater treatment plant (WWTP) provides secondary treatment with basic level disinfection and consists of equalization, aeration, clarification, and sludge digestion. An associated land application system receives effluent from the WWTP. The land application system is permitted separately under FDEP Permit No. FLA016960 (Appendix 10.4.3).

Potable Water Systems

Potable water uses at the plant include water for drinking, washing, showers, urinals, and toilets. Potable water for the plant is provided by a service water system, supplied by well water. The water treatment plant is located in the Water Treatment Building, located southwest of CR3 and southeast of CR 1 and 2 within the CR 1 and 2 facility. The existing water treatment train is comprised of natural draft aeration, cold lime softening, scale inhibitor addition, chlorination, pressure filtration, storage, and distribution. Potable water is distributed via four 300 gpm service water pumps to CR 1 and 2, CR3 and other facilities within the CREC.

Process Wastewater Systems

The major process wastewater systems for CR3 are authorized by the CR 1, 2, and 3 NPDES (Appendix 10.1.2) and Industrial Wastewater Permits (Appendix 10.4.3) as described below (Figure 3.5.4-1):

Outfalls D-091, D-092, D-093 and D-094 are discharges produced when water from the intake canal (for outfalls D-091, D-092 and D-093) and discharge canal (for outfall D-094) is used to wash debris from the rotating debris screens protecting the intake pumps at Units 1, 2, and 3 and also the HCTs. These outfalls discharge to the intake canal at the plant intake structures (for outfalls D-091, D-092 and D-093) and discharge canal (for outfall D-094).

The nuclear services and decay heat seawater system (Outfall D-0F) associated with CR3 consist of once through cooling water and discharges from internal processes (i.e., laundry shower and sump tanks and secondary drain tanks) and the evaporator condensate storage tanks to the discharge canal.

The plant wastewater pond system (Outfall D-0C2) receives waste streams from the overflow of the plant wastewater evaporation/percolation pond system. This system receives various low volume wastes from CR 1, 2, and 3 including the discharge from the CR 1 and 2 sewage treatment plant. This area is also occasionally used as a dredge spoil dewatering area. This discharge has not been used due to the adequacy of the overall capacity of the pond system; however, the outfall should be maintained for future use as needed. This outfall discharges into the discharge canal.

Chemical and Biocide Waste

CR 1 and 2 currently utilize a mechanical condenser cleaning system, wherein plastic cleaners are added to the once through cooling water stream and recaptured in the discharge canal for reuse. CR3 utilizes a differently designed mechanical condenser cleaning system. With this system, cleaning balls are circulated through the CR3 condensers. The balls are collected and recirculated within the circulating water system.

The nuclear services and decay heat seawater system associated with CR3 consists of once through cooling water and discharges from internal processes. This process is treated with a biocide known as Clamtrol (Spectrus CT1300) which is periodically injected into the system to control bio-fouling.

2.3.5 Vegetation/Land Use

The Florida Land Use, Cover, and Forms Classification System (FLUCFCS) Level III codes were utilized to describe the existing vegetative communities at the project area and the surrounding CREC. Figure 2.3.5-1 illustrates vegetative communities and land use at the project area. Each community is discussed in detail in Section 2.3.6.1

Existing land use and land cover within the project boundary includes electrical power facilities (FLUCFCS 831), open land (FLUCFCS 190), freshwater marsh (FLUCFCS 641), saltwater marsh (FLUCFCS 642), and mixed wetland hardwoods (FLUCFCS 617). Upgrades to the CREC will be conducted within areas currently used for electrical power generation. Open land and areas of freshwater marsh and mixed wetland hardwoods will be utilized for construction laydown.

The land use and vegetative communities surrounding the project area include mixed wetland hardwoods, open land, electrical power facilities, saltwater marsh, canals (FLUCFCS 510), and transmission lines (FLUCFCS 832).

2.3.6 Ecology

2.3.6.1 *Species-Environmental Relationships*

The following subsections include descriptions of flora and fauna at the project area and areas near CR3. The CR3 area reconnaissance was conducted on April 12, 2007.

Terrestrial Systems – Flora

831 - Electrical Power Facilities

The project area is dominated by the existing electric power facilities and associated infrastructure, including CR3, warehouses, offices, and cooling water intake and discharge structures. Occasional species occurring adjacent to roadways and upon filled areas include red cedar (*Juniperus virginiana*), cabbage palm (*Sabal palmetto*), Brazilian pepper (*Schinus terebinthifolius*), lantana (*Lantana camara*), marsh elder (*Iva frutescens*), Virginia creeper (*Parthenocissus quinquefolia*), poison ivy (*Toxicodendron radicans*), peppervine (*Ampelopsis arborea*), wax myrtle (*Myrica cerifera*), groundsel tree (*Baccharis halimifolia*), and ragweed (*Ambrosia artemisiifolia*).

832 - Transmission Line Corridor

Two sets of 230 kV and 500 kV transmission lines enter the CREC. The transmission line corridor crosses areas that will be used for construction laydown.

190 - Open Land

There are large areas of open filled land adjacent to the project site that are covered in grasses. Grasses that dominate this habitat include Bermuda grass (*Cynodon dactylon*) and bahia grass (*Paspalum notatum*).

641 - Freshwater Marsh

Several small freshwater marsh areas exist on the project site within areas designated for parking and construction laydown. Dominant species in the freshwater marsh areas include cattails (*Typha latifolia*), coastal plain willow (*Salix caroliniana*), and buttonbush (*Cephalanthus occidentalis*), while common subdominant species include arrowhead (*Sagittaria lancifolia*), sawgrass (*Cladium jamaicense*), white top sedge (*Dichromena colorata*), St. Johns wort (*Hypericum* spp), persimmon (*Diospyros virginianus*), soft rush (*Juncus effusus*), primrose willow (*Ludwigia* spp.), spadeleaf (*Centella asiatica*), marsh pennywort (*Hydrocotyle umbellata*), smartweed (*Polygonum* spp.), lizard's tail (*Saururus cernuus*), groundsel bush (*Baccharis halimifolia*), dogfennel (*Ambrosia artemisiifolia*), sedges (*Cyperus* sp.), spikerush (*Eleocharis* sp.), blue-eyed grass (*Sisyrinchium atlanticum*), American elm (*Ulmus americana*), ash (*Fraxinus* sp.), swamp bay (*Persea palustris*), mermaidweed (*Proserpinaca pectinata*), water hyssop (*Bacopa monnieri*), red maple seedlings (*Acer rubrum*), and blue flag (*Iris virginica*).

642 - Saltwater Marsh

Areas of saltwater marsh are located to the west of the CREC, as well as between the intake and discharge canals. The saltwater marsh areas are dominated by black needlerush (*Juncus roemerianus*), with additional herbaceous and shrub species including marsh elder, salt grass (*Distichlis spicata*), bushy seaside oxeye (*Borrichia frutescens*), saltmarsh cordgrass (*Spartina alterniflora*), annual glasswort (*Salicornia bigelovii*), and occasional cabbage palm and red cedar trees.

617- Mixed Wetland Hardwoods

An area of mixed wetland hardwoods occurs to the east of CR3; this area is designated for additional construction laydown and parking. Canopy species present in the wetland include ash, red maple, cabbage palm, American elm, swamp bay (*Persea palustris*), red cedar, dahoon holly (*Ilex cassine*), coastal plain willow, and live oak (*Quercus virginiana*). Understory species present include sawgrass, swamp lily (*Crinum americanum*), greenbriar (*Smilax* spp.), cattail, lizard's tail (*Saururus cernuus*), marsh pennywort (*Hydrocotyle umbellata*), poison ivy, and leather fern (*Acrostichum danaeifolium*). Shrub species present include coastal plain willow, buttonbush, wax myrtle, Walter's viburnum (*Viburnum obovatum*), and swamp dogwood (*Cornus foemina*).

Vegetative Communities Adjacent to the Project Area

The vegetative communities adjacent to the project area were classified during field reconnaissance conducted in 2006 and 2007.

831 - Electrical Power Facilities

Portions of the CREC are located outside of the defined project area.

832 - Transmission Lines

Two sets of 230 kV and 500 kV transmission lines enter the CREC.

190 - Open Land

There are large areas of open filled land within the CREC adjacent to the project area that are covered in grasses. Grasses that dominate this habitat include Bermuda grass (*Cynodon dactylon*) and bahia grass (*Paspalum notatum*).

641 - Freshwater Marsh

Freshwater marshes are common in the area. Dominant species in these areas include torpedo grass (*Panicum repens*), maidencane (*Panicum hemitomon*), arrowhead (*Sagittaria lancifolia*), cattails, sawgrass, buttonbush, lizard's tail, bushy broomsedge (*Andropogon virginicus*), and coastal plain willow. Other species present include marsh pennywort, smartweed, blue flag iris (*Iris virginica*), and leather fern. Some freshwater marsh areas are located within the transmission line corridors and are impacted by transmission line maintenance activities.

642 - Saltwater Marsh

Saltwater marsh habitat is abundant to the west of CREC adjacent to Crystal Bay. Dominant species include black needlerush with a sparse canopy of cabbage palm and occasional red cedar, marsh elder, as described previously.

630 - Wetland Forested Mixed

These are communities in which neither hardwoods nor conifers achieve a 66 percent dominance of the crown canopy composition. Canopy species present in these areas include cabbage palm, red cedar, slash pine (*Pinus elliottii*), red maple, laurel oak, water oak (*Quercus nigra*), green ash, American elm, swamp bay, red bay (*Persea borbonia*), dahoon holly, and willow. Common understory species include wax myrtle, blueberry (*Vaccinium* sp.), Virginia creeper (*Parthenocissus quinquefolia*), greenbrier, and poison ivy.

510 - Canals

The intake and discharge canals for the CREC are located just outside of the project area. The banks of these areas are actively mowed and maintained.

Terrestrial Systems – Fauna

Wildlife habitat in the project area has been significantly altered by the construction and operation of the existing power facility. Only a very small amount of native habitat is present within the project area. The majority of the site contains structures related to power generation, or is cleared, grassed and periodically mowed. As a result of these extensive habitat alterations, most of the project area provides poor wildlife habitat.

Wildlife utilization of the project area is expected to be minimal. Species tolerant of urbanization and human interaction were observed during the site reconnaissance conducted on April 12, 2007, including common ground doves (*Columbina passerina*) and common grackles (*Quiscalus quiscula*). One wading bird, a snowy egret (*Egretta thula*), was observed in a forested wetland area (FLUCFCS 617). Wading birds may occasionally use wetlands within and adjacent to the project area. Common wading birds that may utilize these areas include the great blue heron (*Ardea herodias*), little blue heron (*Ardea caerulea*), great egret (*Casmerodius albus*), snowy egret (*Egretta thula*), and white ibis (*Eudocimus albus*).

Non-listed wildlife either directly observed, observed through tracks, scat, and/or burrows, or likely to occur in areas adjacent to the project area based upon habitat present include but are not limited to bobwhite quail (*Colinus virginianus*), raccoon (*Procyon lotor*), armadillo (*Dasypus novemcinctus*), white tailed deer (*Odocoileus virginianus*), grey squirrel (*Sciurus carolinensis*), eastern cottontail (*Sylvilagus floridanus*), red-shouldered hawk (*Buteo lineatus*), red-tailed hawk (*Buteo jamaicensis*), mourning dove (*Zenaidura macroura*), rufous-sided towhee (*Pipilo erythrophthalmus*), cardinal (*Cardinalis cardinalis*), barred owl (*Strix varia*), leopard frog (*Rana sphenoccephala*), water moccasin (*Agkistrodon piscivorus*), and black racer (*Coluber constrictor*).

Gopher tortoises (*Gopherus polyphemus*) are known to occur within the CREC property outside of the project area in upland areas adjacent to the existing rail line. Gopher tortoises are currently listed as a species of special concern by the Florida Fish and Wildlife Conservation Commission (FWC), but are proposed for uplisting to threatened upon approval of a management plan. Several species are known to utilize gopher tortoise burrows including the federally threatened Eastern indigo snake (*Drymarchon corais couperi*) and two state species of special concern, the gopher frog (*Rana capito*) and the Florida mouse (*Peromyscus floridanus*).

Aquatic Systems

The aquatic systems in the vicinity of the CREC consist of the cooling water intake and discharge canals, Crystal Bay, Crystal River, and the Withlacoochee River. The two most comprehensive sources of information on the aquatic resources of the CR3 area are the Final Environmental Statement related to the proposed CR3 (AEC 1973) and the CR 1, 2, and 3 316 (a) and (b) Demonstration (SWEC 1985). These historical documents contain useful information on the oceanography (bathymetry, currents, tides, water quality) and marine/estuarine communities of the

Crystal Bay area. PEF has supplemented this historical information with information from state and federal resource agency websites.

Cooling Water Intake and Discharge Canals

Water for cooling is withdrawn from a canal that leads to Crystal Bay. Heated cooling water is discharge into a separate canal that also leads to Crystal Bay.

Crystal Bay

Crystal Bay is a shallow embayment of the Gulf of Mexico. As far out as Fisherman's Pass, approximately three miles west of the site, the depth of the bay is less than 10 ft (SWEC 1985). Shallow inshore areas are characterized by oyster bars oriented parallel to shore that are visible at low tide and covered by water at high tide. These oyster bars, composed mostly of broken shell, create numerous small basins with north-south orientation in the area of the intake and discharge canals.

The Crystal and Withlacoochee Rivers

CREC is midway between the Withlacoochee and Crystal Rivers, and approximately four miles from each. The Withlacoochee River, with a watershed of 2,100 square miles, has an annual average flow of approximately 447 cfs at the Ingles Dam (USGS Station #02313230, period of record 1969-2006). Crystal River, with a much smaller watershed, has an annual average flow of approximately 975 cfs (USGS Station #02310750, period of record 1964-1977).

Salinity in the area of the plant ranges from 22 to 29 parts per thousand (ppt), depending on freshwater inflows to Crystal Bay from rivers and creeks in the area (AEC 1973). Eight to ten miles offshore, in the Gulf of Mexico, the salinity is more typical of open ocean waters; approximately 35 ppt. Water temperatures in the area are lowest in December-January and highest in late summer (July-September). Temperatures as high as 92°F were measured in the general area of the plant (Cedar Keys) prior to CR3 operation, but more typically average in the mid-to-high 80s in late summer (AEC 1973). Water temperatures in mid-winter can approach 40°F in shallow areas, but are generally in the 50s (AEC 1973).

Shoreline Marshlands

A well-developed 0.5 to 1.0 mile-wide band of marshland extends along the coast in the Crystal River area, separating the uplands to the east from the Gulf of Mexico. The marshlands are drained by

numerous small creeks and are typical of those found near this part of the Gulf Coast, with soft rushes (*Juncus* spp.) and cordgrasses (*Spartina* spp.) the dominant marshland plants. The marshlands and associated creeks provide habitat for a variety of invertebrate organisms, including oysters and crabs, and are nursery areas for finfish including mullet, spot, black drum, red drum, and croaker (AEC 1973). They also support alligators, wading birds, waterfowl, and small mammals, including river otters and raccoons.

Seagrasses

Five species of seagrass were found in shallow water adjacent to CREC prior to plant startup (AEC 1973). Three species were most abundant: shoal grass (*Halodule wrightii*), widgeon grass (*Ruppia maritima*), and turtle grass (*Thalassia testudinum*). Manatee grass (*Syringodium filiforme*) and star-grass (*Halophila englemanni*) were also present. Seagrass beds often contained dense assemblages of rooted green algae, primarily *Caulerpa* spp. Limestone outcroppings were colonized by rockweeds, such as *Sargassum*.

The same five seagrass species were observed by biologists conducting studies in the Crystal Bay area in support of the Crystal River Clean Water Act Section 316 Demonstration in 1983-1984 (SWEC 1985). These operational surveys confirmed what studies in the 1970s had suggested - that the heated effluent from the plant influenced seagrass abundance and distribution in the immediate area of the discharge (SWEC 1985). In 1983-1984, shoalgrass was the only seagrass species observed northwest of the plant's discharge canal, the area most affected by the plant's heated discharge (SWEC 1985). Shoal grass often colonizes areas where other more sensitive seagrasses cannot grow (FOCC 2003) and can withstand the widest range of temperatures and salinities (FKNMS 2001).

Biomass of the three dominant seagrasses (*Thalassia*, *Halodule*, and *Syringodium*) was also lower in the discharge area than the area south of the intake canal outside of the plant's thermal influence (SWEC 1985). Studies conducted in the late 1970s showed the same general trends with respect to biomass, but looked at combined biomass of all seagrass species rather than individual species.

Benthic Invertebrates

Preoperational surveys of marine benthos at the CREC identified 286 species, including Atlantic Coast and West Indian species. Most of these were widely distributed forms capable of withstanding a wide variation of environmental conditions, such as fluctuating temperature and salinity. Thirty

mollusks were characterized as “common” or “abundant,” including 22 marine gastropods (snails) and 8 marine pelecypods (bivalves). The following mollusks were described as “abundant” in the vicinity of the CREC: variable bittium (*Bittium varium*), semiplicate doveshell (*Anachis semiplicata*), lunar doveshell (*Mitrella lunata*), common eastern nassa (*Nassarius vibex*), scorched mussel (*Brachidontes exustus*), lateral musculus (*Musculus lateralis*), and Eastern oyster (*Crassostrea virginica*). Other important groups found were six families of Polychaetes, four species of Isopods, and eight species of Decapods, including pink shrimp (*Farfantepenaeus duorarum*).

Fisheries

The Final Environmental Statement (FES) for CR3 lists 64 finfish species and 6 shellfish species commonly found in the Crystal River area that are either commercially/recreationally important or important as “food chain species” (AEC 1973). The four finfish species collected most often in pre-operational (1969-1970) surveys were silver perch (*Bairdiella chrysoura*), spot (*Leiostomus xanthurus*), pigfish (*Orthopristis chrysoptera*), and pinfish (*Lagodon rhomboides*). American oyster (*Crassostrea virginica*), blue crab (*Callinectes sapidus*), stone crab (*Menippe spp.*), and pink shrimp were the most important shellfish. The FES contains useful information on spawning periods and food habits of important species, including species sought by recreational anglers, e.g., spot, Atlantic croaker (*Micropogonias undulatus*), spotted seatrout (*Cynoscion nebulosus*); forage species, e.g., striped mullet (*Mugil cephalus*); and commercial species, e.g., blue crab and pink shrimp.

Trawls captured 98 species of fish and 108 species of invertebrates in the general vicinity of the plant (SWEC 1985). Catch varied by season, with highest numbers in the spring and summer (April through August) and lowest numbers in January and February. Although there was considerable variability in the data, some trends were apparent. Lowest densities of fish and invertebrates were observed along the central transect, the area most affected by the plant’s heated discharge. Transects to the north and south had similar densities of fish, and were both higher than the central transect. Highest numbers of fish were collected at the northern transects in 1983 and the southern transects in 1984.

With regard to important species, spot were present year-round and were captured in highest numbers at northern transects. Pigfish were collected primarily in spring and summer, but were found in greater concentrations at southern transects. Pinfish were collected mostly in spring and summer, but were collected in substantial numbers at both northern and southern transects.

Seine collections in 1983-1984 produced 49 species of fish and 15 invertebrate species (SWEC 1985). Fish captured in significant numbers were usually juveniles of schooling species, such as spot and bay anchovy (*Anchoa mitchilli*). Highest densities were generally observed in June and July and lowest densities were normally observed in fall, winter, and spring. Large numbers of spot, clupeids (*Clupeidae*), and anchovies were sometimes captured during these “slow” periods as schools of these small fish moved into nearshore shallows where they were more vulnerable to capture by seiners.

Creek trawls collected 43 species of fish and 27 species of invertebrates. The largest numbers of fish were collected from January through May with the peak in March (SWEC 1985). Juveniles dominated all creek samples. Fish biomass was highest in the spring, with a secondary peak in November. Invertebrate numbers were highest from November through March. Fish and invertebrate were found in highest densities at a creek north of the discharge canal. They were found in lowest densities at a creek north of the discharge canal and a creek south of the intake canal.

Commercial and Recreational Fishing in the CR3 Area

The FES observed that the shallow waters and numerous oyster bars in the area of the CR3 site make commercial fishing infeasible (AEC 1973). It noted that the marshy shoreline and lack of marinas or landings in the area limited sport fishing opportunities to some degree, but fishing from small boats appeared to be increasing in popularity (AEC 1973). The FES listed red drum (*Sciaenops ocellatus*), spotted seatrout, sheepshead (*Archosargus probatocephalus*), black drum (*Pogonias cromis*), jack crevalle (*Caranx hippos*), and croaker as species sought by anglers in the plant’s intake and discharge canals. The CWA Section 316 Demonstration for CR 1, 2, and 3 was concerned exclusively with assessing potential impacts of the plant’s cooling water intake structures and thermal discharge. The authors of the report did not survey recreational anglers or fishing guides in the area, focusing instead on data that was verifiable and amenable to statistical analysis.

Threatened and Endangered Species – Flora and Fauna

Species in this category consist of plants and animals designated by the U.S. Fish and Wildlife Service (USFWS) as endangered, threatened, or under review for listing; animal species designated by the FWC as endangered, threatened, or species of special concern; and plant species designated by the Florida Department of Agriculture and Consumer Services (FDACS) as endangered, threatened, or commercially exploited

Flora

Table 2.3.5-1 details the state and federally listed plant and animal species of Citrus County. No suitable habitat for listed plant species is located within the project area. Native vegetation was cleared during construction of the existing plant facilities. The probability of listed species occurring in the Project area is extremely low.

Fauna

The project area offers very poor habitat for wildlife. However, several state and federally listed wading birds may forage in the freshwater marsh areas located within the project area. Also, the federally listed Florida manatee and several species of sea turtles are known to utilize the intake and discharge canals immediately adjacent to the project area. Those species with a moderate or high probability of occurrence in or near the project area are discussed below.

Birds

Bald eagle

The bald eagle (*Haliaeetus leucocephalus*) is listed as threatened by the USFWS and the FWC. Bald eagles nest throughout the United States and occur in a wide variety of habitats, but proximity of their nests to water (as foraging habitat) is important (Stalmaster 1987). Preferred nesting habitat includes a high amount of water-to-land edge where their aquatic prey is concentrated. Thus, bald eagles are generally restricted to coastal areas, lakes, and rivers. They prey on fish and other aquatic prey near the surface but will eat dead fish or other carrion, as well as birds, mammals, and occasionally reptiles. Some bald eagles in the southern U.S. migrate northward in mid-summer (after the nesting season) and return in early autumn, but some bald eagles in Florida are non-migratory (Stalmaster 1987, CRC 2006).

In 1999, nearly one thousand active eagle nests were recorded in Florida (FNAI 2001). Bald eagles breed throughout most of peninsular Florida and the Keys. One bald eagle nest (nest ID CI013) has been documented on the CREC and another nest (nest ID CI004) has been confirmed slightly north of the CREC (FWC 2006). The on-site nest is in the southeast corner of the CREC, approximately 1.9 miles from CR3. The off-site nest is approximately 1.2 miles northwest of CR3. According to the FWC bald eagle nest location database, both nests were active during all years from 2001-2005 (FWC 2006). Bald eagles are occasionally observed flying and foraging along Crystal Bay and at the CREC (CRC 2006).

Wood stork

The wood stork (*Mycteria americana*) is listed as endangered by the USFWS and the FWC. Wood stork habitats include cypress/gum ponds, river swamps, marshes (freshwater and saltwater), and bays. The wood stork is highly gregarious in its nesting and feeding behavior. They are tactile feeders (vision seldom used to locate or catch prey) and usually forage in shallow water (6 to 20 inches). Small fish are the primary food items, but storks also consume crustaceans, salamanders, tadpoles, and insects. The distance between nesting colonies and feeding areas can range up to 60 miles or more, although the average distance is typically 12 to 15 km (7 to 9 miles) (Ogden 1996, USFWS 1997). FWC considers the "core foraging area" of wood storks to be that area within 30 km (18.6 miles) of the colony (Cox et al. 1994). There are no known stork rookeries on the CREC. It is unlikely that any rookeries exist on the site, since the gregarious behavior of this species would result in numerous sightings. Wood storks are occasionally seen foraging in the percolation ponds at the CREC and they probably forage, at least occasionally, in nearby salt marshes and in suitable wetlands in or near the transmission corridors (CRC 2006).

Snowy egret

The snowy egret (*Egretta thula*) is listed as a species of special concern by the FWC. The snowy egret feeds in many types of permanently and seasonally flooded wetlands, streams, lakes, and swamps, and in manmade impoundments and ditches. This species is associated with wetlands and may forage in freshwater marsh areas within the project area. One snowy egret was observed in a forested wetland area (FLUCFCS 617) during the site reconnaissance conducted on April 12, 2007.

Tricolored heron

The tricolored heron (*Egretta tricolor*) is listed as a species of special concern by the FWC. Tricolored herons feed in a variety of permanently and seasonally flooded wetlands, mangrove swamps, tidal creeks, ditches, and edges of ponds and lakes. This species is associated with wetlands and may forage in freshwater marsh areas within the project area.

Little blue heron

The little blue heron (*Egretta caerulea*) is listed as a species of special concern by the FWC. Little blue herons feed in shallow freshwater, brackish, and saltwater habitats. This species is associated with wetlands and may forage in freshwater marsh areas within the project area.

White ibis

The white ibis (*Eudocimis albus*) is listed as a species of special concern by the FWC. The white ibis is found in a wide variety of habitats, including freshwater and brackish marshes, salt flats and salt marsh meadows, many types of forested wetlands, wet prairies, swales, seasonally inundated fields, and man-made ditches. This species is associated with wetlands and may forage in freshwater marsh areas within the project area.

Reptiles

Sea Turtles

Sea turtles are sometimes seen in the CREC's intake canal and are occasionally found on the CR3 intake bar racks. From 1994 to 1997, eight sea turtles were stranded on the CR3 intake bar racks. However, monitoring for sea turtles prior to 1997 was non-systematic, and data on species, size, and age was not always obtained.

In the spring of 1998, an unusually high number, approximately 50, of Kemp's ridley sea turtles (*Lepiochelys kempii*) were stranded on the bar racks. As a result, a Biological Opinion was issued by the National Marine Fisheries Service in 1999 which determined that the cooling water intake system was not likely to jeopardize the existence of the five sea turtle species that might be found in the area. A second Biological Opinion, issued by the National Marine Fisheries Service in 2002, stated that continued operation of CR3 would not jeopardize any of the listed sea turtle species populations (Appendix 10.4.4). This Opinion included an Incidental Take Statement allowing the live take of 75 sea turtles annually and three annual lethal takes that are causally related to plant operations (NMFS 2002). There is no limit on non-causally related dead turtles, although there is a reporting requirement if the non-causal take reaches eight individuals (NMFS 2002).

In 1998, a continuous monitoring and rescue program was initiated by Progress Energy: (then dba Florida Power Corporation) to reduce potential sea turtle strandings and mortalities at CR3. PEF implemented Sea Turtle Rescue and Handling Guidance, which provides instructions for sea turtle observation, rescue, handling, notifications, and reporting requirements (Progress Energy undated).

Five species of sea turtles have been recorded in nearshore waters of Citrus County and are discussed below. Four of these sea turtle species have been observed at or near CR3: Kemp's ridley, green (*Chelonia mydas*), loggerhead (*Caretta caretta*), and hawksbill (*Eretmochelys imbricata*).

The Kemp's ridley sea turtle is federally and state listed as endangered. It is the most seriously endangered of the sea turtles, with nesting primarily limited to two provinces in Mexico. It does not nest in Florida. This species is associated with a wide range of coastal benthic habitats, typically with sand or mud bottoms supporting crustaceans and/or other invertebrates. They primarily feed on portunid crabs (*Callinectes spp.*), but other crabs, mollusks and invertebrates are consumed as well. Nearshore waters of the northern Gulf of Mexico provide important developmental habitat for juvenile and sub-adult Kemp's ridley sea turtles (USFWS 2006). The most frequently occurring captured, killed, and rescued sea turtles in the CR3 cooling water intake areas are sub-adult Kemp's ridleys, which reflects their abundance within the nearshore waters of the northern Gulf coast.

The green sea turtle is federally and state listed as endangered. Most green turtle nesting in Florida occurs during June through September. They require open gradually sloping beaches and minimum disturbance for nesting. Critical habitats have been defined for this species, but do not include areas in Florida. Green sea turtles are herbivores, preferring to feed on marine grasses and algae in shallow bays and lagoons (USFWS 2006).

The loggerhead sea turtle is federally and state listed as threatened. In the U.S. loggerheads nest from Texas to Virginia with approximately 80 percent of the nesting occurring in southern Florida coastal counties. They nest on ocean beaches and occasionally on estuarine shorelines with suitable sand. No Critical Habitat has been defined for this species. The nearshore waters of the Gulf of Mexico are thought to provide important developmental areas for juvenile loggerheads (USFWS 2006).

The hawksbill sea turtle is federally and state listed as endangered. In contrast to other sea turtles, hawksbills tend to nest in low densities on scattered small beaches. Nesting may occur on almost any undisturbed deep-sand beach, typically from April through November. Critical Habitats have been defined for this species, but do not include areas in Florida. Hawksbills prefer coral reefs and thus are uncommon in western Gulf waters (USFWS 2006).

The leatherback sea turtle is federally and state listed as endangered. The largest and most pelagic of the sea turtles, its decline was a result of a crash of the breeding population in western Mexico due to harvest for meat and eggs. Small numbers nest in along the east coast of Florida, but none on the western Florida coast. Critical Habitats have been defined for this species, but do not include areas in Florida. They feed primarily on jellyfish and thus may come into shallow waters if there is an

abundance of jellyfish nearshore (USFWS 2006). Although leatherbacks have been observed in Citrus County waters, none have been observed at the CREC.

American Alligator

The American alligator (*Alligator mississippiensis*) is common throughout Florida. The alligator is federally listed as “threatened due to similarity in appearance” to the endangered American crocodile (*Crocodylus acutus*), and is state-listed as a species of special concern. Alligator habitat consists of swamps, marshes, ponds, lakes, and slow-moving streams and rivers. Alligators are opportunistic feeders and eat fish, turtles, birds, snakes, frogs, insects, and small mammals (Mount 1975). Alligators are occasionally seen in swampy areas at CREC and undoubtedly occur in wetlands, ponds, and streams along the transmission corridors.

Mammals

West Indies (Florida) Manatee

An adult Florida manatee (*Trichechus manatus latirostris*) averages about 10 ft in length and 2,200 pounds in weight. The manatee is an aquatic mammal that feeds primarily on seagrass and other aquatic vegetation. In the winter, the Florida manatee spends most of its time in and around areas of warm water, such as natural springs or the cooling water discharge of power plants. It has been reported that the warm-water refuge of power plants is becoming more important for the Florida manatee; for example, the percentage of animals using these areas on the Atlantic coast has increased by 4-6 percent per year since 1994 (Craig and Reynolds 2004). Crystal River is the northernmost natural, warm-water refuge used by manatees on the west coast of Florida (USFWS 2001).

A major threat to manatees is collisions with watercraft (USFWS 2001). Restricted recreational boat access to the Crystal River intake and discharge canal enhances this area for manatee survival by reducing the chance of boat/manatee collisions (CCCD 2006). PEF has also established a Manatee Protection Plan that has been approved by the Florida Department of Environmental Protection (FDEP 2002). The plan establishes various precautions to minimize hazards to manatees at intake and outfall areas, such as having observers on board vessels associated with in-water work, operating vessels at “no wake/idle” speeds while in the warm water refuge area, and avoiding major inwater work in the discharge canal from November 15 through March 31 unless approved by FWC’s Bureau of Protected Species Management. PEF cooperates with USFWS, FWC, Florida Fish & Wildlife Research Institute, and the U.S. Geological Service in providing access to CR3 for manatee research and monitoring by these agencies.

The Florida manatee population is divided into four sub-populations (Figure 2.3.6-1). The sub-population of northwest Florida (including Crystal River) accounts for approximately 11 percent of the total population (FWC 2006). The northwest subpopulation has grown at an annual rate of 3.7 percent over the 10 years prior to 2001 (Runge et al. 2004), possibly due to high adult survival rate of manatees in this region (FWC 2006). Synoptic aerial manatee surveys conducted in January 2001 reported preliminary data of 3300 manatees living in Florida waters, with a total of 377 manatees in the northwest region (FWC 2006).

The Florida manatee is currently listed as Endangered by the State of Florida and the U.S. Fish and Wildlife Service (USFWS 2001). They are protected not only by the Federal Endangered Species Act, but also by the Federal Marine Mammal Protection Act and the Florida Manatee Sanctuary Act. In addition, Citrus County has a federal and state approved manatee protection plan as guidance for coastal development (CCCD 2006).

In August of 2001, the Florida Fish and Wildlife Conservation Commission (FWC) was petitioned to re-evaluate the status of the Florida manatee (FMRI 2002). The 2005-2006 FWC Florida Manatee Biological Review Panel has recommended that the Florida manatee should be listed as Threatened for the State of Florida (FWC 2006). Currently, the FWC is proceeding with the final phase of re-classification and is drafting a new management plan for the species.

2.3.6.2 Pre-Existing Stresses

Terrestrial Systems

The greatest pre-existing stress to the terrestrial systems located within and around the site is the result of the existing electric utility facilities. The natural topography, soils, and hydrology of the Site have been altered to accommodate the existing units.

Aquatic Systems

The greatest pre-existing stress to the aquatic systems located within and around the Site is the result of the existing electric utility facilities. Water is withdrawn for cooling from Crystal Bay through an intake canal, causing the impingement or entrainment of aquatic organisms. Heated cooling water is discharged to Crystal Bay through a discharge channel.

2.3.6.3 *Measurement Programs*

Terrestrial Ecology

Terrestrial ecological resources were evaluated through a combination of literature review, site reconnaissance, and previous studies. Vegetative communities, wildlife utilization, and potential for threatened and endangered wildlife occurrence were addressed during the site reconnaissance conducted in April 2007.

Aquatic Ecology

Aquatic ecological resources were evaluated through a combination of literature review, site reconnaissance, and previous studies. The two most comprehensive sources of information on the aquatic resources of the CR3 area are the FES related to the proposed CR3 (AEC 1973) and the CR 1, 2, and 3 Clean Water Act Section 316 Demonstration (SWEC 1985). Although two and three decades old, respectively, these documents contain useful information on the oceanography (bathymetry, currents, tides, water quality) and marine/estuarine communities of the Crystal Bay area.

2.3.7 Meteorological and Ambient Air Quality

2.3.7.1 Meteorology

Meteorological data collected at existing monitoring stations were used to describe the local and regional climatology in the vicinity of the CREC. The closest existing meteorological station to the plant with complete data is the National Weather Service (NWS) station located at the Tampa International Airport, situated approximately 110 km south of CR3. The NWS has recorded weather observations for more than 50 years at this site. These data are the most complete for, and representative of, the region surrounding the CR3. FDEP has approved the use of these meteorological data in previous air permit applications for this area and recommended that these data be used for the CR3 Uprate Project.

The climate in the plant area is subtropical with a marine influence from the Gulf of Mexico. The NWS station is located approximately 17 miles from the Gulf. The monthly and annual average temperatures for this area are presented in Table 2.3.7-1. The annual average temperature is approximately 73 °F with the average monthly daily extreme temperatures varying from a maximum of 90 °F to a minimum of 52.4 °F. Record extreme temperatures range from a low of 18 °F to a record high of 99 °F. During the summertime, temperatures rarely exceed 99 °F due to the high

relative humidities with subsequent cloud cover formation and the abundant convective-type (e.g., thunderstorms) precipitation.

The monthly and annual average precipitation data are presented in Table 2.3.7-2. Approximately 70 percent of the annual precipitation falls during the six warmest months, May through October. The average annual precipitation is approximately 45 inches, but this has varied from as little as 30 inches to 68 inches in the past 30 years. The majority of rain is in the form of short-lived convection showers (e.g., thunderstorms). Large amounts of rain are also produced during the late summer or fall when tropical storms or hurricanes may pass near the Tampa region. These events may result in heavy downpours that reach torrential proportions; 24-hour amounts of about 12 inches have been associated with hurricanes.

Monthly and annual average relative humidities, which indicate the amount of moisture in the air at a given temperature, are also presented in Table 2.3.7-2 for the morning hours of 1:00 a.m. and 7:00 a.m. and early afternoon and evening hours of 1:00 p.m. and 7:00 p.m. The highest humidities are coincident with the coolest ambient temperatures, which generally occur at 7:00 a.m., or near dawn. The lowest humidities coincide with the highest ambient temperatures.

The project area lies entirely within the trade wind belt (i.e., below 30 °N latitude), resulting in predominant winds from the east. Because of the location of the Gulf of Mexico, moderate to strong late afternoon sea breezes occur on days with strong land heating and produce localized onshore winds to offset the prevailing easterly winds. A wind rose for the five-year period from 2001 through 2005 is given in Figure 2.3.7-1. Seasonal wind roses are presented in Figures 2.3.7-2 through 2.3.7-5. A summary of the seasonal and annual average wind direction and wind speed, including calm conditions, is presented in Table 2.3.7-3. Except during the passage of tropical storms or hurricanes, wind speeds greater than 25 mph in the area are not common.

Atmospheric stability is a measure of the atmosphere's capability to disperse pollutants and potentially reduce ground-level concentrations. During the daytime with strong solar heating, the atmosphere can disperse pollutants very quickly for a relatively short period. This condition is considered unstable and generally occurs more frequently during the summer. During the nighttime, under clear skies and light wind speeds, the atmosphere is considered stable with minimal potential to disperse pollutants. During the day or night, when wind speeds are moderate to high, pollutants are dispersed at moderate rates (i.e., dispersion rates that are lesser than those during unstable conditions

but greater than those during stable conditions). This condition is considered neutral and occurs frequently throughout the year. The seasonal and annual average occurrences of atmospheric stability classes for this area for 1991 to 1995 are shown in Table 2.3.7-4.

During the summer months, unstable conditions occur about 35 percent of the time due to strong solar heating, whereas unstable conditions occurs only 16 percent of the time in the winter months. Neutral stability occurs most frequently during the winter months due to the higher wind speeds that occur in this season. The occurrence of stable conditions is nearly uniform throughout the year.

The mixing height is a parameter used to define the vertical height to which pollutants can disperse and, therefore, is used in estimating the volume of air in which pollutants are emitted and can be dispersed. In general, the higher the mixing height, the greater the potential for pollutants to be dispersed and for ground-level concentrations to be reduced.

The seasonal and annual average morning and afternoon mixing heights for the plant area for 1991 to 1995 were determined using the Holzworth method and are listed in Table 2.3.7-5. These data are obtained from the nearest upper air station closest to the site and located in Ruskin. The highest afternoon mixing heights occur in the spring and the lowest morning mixing heights occur in winter.

Thunderstorms are the most frequent of severe storms, occurring an average of 85 days per year as reported by the NWS at Tampa International Airport. These storms occur throughout the year, but about 73 percent occur from May through October.

Hurricanes and tornadoes are other types of severe weather that can occur in the project area, but the probability of a hurricane or tornado passing over the plant site is low.

Statistics compiled by the severe local storms branch of the national severe storms forecast center (Pautz 1969) show that 42 tornadoes were spotted within the 1 degree latitude by 1 degree longitude square centered just south of the Tampa area from 1955 to 1967. This averages about two tornadoes per year. The tornado recurrence interval for any specific point location within the 1 degree square was estimated by the Methodology of Thom (1963). The recurrence interval, r , is equal to $1/p$ where p is the probability of a tornado striking within the 1 degree square area and is estimated as follows:

$$p = (2.8209 \times t)/A$$

where: t = mean annual frequency of tornadoes occurring, and

A = area in square mile (mi^2)

In this analysis, t was assumed to be 1.4 based on data collected from 1953 to 1962 and A was estimated to be 4,200 square miles. Therefore, the mean recurrence interval for a tornado striking a point within this square is more than 1,000 years.

2.3.7.2 *Ambient Air Quality*

Ambient Standards

The National and Florida Ambient Air Quality Standards (AAQS) are presented in Table 2.3.7-6. Primary National AAQS were promulgated to protect the public health, and secondary National AAQS were promulgated to protect the public welfare from any known or anticipated adverse effects associated with the presence of pollutants in the ambient air. Areas of the country in violation of AAQS are designated as nonattainment areas, and new sources to be located in or near these areas may be subject to more stringent air permitting requirements. Pollutants for which AAQS have been established are referred to as criteria pollutants. These pollutants include particulate matter (PM) with an aerodynamic particle size of 10 micrometers (μm) or less (PM_{10}), sulfur dioxide (SO_2), carbon monoxide (CO), nitrogen dioxide (NO_2), ozone (O_3), and lead (Pb).

Citrus County is classified as an attainment area for all criteria pollutants (Rule 62-204.340, F.A.C.).

On July 18, 1997 the EPA promulgated revisions to the National AAQS for O_3 and PM) [62 Federal Register (FR) No. 138]. The O_3 standard was modified to be 0.08 parts per million (ppm) for an eight-hour average concentration. This standard is achieved when the 3-year average concentration of the forth highest value is 0.08 ppm or less. The 1-hour average AAQS will no longer apply to an area 1 year after the effective date of the designation of that area for the 8-hour O_3 AAQS. The effective date for most areas is June 15, 2004 [Federal Register, April 30, 2004 (69 FR 23996)].

The FDEP has not yet adopted the revised O_3 or $\text{PM}_{2.5}$ AAQS. Based on evaluations performed by FDEP and EPA, Citrus County has been designated an attainment area for the revised O_3 AAQS [Federal Register, April 30, 2004 (69 FR 23996)] as well as an attainment area for the new particulate matter less than 2.5 microns ($\text{PM}_{2.5}$) AAQS [Federal Register, January 5, 2005 (70 FR 944)]. These standards must be implemented in the 2007 to 2008 timeframe with a revision to the State Implementation Plan.

On October 17, 2006, EPA finalized the AAQS for PM (71 FR 61236). The PM AAQS include two new PM_{2.5} standards: a short-term 24-hour average standard and an annual average standard. The PM_{2.5} standards are based on a 3-year average of the 98th percentile of 24-hour average concentrations that must not exceed 35 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$) (from population-orientated monitors) and a 3-year average of annual average concentrations that must not exceed 15 $\mu\text{g}/\text{m}^3$ (from a single- or community-orientated monitor). The form of compliance for the annual standard remains in the form of an expected exceedance that must not be exceeded more than once per year averaged over three years.

In promulgating the 1977 Clean Air Act (CAA) Amendments, Congress specified that certain increases above an air quality *baseline concentration* level of SO₂ and PM concentrations would constitute *significant deterioration* for sources located in attainment areas. The magnitudes of the allowable increases, or prevention of significant deterioration (PSD) increments, depend on the classification of the area in which a new source (or modification) will be located or have an impact. Three PSD increment classifications were designated based on criteria established in the 1977 CAA amendments. Initially, Congress promulgated areas as either Class I (national parks, national wilderness areas, and memorial parks larger than 5,000 acres, and national parks larger than 6,000 acres) or as Class II (all areas not designated as Class I). No Class III areas, which would be allowed greater deterioration than Class II areas, were designated. EPA then promulgated as regulations the requirements for classifications and area designations.

On October 17, 1988, EPA promulgated regulations to prevent significant deterioration due to nitrogen oxide (NO_x) emissions and established PSD increments for NO₂ concentrations. The EPA class designations and allowable PSD increments are presented in Table 2.3.7-6. Florida has adopted the EPA allowable increments for PM₁₀, SO₂, and NO₂.

Citrus County is classified as a Class II area (Rule 62-204.340, F.A.C.) since it is an attainment area for all pollutants. The nearest Class I area to the plant is the Chassahowitzka National Wilderness Area (NWA) located about 22 km (13 miles) to the south. In addition, the St. Marks NWA is located about 175 km to the northwest of the site.

Ambient Air Quality Data

The CREC is located in a rural area of Citrus County, which has a minimal number of air pollution sources. Air monitoring data are not collected in the county. However, monitoring data are collected

in nearby counties for SO₂, PM₁₀, O₃, and NO₂. Summaries of the maximum pollutant concentrations measured in Pinellas and Marion Counties from 2003 through 2005 are presented in Table 2.3.7-7. These data indicate that the maximum air quality concentrations measured in the region are well below applicable standards.

Given the lack of industrial development in the vicinity of the plant, existing concentrations of other criteria pollutants, i.e., CO and Pb, which are usually associated with an urban environment, are expected to be well below the AAQS.

2.3.7.3 Measurement Programs

All information (i.e., meteorology and air quality data) was compiled from offsite monitoring stations maintained and operated by the FDEP, Pinellas County, Marion County, or cooperating governmental agencies (i.e., NWS). No significant changes in these programs are anticipated after the construction and operation of the Project.

Meteorological data were obtained from the NWS surface and upper-air station at the Tampa International Airport. These data were obtained for the five-year periods from 2001 through 2005 from which the joint frequency of wind direction and wind speed were developed, and from 1991 through 1995 from which the atmospheric stability and a five-year average of mixing heights were developed. The wind sensors at the Tampa International Airport have been located 22 ft above grade. Regular surface observations are taken just before each hour, seven days per week. Upper-air soundings are conducted twice per day at 0700 and 1900 Eastern Standard Time at Ruskin.

2.3.8 Noise

2.3.8.1 Background

In 2005, the county commissioners enacted ordinance No. 2005-05 which can be found in Chapter 21, Article II of the Code of Ordinances for the County of Citrus Florida. The intent of this ordinance is to protect the health, safety, and welfare, and to protect the aesthetic and property values of properties within unincorporated Citrus County by providing for abatement of excessive and unnecessary noise.

Receiving Land Use Category	Time	Sound Limit (dBA)	Level
Residential	7 a.m. — 10 p.m.	60	
	10 p.m. — 7 a.m.	55	
Governmental-owned building or property, institutional or recreational	7 a.m. — 10 p.m.	55	
	10 p.m. — 7 a.m.	50	
Commercial or business	7 a.m. — 10 p.m.	65	
	10 p.m. — 7 a.m.	60	
Industrial or manufacturing	At all times	75	
Agricultural	At all times	75	

As defined in the ordinance, the noise from any activity or from any permissible use of property within the applicable land use district classifications of Citrus County shall be deemed a violation if the total noise level as measured on the A-scale due to both ambient noise, and the alleged source of the offensive noise, exceeds the noise levels which are prescribed in the above table, the measurement of which is based upon decibels. All such measurements as well as the method employed shall be consistent with section 21-17 of Chapter 21, Article II of the Code of Ordinances, and shall represent the A-weighted sound pressure level which is exceeded ten percent of the time (L_{10}) during the observation period.

2.3.8.2 Noise Measurement Procedures

A comprehensive ambient noise monitoring program was performed at seven locations at or near the CR3 Uprate Project (Figure 2.3.8-1). The equipment used to monitor the baseline noise levels operated in the slow response mode to obtain accurate, integrated, A-weighted sound pressure levels. A windscreen was used because all measurements were taken outdoors. The microphone was positioned so that a random incidence response, as specified by the American National Standard Institute (ANSI), was achieved. The sound level meter and octave band analyzer were calibrated immediately prior to and just after the sampling period to provide a quality control check of the sound level meter's operation during monitoring.

Integrated sound pressure level (SPL) data consisting of the following noise parameters were collected at each location:

L_{eq} The sound pressure level averaged over the measurement period; this parameter is the continuous steady sound pressure level that would have the same total acoustic energy as the real fluctuating noise over the same time period;

Max The maximum sound pressure level for the sampling period, and;

Min The minimum sound pressure level for the sampling period.

L_n The sound pressure levels which were exceeded n% of the time during sampling period.

The SPL data were analyzed and reported in both decibels (dB) and A-weighted decibels (dBA). The higher the decibel value, the louder the sound. The SPL averages were calculated using the following formula:

$$\text{Average SPL} = 10 \log \frac{\sum_{i=1}^N 10^{(\text{SPL}_i/10)}}{N}$$

where: N = number of observations.

SPL_i = individual sound pressure level in data set.

Monitoring was conducted using the sound level meter mounted on a tripod at a height of 1.5 m (5 ft) abovegrade. Local meteorological conditions were measured during the monitoring periods. Detailed field notes were recorded by the operator during monitoring and including major noise sources in the area.

The SPLs and octave band data were collected at the monitoring locations, for a minimum of 10 continuous minutes, using measurement techniques set forth by ANSI S12.9-1993/Part 3 (ANSI, 1993).

The noise monitoring equipment used during the study included:

1. Continuous Noise Monitoring Equipment
 - a. Larson Davis Model 824 Precision Integrating Sound Level Meter with Real Time Frequency Analyzer
 - b. Larson Davis Model PRM902 Microphone Preamplifier
 - c. Larson Davis Model 2560 Prepolarized 1/2" Condenser Microphone
 - d. Windscreen, tripod, and various cables
2. Sound Level Meter Calibration Unit
 - a. Larson Davis Model CAL200 Sound Level Calibrator, 94/114 dB at 1,000 Hz.

The Larson Davis sound level meter complies with Type I--Precision requirements set forth for sound level meters and for one-third octave filters. The calibration certificates are provided in Appendix 10.5-1.

Of the seven monitoring locations, four (Sites 1 through 4) were chosen to delineate the laydown and construction areas of the future CR3 Uprate Project. The other three monitoring sites (Sites 5 through 7) were selected to determine the baseline noise levels at property lines.

2.3.8.3 Existing Ambient Sound Pressure Level Conditions

The daytime and nighttime ambient noise levels for each of the monitoring sites are indicated in Table 2.3.8-1. Since there are no residential communities adjacent to the plant, the commercial sound level limits from the Code of Ordinances for Citrus County were used for comparison. The sound level limits are 65 dBA during the daytime and 60 dBA at night. In accordance with the ordinance, the L_{10} from each sampling period were used for compliance with the sound level limits.

The highest L_{10} noise levels measured during the study were 70 dBA at Site 3 during the daytime and 74 dBA at Site 6 during the nighttime. The elevated daytime and nighttime noise levels at Site 3 were due to the constant plant operations in that area. Since the location of Site 3 is not near any boundary, it does not have to comply with any sound level limits. All other daytime noise levels were at or below the 65 dBA limit. The high nighttime noise level at Site 6 was due to a train arriving at the plant. The L_{90} at this location was 40 dBA which would be more consistent with the nighttime noise levels in the area of Site 6 without the influence of the noise generated by the train. The nighttime noise levels at Sites 5 and 7 were well below the nighttime limit of 60 dBA.

2.3.9 Other Environmental Features

Several environmental features have been established at the CREC in coordination with state and federal agencies as described below:

The Mariculture Center, a multi-species fish hatchery was established to mitigate fisheries impacts related to the once-through cooling water system at Crystal River Units 1, 2, and 3. The Center has four spawn rooms and eight one-acre ponds. Red drum, spotted seatrout, pink shrimp and striped mullet were the species initially selected for culture. Pigfish, silver fish, blue crab and stone crab were added and cultured at the Center. The Mariculture Center continues to operate to offset the

previously identified fisheries impacts. Approximately 5.18 acres of wetlands were previously established to mitigate wetland impacts associated with the construction of the Mariculture Center and the CR 1, 2, and 3 helper cooling towers.

In 2003, PEF granted permission for the Florida Fish and Wildlife Conservation Commission (FWC) to post signs for the protection of shorebird and sea bird nesting sites in the vicinity of the CREC. The posted areas are on sandbars and spoil islands and was primarily for the protection of nesting least terns, black skimmers and American oystercatchers.

The Crystal River and its headwaters have been designated as Critical Habitat for the Florida Manatee. The Crystal River Critical Habitat is adjacent to the south boundary of the CREC. No other areas designated by the FWC as "Critical Habitat" for endangered species occurs at CR3 or in the vicinity of the CREC.

PEF is currently issuing a conservation easement to FDEP for 90 acres of forested wetlands and tidal marsh associated with Cedar Creek within the CREC site to mitigate for wetland impacts associated with the construction of a new roadway within the CREC.

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TABLES

TABLE 2.2.8-1
Overall Emergency Response Organizations and Suborganizations

Organization/Officer	General Location	Specific Location	Classification
CR3 Emergency Organization	On-Site	Crytal River, FL	Corporate
EOF Staff	Off-Site	Crytal River, FL	Corporate
State Warning Point-Tallahassee	Off-Site	Tallahassee, FL	State
Division of Emergency Management	Off-Site	Tallahassee, FL	State
Department of Health, Bureau of Radiation Control	Off-Site	Orlando, FL	State
Division of Florida Highway Patrol, Department of Highway Safety and Motor Vehicles	Off-Site	Crytal River, FL	State
Division of Road Operations, Department of Transportation	Off-Site	Tallahassee, FL	State
Department of Agriculture & Consumer Services	Off-Site	Tallahassee, FL	State
Division of Forestry and Consumer Services	Off-Site	Tallahassee, FL	State
Division of Law Enforcement, Department of Natural Resources	Off-Site	Tallahassee, FL	State
Fish and Wildlife Conservation Commission	Off-Site	Crytal River, FL	State
Citrus County Emergency Management	Off-Site	Lecanto, FL	County
Citrus County Health Officer	Off-Site	Inverness, FL	County
Citrus County Sheriff	Off-Site	Inverness, FL	County
Citrus County Road Department	Off-Site	Inverness, FL	County
Local Emergency Medical Services	Off-Site	Crytal River, FL	County
Levy County Emergency Management	Off-Site	Bronson, FL	County
Citrus Memorial Hospital	Off-Site	Inverness, FL	Local
Seven Rivers Community Hospital	Off-Site	Crytal River, FL	Local
NRC, Region II	Off-Site	Atlanta, GA	Federal
NRC, Operations Center	Off-Site	Rockville, MD	Federal
Department of Homeland Security Chemical Nuclear Preparedness Protection Division (formerly Federal Emergency Management Agency (FEMA)), Region IV	Off-Site	Atlanta, GA	Federal
Institute of Nuclear Power Operations	Off-Site	Atlanta, GA	Private
Nuclear Safety Department, Nuclear Power Division of Electric Power Research Institute	Off-Site	Palo Alto, CA	Private
Framatome Technologies	Off-Site	Lynchburg, VA	Private
Contractors	Off-Site	Various	Private
Radiation Emergency Assistance Center/Training Site	Off-Site	Oak Ridge, TN	Private

Golder Associates

MEAN ANNUAL STREAMFLOW FOR WITHLACOOCHEE AND CRYSTAL RIVERS

Date	Withlacoochee Mean Annual Flow (cfs) ₁	Crystal River Mean Annual Flow (cfs) ₂
1965	NM	979.9
1966	NM	785.4
1967	NM	719.8
1968	NM	839.7
1969	NM	1,149
1970	1,573	1,076
1971	255	798.1
1972	212	594.6
1973	343	956.9
1974	406.6	1,189
1975	95.6	986
1976	139.3	925.1
1977	80.9	1,673
1978	235.3	NM
1979	126.7	NM
1980	397.2	NM
1981	78.8	NM
1982	671.2	NM
1983	1,224	NM
1984	693.4	NM
1985	310.1	NM
1986	344.5	NM
1987	382.6	NM
1988	467.1	NM
1989	311.5	NM
1990	205.5	NM
1991	227.4	NM
1992	122.2	NM
1993	165.6	NM
1994	312.6	NM
1995	741.2	NM
1996	810	NM
1997	123.4	NM
1998	1,645	NM
1999	233.6	NM
2000	134.9	NM
2001	138.4	NM
2002	180.5	NM
2003	1,219	NM
2004	379.4	NM
2005	1,255	NM
2006	305.2	NM

NM = Not measured

1 - USGS Station #02313230 period of record 1969-2006

2 - USGS Station #02310750 period of record 1964-1977



TABLE 2.3.4-2
SURFACE WATER QUALITY, CRYSTAL BAY

Parameter	Water Quality Standard ¹	Intake Canal Vicinity ²				Discharge Canal Vicinity ³					
		Average	Maximum	Minimum	95th Percentile	Number of Samples	Average	Maximum	Minimum	95th Percentile	Number of Samples
FECAL COLIFORM, A-1 MOD, WATER, 44.5C, 24HR (MPN/100ML) OXYGEN DISSOLVED, ANALYSIS BY PROBE (MG/L) OXYGEN DISSOLVED, PERCENT OF SATURATION (%)	<200 monthly ave										
	<400 in 10%										
	<800 on 1 day	3.11	79.00	1.00	13.00	274.00	3.64	33.00	1.00	16.50	74.00
	>5.0 24-hr ave, >4.0	8.11	14.30	3.00	11.00	414.00	7.42	11.50	3.20	10.50	125.00
PH, LAB (SU) SALINITY BASED ON CONDUCTIVITY	-	92.90	160.27	36.59	66.33	406.00	89.36	132.00	39.51	54.93	125.00
	6.5 to 8.5	8.11	8.50	7.50	8.30	173.00	8.01	8.30	7.60	8.20	48.00
	-	22.76	36.80	5.80	30.07	490.00	21.59	29.90	5.10	26.99	144.00
TEMPERATURE, WATER (°C)	92°F Max, +2°F AM-Summer										
	90°F Max, +4°F AM-Remainder	21.77	34.80	6.10	31.00	1171.00	30.43	39.00	11.30	38.00	309.00
TURBIDITY, LAB (NTU)	≤ 29 above background	15.34	80.00	0.00	39.50	171.00	18.55	58.00	0.00	53.40	44.00

Source:

¹ Chapter 62-302, F.A.C.² EPA STORET Station Numbers 21FLA34076SEAS, 21FLA34064SEAS, 21FLA34050SEAS, 21FLA34051SEAS, 23010121³ EPA STORET Station Numbers 21FLA34069SEAS, 21FLA34094SEAS, 23010122



TABLE 2.3.5-1
FLORIDA NATURAL AREAS INVENTORY
 1018 Thomasville Road, Suite 200-C
 Tallahassee, FL 32303
 (850) 224-8207, FAX (850) 681-9364



January 2004

Citrus County Summary

Page 1

Rare Species and Natural Communities Documented or Reported

Scientific Name	Common Name	Global Rank	State Rank	Federal Status	State Status
<u>AMPHIBIANS</u>					
<i>Notophthalmus perstriatus</i>	Striped Newt	G2G3	S2S3	N	N
<i>Pseudobranchius striatus lustricolus</i>	Gulf Hammock Dwarf Siren	G5T1	S1	N	N
<i>Rana capito</i>	Gopher Frog	G3	S3	N	LS
<u>REPTILES</u>					
<i>Alligator mississippiensis</i>	American Alligator	G5	S4	T(S/A)	LS
<i>Caretta caretta</i>	Loggerhead	G3	S3	LT	LT
<i>Chelonia mydas</i>	Green Turtle	G3	S2	LE	LE
<i>Crotalus adamanteus</i>	Eastern Diamondback Rattlesnake	G4	S3	N	N
<i>Dermochelys coriacea</i>	Leatherback	G2	S2	LE	LE
<i>Drymarchon couperi</i>	Eastern Indigo Snake	G3	S3	N	LT
<i>Eretmochelys imbricata</i>	Hawksbill	G3	S1	LE	LE
<i>Gopherus polyphemus</i>	Gopher Tortoise	G3	S3	N	LS
<i>Lepidochelys kempii</i>	Kemp's Ridley	G1	S1	LE	LE
<i>Nerodia clarkii clarkii</i>	Gulf Salt Marsh Snake	G4T3	S3?	N	N
<i>Pituophis melanoleucus mugitus</i>	Florida Pine Snake	G4T3?	S3	N	LS
<i>Pseudemys concinna suwanniensis</i>	Suwannee Cooter	G5T3	S3	N	LS
<i>Stilosoma extenuatum</i>	Short-tailed Snake	G3	S3	N	LT
<u>BIRDS</u>					
<i>Accipiter cooperii</i>	Cooper's Hawk	G5	S3	N	N
<i>Aimophila aestivalis</i>	Bachman's Sparrow	G3	S3	N	N
<i>Ajaia ajaja</i>	Roseate Spoonbill	G5	S2	N	LS
<i>Ammodramus maritimus peninsulae</i>	Scott's Seaside Sparrow	G4T3	S3	N	LS
<i>Aphelocoma coerulescens</i>	Florida Scrub-jay	G2	S2	LT	LT
<i>Aramus guarana</i>	Limpkin	G5	S3	N	LS
<i>Ardea alba</i>	Great Egret	G5	S4	N	N
<i>Athene cunicularia floridana</i>	Florida Burrowing Owl	G4T3	S3	N	LS
<i>Buteo brachyurus</i>	Short-tailed Hawk	G4G5	S1	N	N
<i>Charadrius melodus</i>	Piping Plover	G3	S2	LT	LT
<i>Cistothorus palustris marianae</i>	Marian's Marsh Wren	G5T3	S3	N	LS
<i>Dendroica discolor paludicola</i>	Florida Prairie Warbler	G5T3	S3	N	N
<i>Egretta caerulea</i>	Little Blue Heron	G5	S4	N	LS
<i>Egretta thula</i>	Snowy Egret	G5	S3	N	LS
<i>Egretta tricolor</i>	Tricolored Heron	G5	S4	N	LS
<i>Elanoides forficatus</i>	Swallow-tailed Kite	G5	S2	N	N
<i>Eudocimus albus</i>	White Ibis	G5	S4	N	LS
<i>Falco columbarius</i>	Merlin	G5	S2	N	N
<i>Falco peregrinus</i>	Peregrine Falcon	G4	S2	N	LE
<i>Falco sparverius paulus</i>	Southeastern American Kestrel	G5T4	S3	N	LT
<i>Fregata magnificens</i>	Magnificent Frigatebird	G5	S1	N	N
<i>Grus canadensis pratensis</i>	Florida Sandhill Crane	G5T2T3	S2S3	N	LT
<i>Haematopus palliatus</i>	American Oystercatcher	G5	S2	N	LS
<i>Haliaeetus leucocephalus</i>	Bald Eagle	G4	S3	LT	LT
<i>Ixobrychus exilis</i>	Least Bittern	G5	S4	N	N
<i>Laterallus jamaicensis</i>	Black Rail	G4	S2	N	N
<i>Mycteria americana</i>	Wood Stork	G4	S2	LE	LE
<i>Nyctanassa violacea</i>	Yellow-crowned Night-heron	G5	S3	N	N
<i>Nycticorax nycticorax</i>	Black-crowned Night-heron	G5	S3	N	N
<i>Pandion haliaetus</i>	Osprey	G5	S3S4	N	LS*
<i>Pelecanus occidentalis</i>	Brown Pelican	G4	S3	N	LS
<i>Picoides borealis</i>	Red-cockaded Woodpecker	G3	S2	LE	LS
<i>Picoides villosus</i>	Hairy Woodpecker	G5	S3	N	N

Rare Species and Natural Communities Documented or Reported

Scientific Name	Common Name	Global Rank	State Rank	Federal Status	State Status
<u>BIRDS</u>					
<i>Plegadis falcinellus</i>	Glossy Ibis	G5	S3	N	N
<i>Rallus longirostris scottii</i>	Florida Clapper Rail	G5T3?	S3?	N	N
<i>Rynchops niger</i>	Black Skimmer	G5	S3	N	LS
<i>Sterna antillarum</i>	Least Tern	G4	S3	N	LT
<i>Sterna caspia</i>	Caspian Tern	G5	S2	N	N
<i>Sterna maxima</i>	Royal Tern	G5	S3	N	N
<i>Sterna sandvicensis</i>	Sandwich Tern	G5	S2	N	N
<u>MAMMALS</u>					
<i>Corynorhinus rafinesquii</i>	Rafinesque's Big-eared Bat	G3G4	S2	N	N
<i>Mustela frenata peninsulæ</i>	Florida Long-tailed Weasel	G5T3	S3	N	N
<i>Mustela vison halimmetes</i>	Gulf Salt Marsh Mink	G5T3	S3	N	N
<i>Myotis austroriparius</i>	Southeastern Bat	G3G4	S3	N	N
<i>Neofiber alleni</i>	Round-tailed Muskrat	G3	S3	N	N
<i>Podomys floridanus</i>	Florida Mouse	G3	S3	N	LS
<i>Puma concolor coryi</i>	Florida Panther	G5T1	S1	LE	LE
<i>Sciurus niger shermani</i>	Sherman's Fox Squirrel	G5T3	S3	N	LS
<i>Sorex longirostris eionis</i>	Homosassa Shrew	G5T3	S3	N	LS
<i>Trichechus manatus</i>	Manatee	G2	S2	LE	LE
<i>Ursus americanus floridanus</i>	Florida Black Bear	G5T2	S2	N	LT*
<u>INVERTEBRATES</u>					
<i>Cincinnatia helicogyra</i>	Helicoid Spring Siltsnail	G1	S1	N	N
<i>Crangonyx hobbsi</i>	Hobbs' Cave Amphipod	G2G3	S2S3	N	N
<i>Procambarus lucifugus</i>	Light-fleeing Cave Crayfish	G2G3	S2S3	N	N
<i>Troglocambarus maclanei</i>	North Florida Spider Cave Crayfish	G2G3	S2	N	N
<u>PLANTS</u>					
<i>Adiantum tenerum</i>	Brittle Maidenhair Fern	G5	S3	N	LE
<i>Agrimonia incisa</i>	Incised Groove-bur	G3	S2	N	LE
<i>Asplenium pumilum</i>	Dwarf Spleenwort	G5	S1	N	LE
<i>Asplenium x curtissii</i>	Curtiss' Spleenwort	GNA	S1	N	N
<i>Blechnum occidentale</i>	Sinkhole Fern	G5	S1	N	LE
<i>Centrosema arenicola</i>	Sand Butterfly Pea	G2Q	S2	N	LE
<i>Cheilanthes microphylla</i>	Southern Lip Fern	G5	S3	N	LE
<i>Glandularia tampensis</i>	Tampa Vervain	G2	S2	N	LE
<i>Matelea floridana</i>	Florida Spiny-pod	G2	S2	N	LE
<i>Monotropsis reynoldsiae</i>	Pigmy Pipes	G1Q	S1	N	LE
<i>Pavonia spinifex</i>	Yellow Hibiscus	G4G5	S2	N	N
<i>Peperomia humilis</i>	Terrestrial Peperomia	G5	S2	N	LE
<i>Pteroglossaspis ecristata</i>	Giant Orchid	G2	S2	N	LT
<i>Spiranthes polyantha</i>	Green Ladies'-tresses	G4	S1S2	N	LE
<i>Stylisma abdita</i>	Scrub Stylisma	G3	S3	N	LE
<i>Thelypteris reptans</i>	Creeping Maiden Fern	G5	S2	N	LE
<i>Triphora craigheadii</i>	Craighead's Nodding-caps	G1	S1	N	LE
<u>NATURAL COMMUNITIES</u>					
Aquatic cave		G3	S3	N	N
Basin marsh		G4	S4	N	N
Basin swamp		G4	S3	N	N
Depression marsh		G4	S4	N	N
Floodplain swamp		G4	S4	N	N
Hydric hammock		G4	S4	N	N
Marine tidal marsh		G5	S4	N	N
Marine tidal swamp		G5	S4	N	N
Maritime hammock		G3	S2	N	N
Sandhill		G3	S2	N	N
Sandhill upland lake		G3	S2	N	N
Scrub		G2	S2	N	N
Shell mound		G2	S2	N	N
Sinkhole		G2	S2	N	N

Rare Species and Natural Communities Documented or Reported

Scientific Name	Common Name	Global Rank	State Rank	Federal Status	State Status
<u>NATURAL COMMUNITIES</u>					
	Terrestrial cave	G3	S2	N	N
	Upland hardwood forest	G5	S3	N	N
	Upland mixed forest	G4	S4	N	N
	Xeric hammock	G3	S3	N	N
<u>OTHER ELEMENTS</u>					
	Bird rookery	GNR	SNR	N	N
	Geological feature	GNR	SNR	N	N
	Manatee aggregation site	GNR	SNR	N	N

Total count:

Number of tracked elements: 109
Number of distinct occurrences: 325

TABLE 2.3.7-1
Monthly and Annual Average Temperatures Measured
at Tampa International Airport

Month	Daily Avg. Temperatures (°F) ^a			Daily Extremes (°F) ^b	
	Average	Maximum	Minimum	Maximum	Minimum
January	61.3	70.1	52.4	86	21
February	62.7	71.6	53.8	88	24
March	67.4	76.3	58.5	91	29
April	71.5	80.6	62.4	93	40
May	77.6	86.3	68.9	98	49
June	81.5	88.9	74.0	99	53
July	82.5	89.7	75.3	97	63
August	82.7	90.0	75.4	98	67
September	81.6	89.0	74.3	96	57
October	75.8	84.1	67.6	94	40
November	69.3	78.0	60.7	90	23
December	63.3	72.0	54.7	86	18
Annual	73.1	81.4	64.8	99	18

^a 30-year period of record, climatological normal, 1971 to 2000

^b 59-year period of record, 1947 to 2005.

Source: National Oceanic and Atmospheric Administration (NOAA), 2005.

TABLE 2.3.7-2
Monthly and Annual Average Precipitation and Relative Humidity Measured
at Tampa International Airport

Month	Precipitation (inches)	Humidity (%) hour (LT) ^a					
	Average ^a	Maximum ^b	Minimum ^b	1 a.m.	7 a.m.	1 p.m.	7 p.m.
January	2.27	8.02	< 0.01	85	87	60	74
February	2.67	10.82	0.21	84	87	57	70
March	2.84	12.64	0.06	83	87	55	68
April	1.80	10.71	<0.01	82	86	52	64
May	2.85	17.64	0.02	82	85	54	64
June	5.50	13.75	1.46	85	86	60	70
July	6.49	20.59	1.65	86	88	64	74
August	7.60	18.59	2.35	88	90	65	76
September	6.54	13.98	0.79	88	91	63	76
October	2.29	7.36	0.06	86	90	58	73
November	1.62	6.12	<0.01	86	88	59	74
December	2.30	15.57	0.07	86	88	61	75
Annual	44.77	67.71	29.85	85	88	59	72

^a 30-year period of record, climatological normal, 1971 to 2000.

^b 59-year period of record, 1947 to 2005.

Note: LT = local time.

Source: NOAA, 2005.

TABLE 2.3.7-3
Seasonal and Annual Average Wind Direction and Wind Speed Measured
at Tampa International Airport

Season	Average Wind Speed (mph)	Calm (Percent)	Prevailing Wind Direction
Winter	6.6	13.2	North-northeast
Spring	7.4	10.5	West
Summer	5.7	18.0	West-southwest
Fall	6.7	12.0	Northeast
Annual	6.6	13.4	North-northeast

^a 5-year period of record, 2001 to 2005. The data for this period were also used in the air quality impact analyses for the project.

Source: NOAA, 2007.

TABLE 2.3.7-4
Seasonal and Annual Average Atmospheric Stability Classes Determined
at Tampa International Airport

Season	<u>Occurrence (Percent) of Stability Class ^a</u>					
	Very Unstable	Moderately Unstable	Unstable	Slightly Neutral	Stable	Slightly Stable
Winter	0.0	3.5	12.2	41.7	18.4	24.2
Spring	0.5	8.6	17.1	33.1	18.0	22.8
Summer	2.6	13.4	19.0	20.8	14.7	29.6
Fall	0.6	7.5	15.4	30.3	17.5	28.8
Annual	0.9	8.3	15.9	31.4	17.1	26.3

^a 5-year period of record, 1991 to 1995.

Source: NOAA, 1995.

TABLE 2.3.7-5
Seasonal and Annual Average Morning and Afternoon Mixing Heights Determined
at Tampa International Airport

Season	Mixing Height (m)	
	Morning	Afternoon
Winter	475	1,032
Spring	691	1,531
Summer	657	1,398
Fall	481	1,132
Annual	577	1,275

^a5-year period of record, 1991 to 1995. Mixing heights based on surface temperatures and upper-air data from the NWS stations at Tampa International Airport and Ruskin, respectively.

Source: NOAA, 1995.

**TABLE 2.3.7-6
NATIONAL AND STATE AAQS, ALLOWABLE PSD INCREMENTS, AND SIGNIFICANT IMPACT LEVELS**

Pollutant II	Averaging Time	National AAQS ($\mu\text{g}/\text{m}^3$) ^a		Florida AAQS ^a ($\mu\text{g}/\text{m}^3$)	Significant Impact PSD Increments ($\mu\text{g}/\text{m}^3$) ^a		Levels ($\mu\text{g}/\text{m}^3$) ^b	
		Primary Standard	Secondary Standard		Class I	Class II	Class I	Class II
Particulate Matter (PM_{10})	Annual Arithmetic Mean	50	50	50	4	17	0.2	1
	24-Hour Maximum	150	150	150	8	30	0.3	5
Particulate Matter ^c ($\text{PM}_{2.5}$)	Annual Arithmetic Mean	15	15	50	NA	NA	NA	NA
	24-Hour Maximum	35	35	150	NA	NA	NA	NA
Sulfur Dioxide	Annual Arithmetic Mean	80	NA	60	2	20	0.1	1
	24-Hour Maximum	365	NA	260	5	91	0.2	5
	3-Hour Maximum	NA	1,300	1,300	25	512	1.0	25
Carbon Monoxide	8-Hour Maximum	10,000	10,000	10,000	NA	NA	NA	500
	1-Hour Maximum	40,000	40,000	40,000	NA	NA	NA	2,000
Nitrogen Dioxide	Annual Arithmetic Mean	100	100	100	2.5	25	0.1	1
	1-Hour Maximum ^d	235	235	235	NA	NA	NA	NA
Ozone ^e	8-Hour Maximum ^e	160	160					
Lead	Calendar Quarter Arithmetic Mean	1.5	1.5	1.5	NA	NA	NA	NA

Note: Particulate matter (PM_{10}) = particulate matter with aerodynamic diameter less than or equal to 10 micrometers.

Particulate matter ($\text{PM}_{2.5}$) = particulate matter with aerodynamic diameter less than or equal to 2.5 micrometers.

NA = Not applicable, i.e., no standard exists or not promulgated yet.

^a Short-term maximum concentrations are not to be exceeded more than once per year, except for PM_{10} , $\text{PM}_{2.5}$, and O_3 AAQS which are based on expected exceedances.

^b Maximum concentrations are not to be exceeded.

^c 24-hour standard based on the 3-year averages of the 98th percentile values; annual standard based on 3-year average at community monitors. These standards must be implemented in the 2007-2008 timeframe. On October 17, 2006, EPA finalized the PM AAQS (71 FR 61236). The 24-hour $\text{PM}_{2.5}$ standard was changed to 35 $\mu\text{g}/\text{m}^3$. The FDEP has not yet adopted the revised standards.

^d 0.12 ppm; achieved when the expected number of days per year with concentrations above the standard is fewer than 1.

^e 0.08 ppm; achieved when the 3-year average of 99th percentile values is 0.08 ppm or less. These standards must be implemented in the 2007-2008 timeframe. The FDEP has not yet adopted the revised standards.

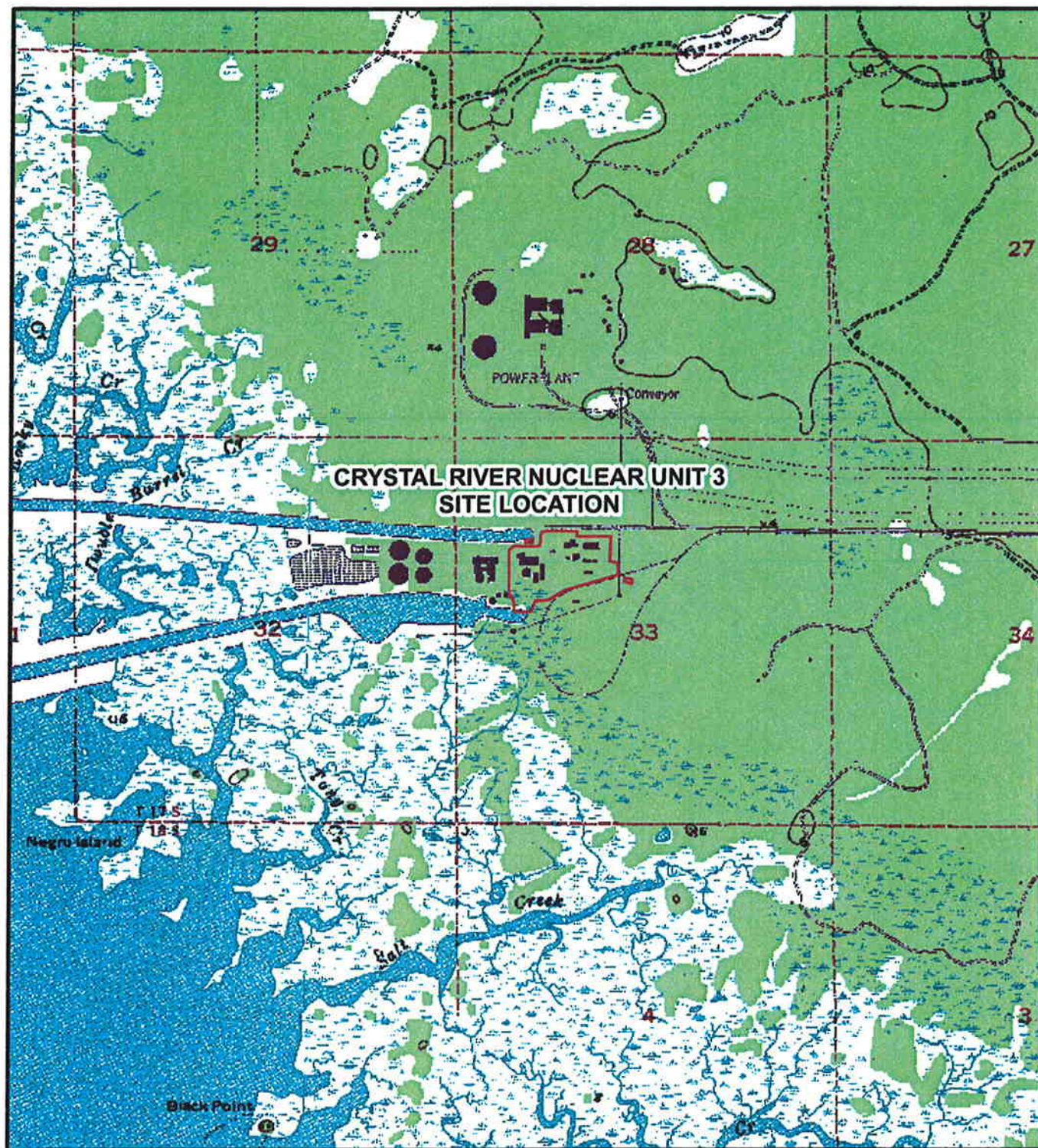
Sources: Federal Register, Vol. 43, No. 118, June 19, 1978; 40 CFR 50; 40 CFR 52.21; Florida Chapter 62.204, F.A.C. Golder, 2006.

TABLE 2.3.8-1
Baseline Ambient Sound Pressure Levels (dBA) Observed at the Crystal River Energy Complex

Site	Coordinates	Date	Time	Sound Levels (dBA)			Observations
				Min	Max	Leq	
1. On-site North of reactor	28° 57' 32.6" N 82° 41' 52.7" W	11-Apr-07	Daytime	60	85	65	Plant traffic and plant operations
			Nighttime	61	76	62	Plant traffic, plant operations, and insect noise
2. On-site East of reactor	28° 57' 28.1" N 82° 41' 37.6" W	11-Apr-07	Daytime	63	68	65	Plant operations, conveyor, and fence construction
			Nighttime	62	66	63	Plant operations, conveyor, and insect noise
3. On-site South of reactor	28° 57' 22.96" N 82° 41' 51.3" W	11-Apr-07	Daytime	67	75	70	Plant operations, conveyor, and traffic
			Nighttime	69	72	71	Plant operations, conveyor, and insect noise
4. West of plant near cooling towers	28° 57' 34.7" N 82° 42' 15.2" W	11-Apr-07	Daytime	52	60	57	Plant traffic, plant operations, and cooling tower ops,
			Nighttime	56	63	60	Plant traffic and rain
5. Northeast corner of fence line	28° 58' 11.0" N 82° 41' 07.8" W	11-Apr-07	Daytime	47	57	51	Coal plant operations and air plane traffic
			Nighttime	47	63	57	Coal plant operations and insect noise
6. Intersection of Tallahassee and Powerline Rd	28° 57' 35.4" N 82° 38' 00.2" W	11-Apr-07	Daytime	42	68	56	Traffic, powerline buzz, and neighboring facility noise
			Nighttime	39	95	74	Traffic, powerline buzz, insects, and train passing
7. Middle point on Powerline Rd	28° 57' 34.2" N 82° 39' 37.5" W	11-Apr-07	Daytime	39	74	62	Traffic, powerline buzz, and airplane traffic
			Nighttime	44	54	47	Plant operations and powerline buzz
Commercial Maximum Allowable Sound Pressure Levels (L ₁₀)			Daytime			65	
			Nighttime			60	

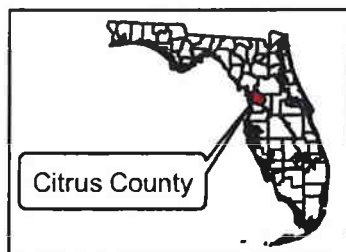
Source: Golder Associates Inc, 2007

FIGURES



LEGEND

Crystal River Nuclear Unit 3 Site Location



REFERENCE

1. Topo scanned from existing USGS 7.5" quads in 1997.

0 0.4 0.8
Miles



PROJECT
PROGRESS ENERGY FLORIDA, CRYSTAL RIVER
NUCLEAR UNIT 3 UPRATE PROJECT

TITLE

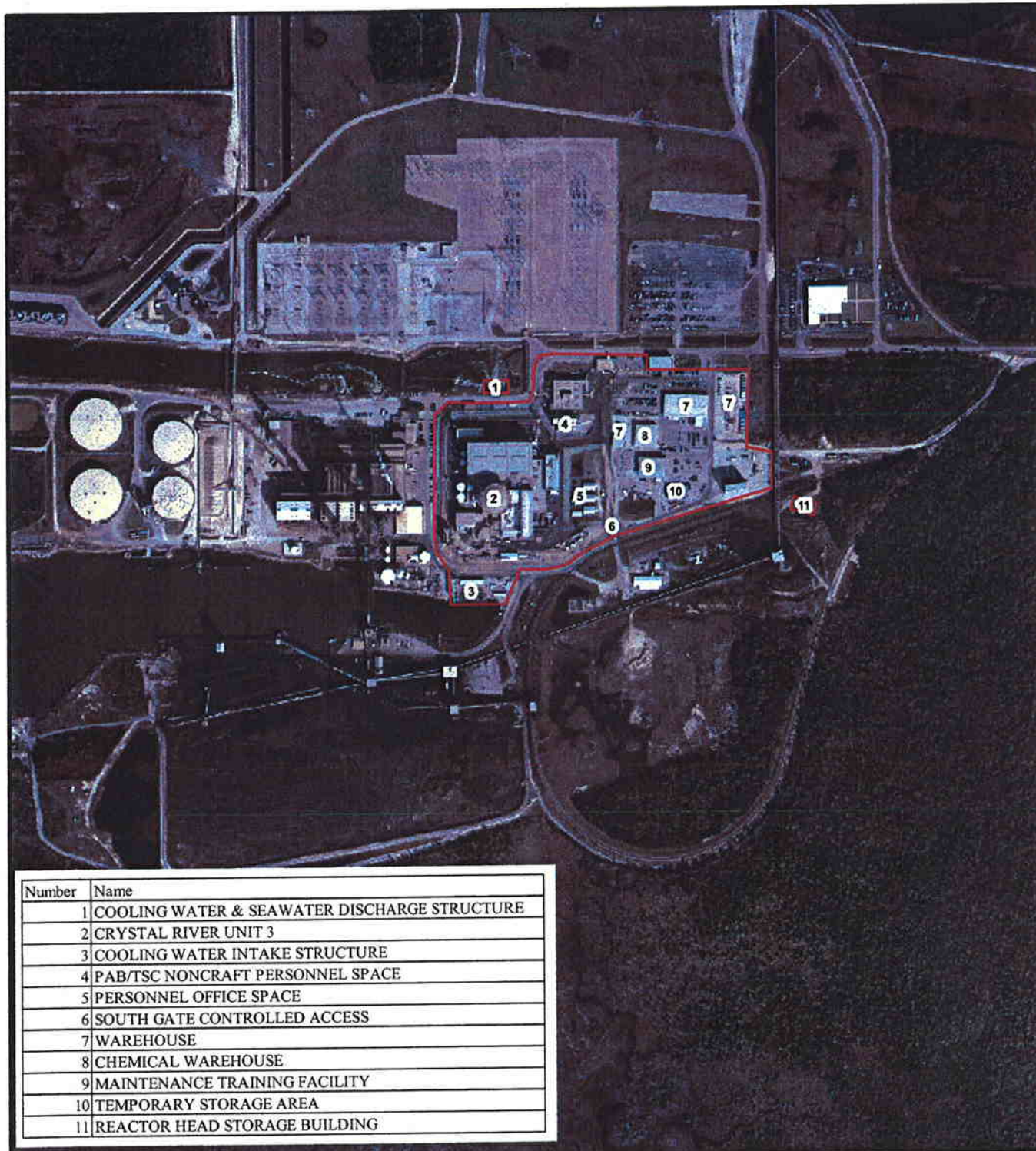
SITE LOCATION



PROJECT No.	073-88531
DESIGN	JG April 17, 2007
GIS	JG April 17, 2007
CHECK	KG April 17, 2007
REVIEW	MM April 17, 2007

SCALE AS SHOWN REV 0

FIGURE
2.1.1-1



Number	Name
1	COOLING WATER & SEAWATER DISCHARGE STRUCTURE
2	CRYSTAL RIVER UNIT 3
3	COOLING WATER INTAKE STRUCTURE
4	PAB/TSC NONCRAFT PERSONNEL SPACE
5	PERSONNEL OFFICE SPACE
6	SOUTH GATE CONTROLLED ACCESS
7	WAREHOUSE
8	CHEMICAL WAREHOUSE
9	MAINTENANCE TRAINING FACILITY
10	TEMPORARY STORAGE AREA
11	REACTOR HEAD STORAGE BUILDING

LEGEND

Crystal River Nuclear Unit 3 Site Location

REFERENCE

- 2006 SWFWMD Aerial.
- Crystal River Unit 3 Site Location by Golder Associates Inc.

0 0.1 0.2
Miles



PROJECT
PROGRESS ENERGY FLORIDA, CRYSTAL RIVER
NUCLEAR UNIT 3 UPRATE PROJECT

TITLE
**CRYSTAL RIVER NUCLEAR UNIT 3
SITE LAYOUT/CERTIFICATION BOUNDARY**



PROJECT No.	073-89531
DESIGN	JG April 17, 2007
GIS	JG April 17, 2007
CHECK	KG April 17, 2007
REVIEW	MM April 17, 2007

SCALE AS SHOWN REV. 0

**FIGURE
2.1.2-1**



LEGEND

Crystal River Nuclear Unit 3 Site Location

REFERENCE

1. 2006 SWFWMD Aerial.
2. Crystal River Unit 3 Site Location by Golder Associates Inc.

0 0.1 0.2 Miles



PROJECT
PROGRESS ENERGY FLORIDA, CRYSTAL RIVER
NUCLEAR UNIT 3 UPRATE PROJECT

TITLE

AERIAL PHOTOGRAPH



PROJECT No. 073-89531			SCALE AS SHOWN	REV. 0
DESIGN	JG	April 17, 2007	FIGURE 2.1.2-2	
GIS	JG	April 17, 2007		
CHECK	KG	April 17, 2007		
REVIEW	MM	April 17, 2007		

**LEGEND**

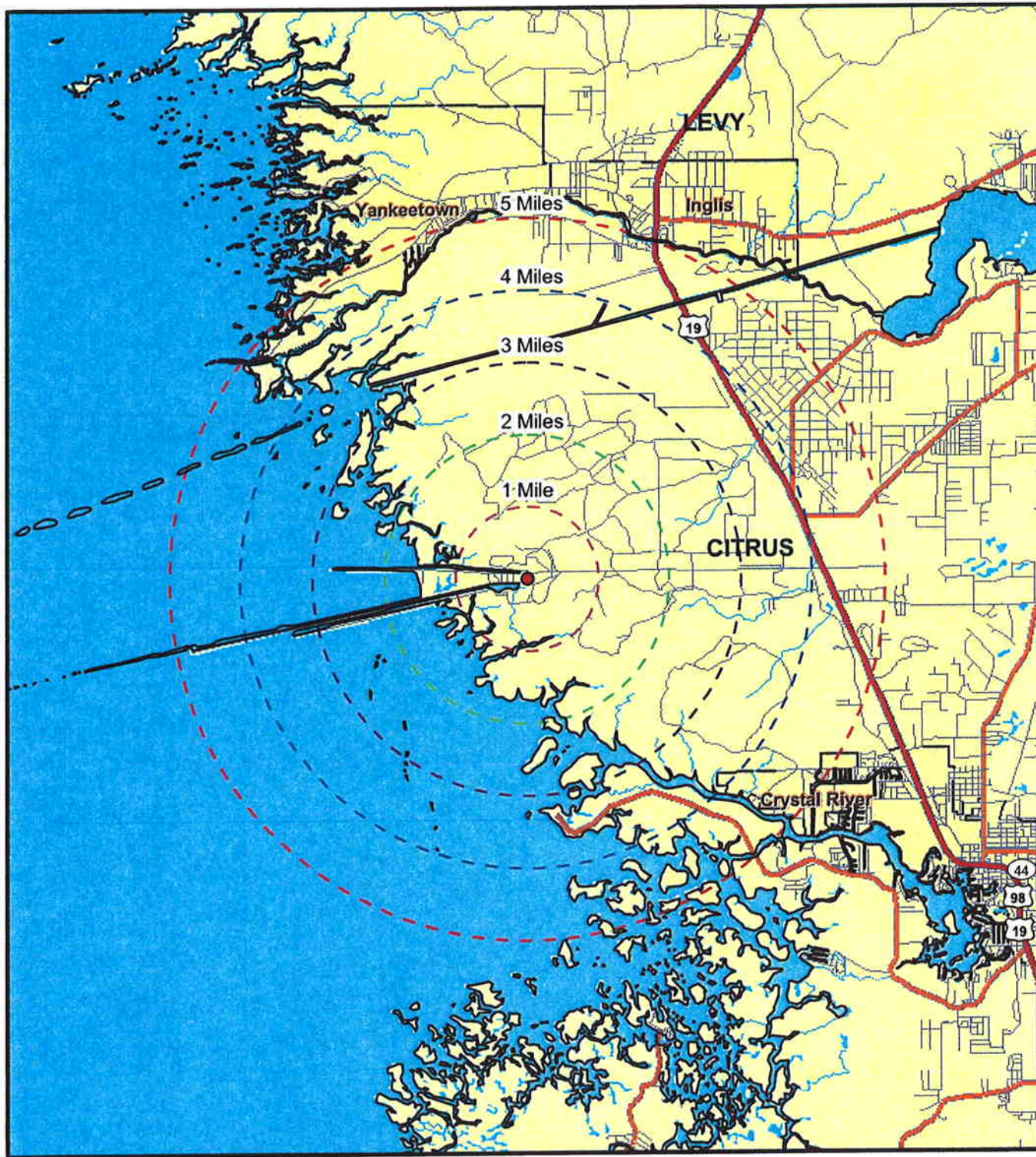
Crystal River Nuclear Unit 3 Site Location

0 0.1 0.2
Miles

**REFERENCE**

1. 2006 SWFWMD Aerial.
2. FEMA flood zone information from the FDEP.
3. Crystal River Site Location by Golder Associates Inc.

PROJECT			
PROGRESS ENERGY FLORIDA, CRYSTAL RIVER NUCLEAR UNIT 3 UPRATE PROJECT			
TITLE			
FLOOD ZONE			
 Tampa, Florida	PROJECT No. 073-89531		SCALE AS SHOWN
	DESIGN	JG April 17, 2007	FIGURE 2.1.5-1
	GIS	JG April 17, 2007	
	CHECK	KG April 17, 2007	
	REVIEW	MM April 17, 2007	



LEGEND

- Crystal River Nuclear Unit 3 Site Location
- ▭ County Boundaries
- 5 Mile Radius
- 4 Mile Radius
- 3 Mile Radius
- 2 Mile Radius
- 1 Mile Radius
- Highway
- Major Road
- Local Road
- ▭ Municipalities

REFERENCE

1. ESRI Street Map was used as background.

0 2 4 Miles



PROJECT
PROGRESS ENERGY FLORIDA, CRYSTAL RIVER
NUCLEAR UNIT 3 UPRATE PROJECT

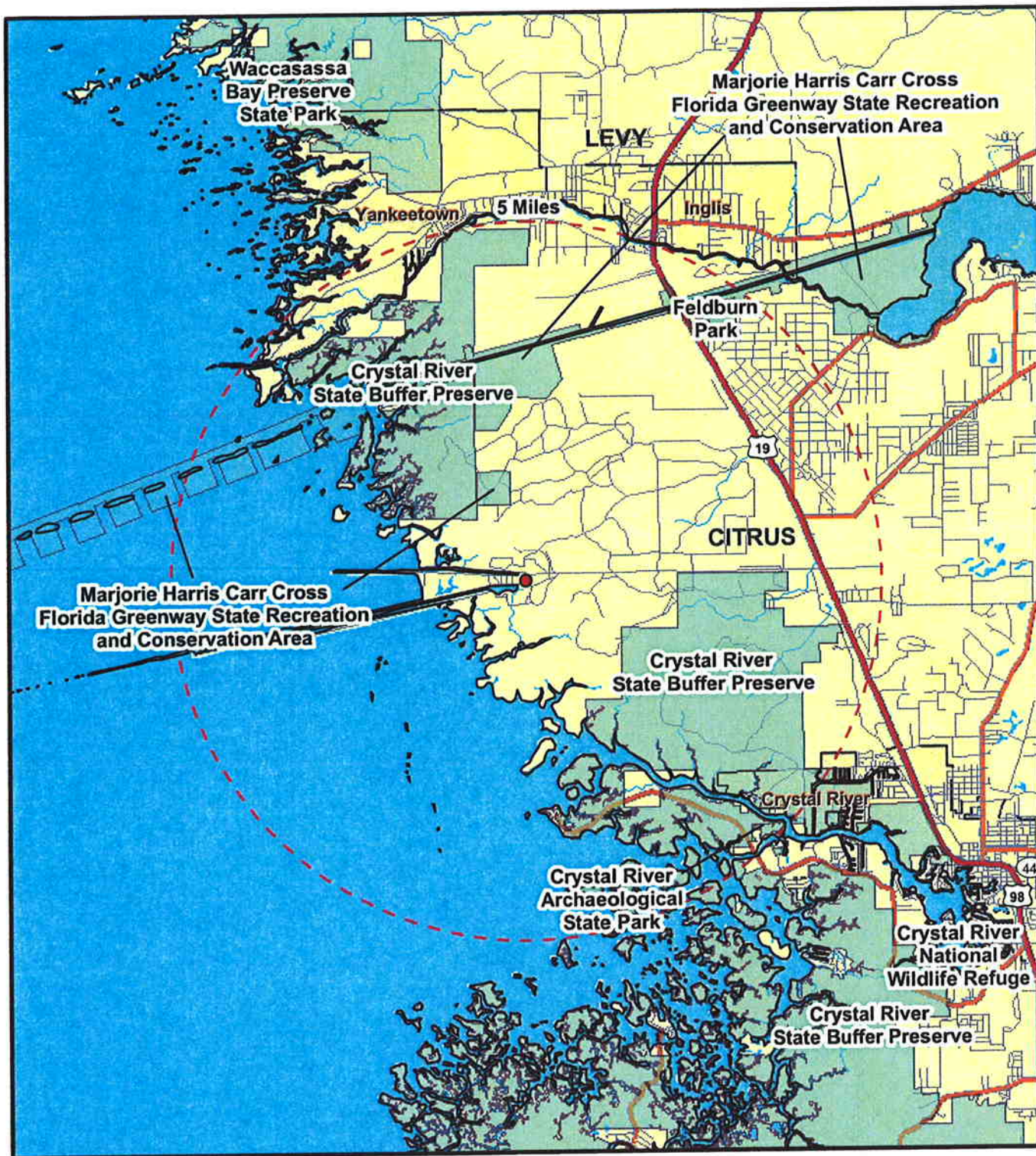
TITLE
GOVERNMENTAL JURISDICTIONS
(Within 1,2,3,4, and 5 Mile Radii)



PROJECT No.	073-89531
DESIGN	JG April 17, 2007
GIS	JG April 17, 2007
CHECK	KG April 17, 2007
REVIEW	MM April 17, 2007

SCALE AS SHOWN REV. 0

FIGURE
2.2.1-1



LEGEND

- Crystal River Nuclear Unit 3 Site Location
- Highway
- Major Road
- Local Road
- 5 Mile Radius
- Conservation Lands
- Municipalities
- County Boundaries

REFERENCE

1. ESRI Street Map was used as background.
2. Conservation Lands represent public and some private lands that the Florida Natural Areas Inventory (FNAI) has identified as having natural resource value and are being managed at least partially for conservation.

0 2 4 Miles



PROJECT
PROGRESS ENERGY FLORIDA, CRYSTAL RIVER
NUCLEAR UNIT 3 UPRATE PROJECT

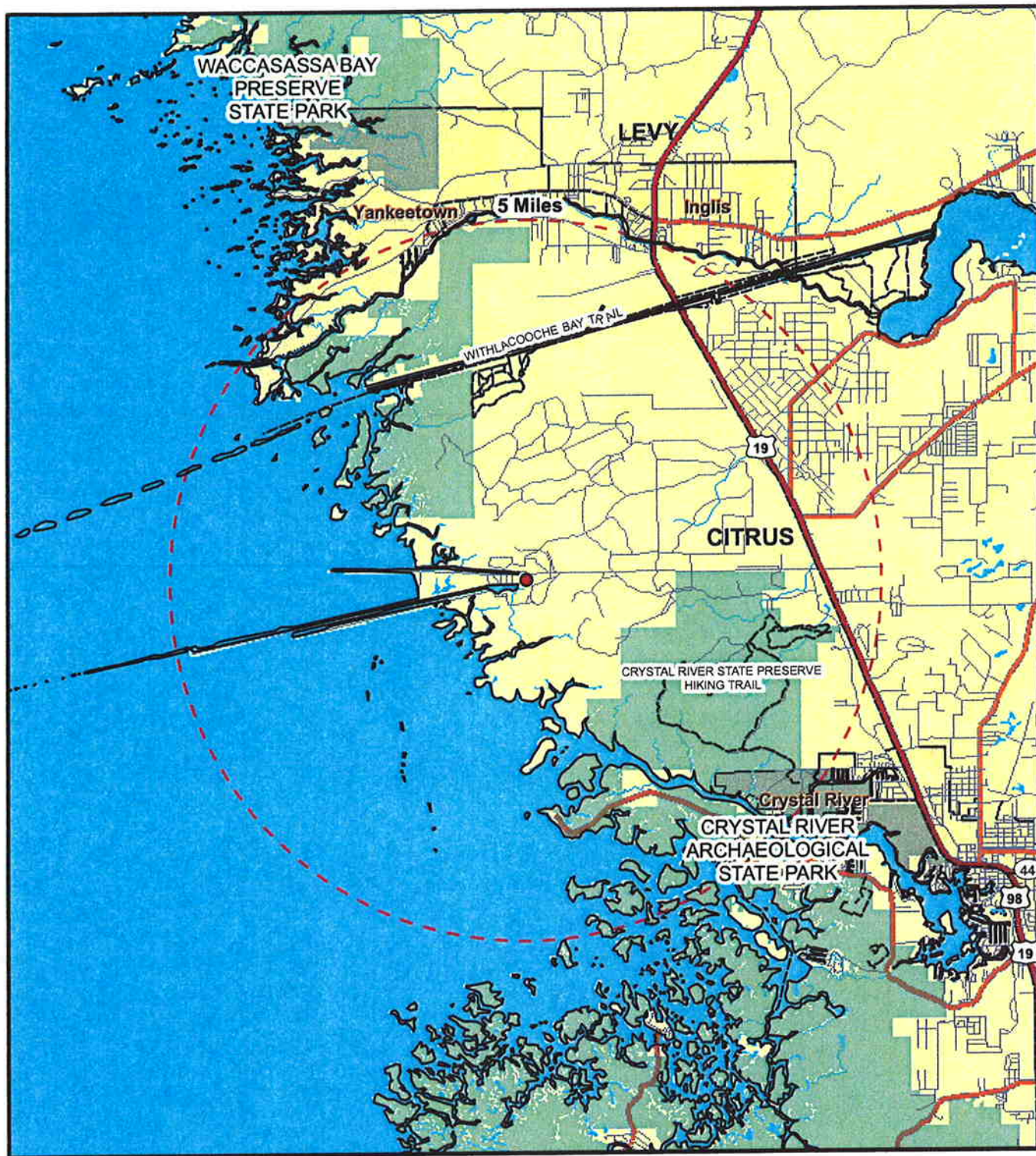
TITLE
**CONSERVATION LANDS
WITHIN 5 MILE RADIUS**



PROJECT No.	JG	April 17, 2007
DESIGN	JG	April 17, 2007
CHECK	KG	April 17, 2007
REVIEW	MM	April 17, 2007

SCALE AS SHOWN REV. 0

**FIGURE
2.2.1-2**



LEGEND

- Crystal River Nuclear Unit 3 Site Location
- 5 Mile Radius
- Highway
- Major Road
- Local Road
- Existing Trails
- State Parks
- Municipalities
- County Boundaries

REFERENCE

1. ESRI Street Map was used as background.
2. State Parks & Existing Trails from the Florida Department of Environmental Protection.

0 2 4 Miles



PROJECT
PROGRESS ENERGY FLORIDA, CRYSTAL RIVER
NUCLEAR UNIT 3 UPRATE PROJECT

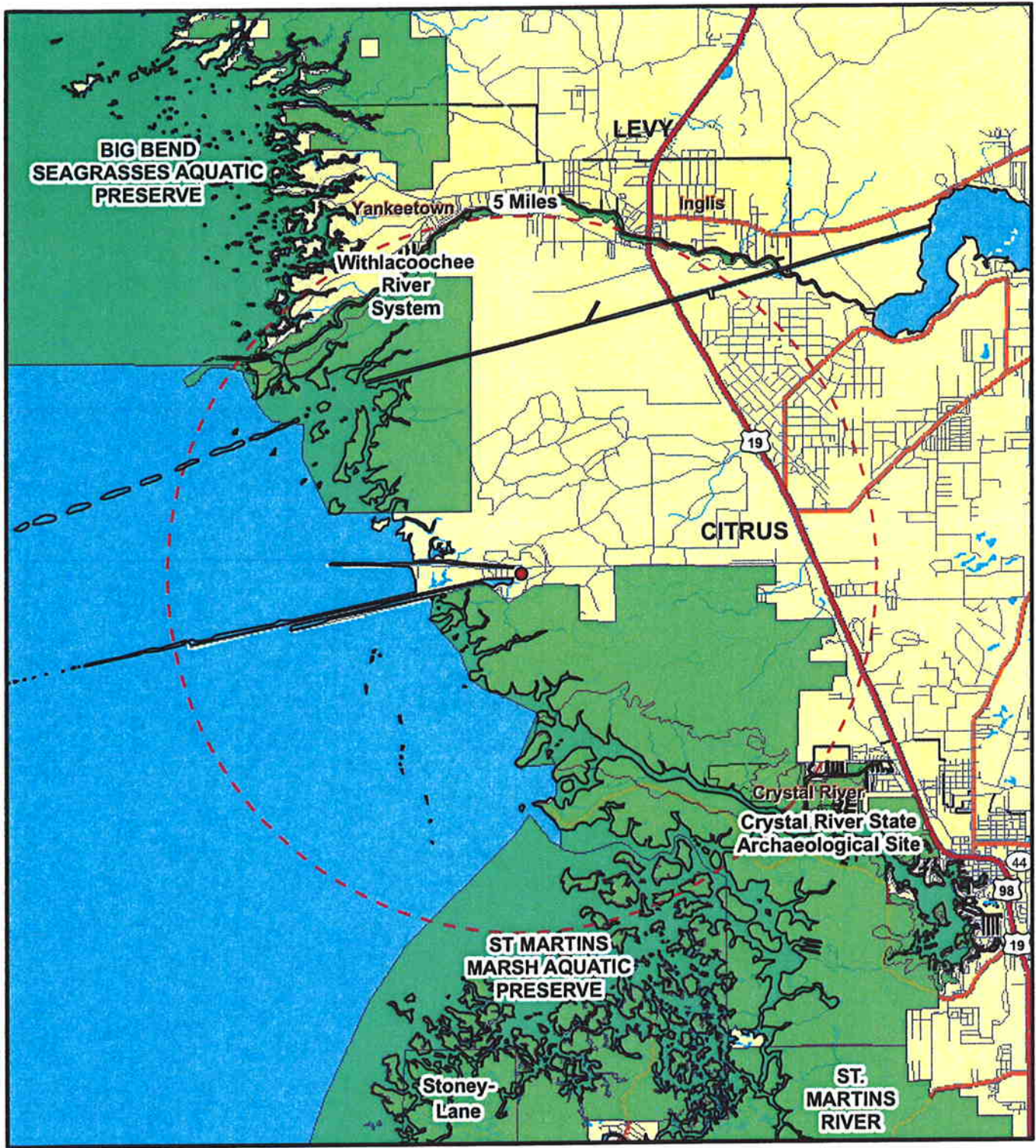
TITLE
**STATE PARKS & EXISTING TRAILS
WITHIN 5 MILE RADIUS**



PROJECT No.	073-89531
DESIGN	JG April 17, 2007
GIS	JG April 17, 2007
CHECK	KG April 17, 2007
REVIEW	MM April 17, 2007

SCALE AS SHOWN REV. 0

**FIGURE
2.2.1-3**



LEGEND

- Crystal River Nuclear Unit 3 Site Location
- Highway
- Major Road
- Local Road
- 5 Mile Radius
- Outstanding Florida Waters
- Municipalities
- County Boundaries

REFERENCE

1. ESRI Street Map was used as background.
2. Outstanding Florida Waters from the Florida Department of Environmental Protection.

0 2 4 Miles



PROJECT
PROGRESS ENERGY FLORIDA, CRYSTAL RIVER
NUCLEAR UNIT 3 UPRATE PROJECT

TITLE
OUTSTANDING FLORIDA WATERS
WITHIN 5 MILE RADIUS



PROJECT No.	073-99531
DESIGN	JG April 17, 2007
GIS	JG April 17, 2007
CHECK	KG April 17, 2007
REVIEW	MM April 17, 2007

SCALE AS SHOWN REV. 0

FIGURE
2.2.1-4

CITRUS COUNTY, FL

1 Mile

CRYSTAL RIVER NUCLEAR UNIT 3
SITE LOCATION

LEGEND

- Crystal River Nuclear Unit 3 Site Location
- Outstanding Florida Waters
- 1 Mile Radius
- Local Road

REFERENCE

1. ESRI Street Map was used as background.
2. Outstanding Florida Waters from the Florida Department of Environmental Protection.



PROJECT
PROGRESS ENERGY FLORIDA, CRYSTAL RIVER
NUCLEAR UNIT 3 UPRATE PROJECT

TITLE
**GOVERNMENTAL JURISDICTIONS
WITHIN 1 MILE RADIUS**



PROJECT No. 073-89531		SCALE AS SHOWN	REV. 0
DESIGN	JG	April 17, 2007	
GIS	JG	April 17, 2007	
CHECK	KG	April 17, 2007	
REVIEW	MM	April 17, 2007	

**FIGURE
2.2.1-5**

Transportation, Communication and Utilities

The entire Crystal River Unit 3 Site Location is located within the Future Land Use category "Transportation, Communication and Utilities".

LEGEND

Crystal River Nuclear Unit 3 Site Location

0 0.1 0.2 Miles



REFERENCE

1. 2006 Southwest Florida Water Management District Aerial.
2. Future Land Use Map from Citrus County.
3. Crystal River Site Location by Golder Associates Inc.

PROJECT				PROGRESS ENERGY FLORIDA, CRYSTAL RIVER NUCLEAR UNIT 3 UPRATE PROJECT			
TITLE				FUTURE LAND USE			
				PROJECT No. 073-89531		SCALE AS SHOWN	REV. 0
				DESIGN	JG	April 17, 2007	FIGURE 2.2.2-1
				GIS	JG	April 17, 2007	
				CHECK	KG	April 17, 2007	
				REVIEW	MM	April 17, 2007	





LEGEND

Crystal River Nuclear Unit 3 Site Location

0 0.1 0.2
Miles



PROJECT
PROGRESS ENERGY FLORIDA, CRYSTAL RIVER
NUCLEAR UNIT 3 UPRATE PROJECT

TITLE
ZONING

REFERENCE

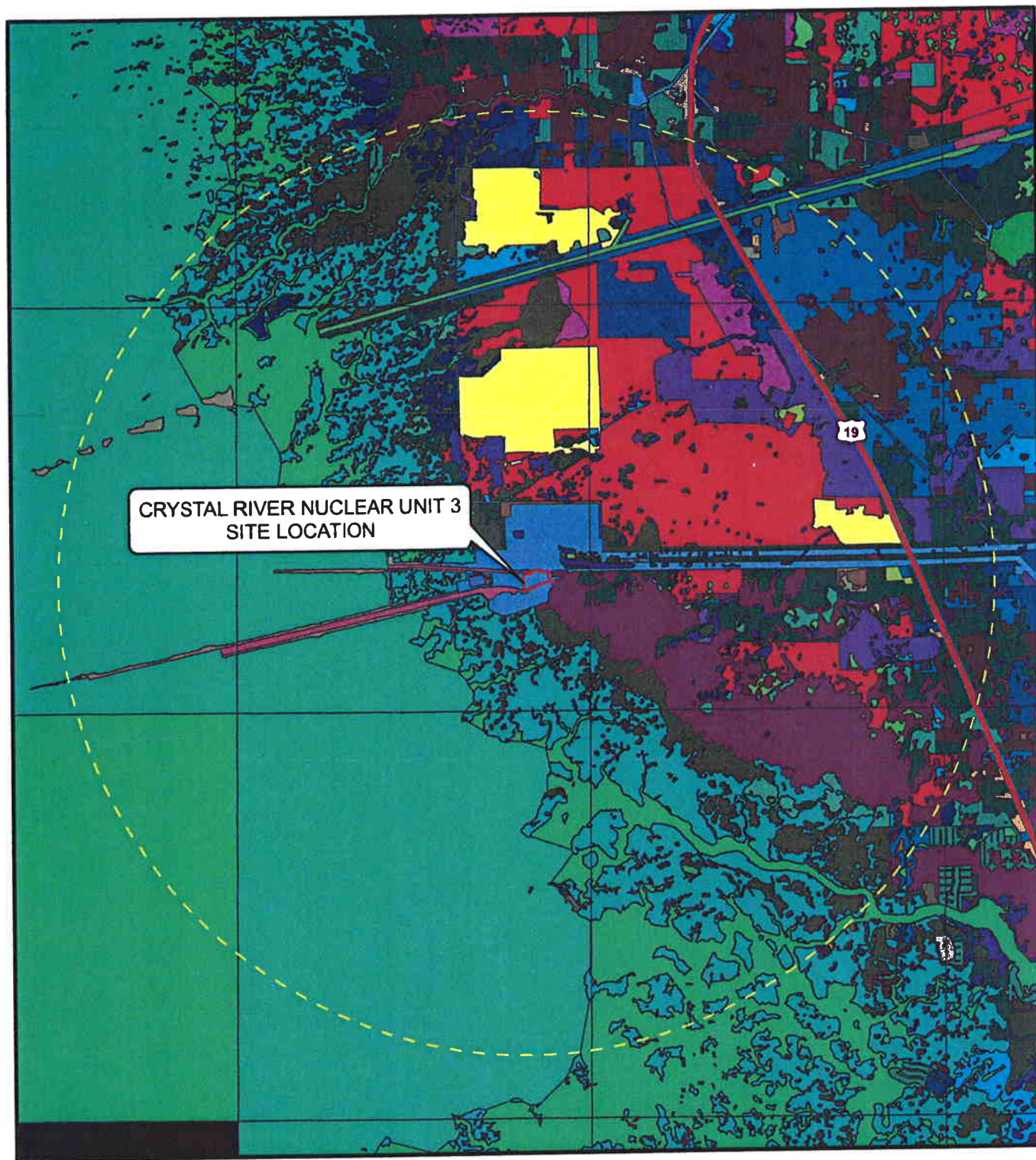
1. 2006 Southwest Florida Water Management District Aerial.
2. Zoning map from Citrus County zoning maps.
3. Crystal River Site Location by Golder Associates Inc.



PROJECT No.	073-89531
DESIGN	JG April 17, 2007
GIS	JG April 17, 2007
CHECK	KG April 17, 2007
REVIEW	MM April 17, 2007

SCALE AS SHOWN REV. 0

FIGURE
2.2.2-2



LEGEND

- Crystal River Nuclear Unit 3 Site Location
- Highway
- 5 Mile Radius

Florida Land Use and Cover Classification System

- LEV2, FLUCCS CODE, DESCRIPTION
- 11, 1100, RESIDENTIAL LOW DENSITY < 2 DWELLING UNITS
 - 13, 1300, RESIDENTIAL HIGH DENSITY
 - 14, 1400, COMMERCIAL AND SERVICES
 - 15, 1500, INDUSTRIAL
 - 16, 1600, EXTRACTIVE
 - 17, 1700, INSTITUTIONAL
 - 18, 1800, RECREATIONAL
 - 19, 1900, OPEN LAND

- 21, 2100, CROPLAND AND PASTURELAND
- 26, 2600, OTHER OPEN LANDS <RURAL>
- 31, 3100, HERBACEOUS
- 32, 3200, SHRUB AND BRUSHLAND
- 33, 3300, MIXED RANGELAND
- 41, 4120, LONGLEAF PINE - XERIC OAK
- 41, 4110, PINE FLATWOODS
- 41, 4100, UPLAND CONIFEROUS FOREST
- 43, 4340, HARDWOOD CONIFER MIXED
- 44, 4400, TREE PLANTATIONS
- 51, 5100, STREAMS AND WATERWAYS
- 52, 5200, LAKES
- 53, 5300, RESERVOIRS
- 54, 5400, BAYS AND ESTUARIES
- 57, 5720, GULF OF MEXICO
- 61, 6150, STREAM AND LAKE SWAMPS (BOT TOMLAND)
- 62, 6210, CYPRESS
- 63, 6300, WETLAND FORESTED MIXED
- 64, 6430, SALTWATER MARSHES
- 64, 6440, EMERGENT AQUATIC VEGETATION
- 64, 6410, FRESHWATER MARSHES
- 64, 6430, WET PRAIRIES
- 65, 6530, INTERMITTENT PONDS
- 74, 7400, DISTURBED LAND
- 81, 8100, TRANSPORTATION
- 83, 8300, UTILITIES

REFERENCE

1. Florida Land Use and Cover Classification System (2004) from Southwest Florida Water Management Department (SWFWMD).
2. Crystal River Site Location by Golder Associates Inc.

0 2 4 Miles



PROJECT
PROGRESS ENERGY FLORIDA, CRYSTAL RIVER
NUCLEAR UNIT 3 UPRATE PROJECT

TITLE

EXISTING LAND USE



PROJECT No. 073-89531	SCALE AS SHOWN	REV. 0
DESIGN JG April 17, 2007	FIGURE 2.2.3-1	
GIS JG April 17, 2007		
CHECK KG April 17, 2007		
REVIEW MM April 17, 2007		



LEGEND

- Crystal River Nuclear Unit 3 Site Location
- Schools & Recreation Locations
- 5 Mile Radius

REFERENCE

- ESRI Street Map was used as background.
- Schools & Recreation Locations from FGDL (Florida Geographic Data Library).

0 2 4 Miles



PROJECT
PROGRESS ENERGY FLORIDA, CRYSTAL RIVER
NUCLEAR UNIT 3 UPRATE PROJECT

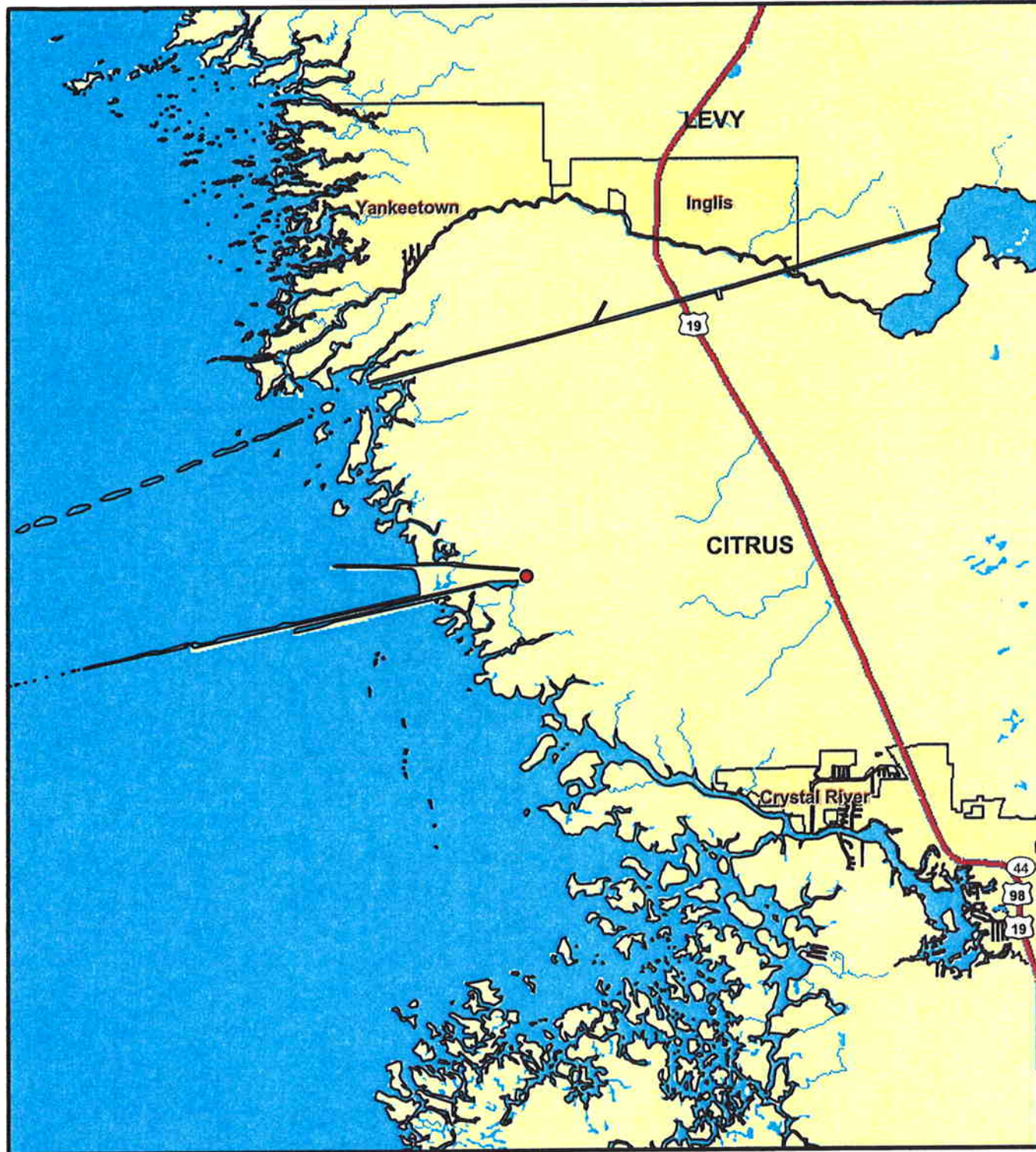
TITLE
SCHOOLS & RECREATION LOCATIONS



PROJECT No.	073-89531
DESIGN	JG April 17, 2007
CHECK	XG April 17, 2007
REVIEW	MM April 17, 2007

SCALE AS SHOWN REV. 0

FIGURE
2.2.8-1



LEGEND

- Crystal River Nuclear Unit 3 Site Location
- Municipalities
- Major Roads
- Highway
- County Boundaries

REFERENCE

1. ESRI Street Map was used as background.

0 2 4 Miles



PROJECT
PROGRESS ENERGY FLORIDA, CRYSTAL RIVER
NUCLEAR UNIT 3 UPRATE PROJECT

TITLE
MAJOR ROADS

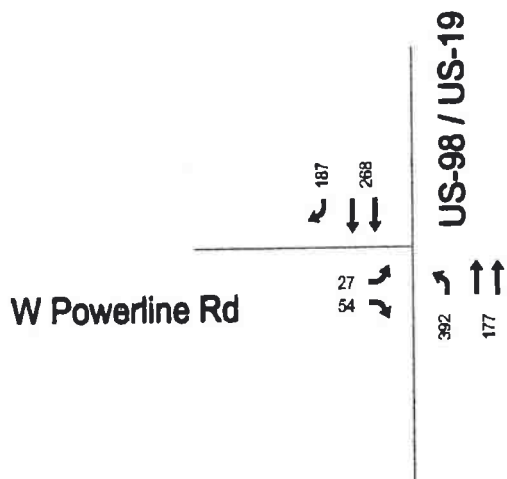


PROJECT No.	073-89531
DESIGN	JG April 17, 2007
QIS	JG April 17, 2007
CHECK	KG April 17, 2007
REVIEW	MM April 17, 2007

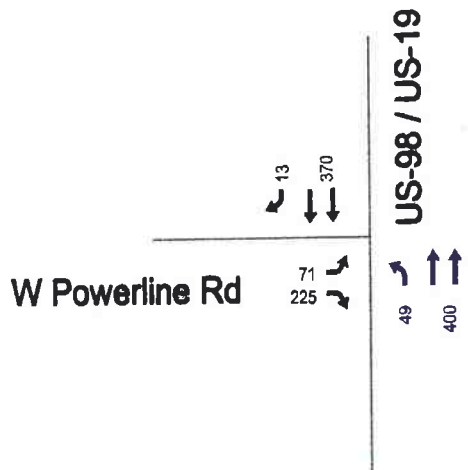
SCALE AS SHOWN REV. 0

FIGURE
2.2.8-2

AM PEAK HOUR



PM PEAK HOUR



SCALE: N.T.S.



Transportation Solutions for Today and Tomorrow
Park Tower Suite 1140 / 400 North Tampa Street
Tampa, Florida 33602 / (813) 386-3630

PROJECT NO. GOLAS00-07199

PROJECT: CR3 Uprate Project

TITLE: 2007 Existing Traffic Volumes

FIGURE

2.2.8-3

D.B. N.A.S.
C.B. N.A.S.
REV. _____

Quaternary

Holocene

Qh Holocene sediments

Pleistocene/Holocene

Qal Alluvium

Qbd Beach ridge and dune

Qu Undifferentiated sediments

Pleistocene

Qa Anastasia Formation

Qk Key Largo Limestone

Qm Miami Limestone

Qtr Trail Ridge sands

Tertiary/Quaternary

Pliocene/Pleistocene

TQsu Shelly sediments of Plio-Pleistocene age

TQu Undifferentiated sediments

TQd Dunes

TQuc Reworked Cypresshead sediments

Tertiary

Pliocene

Tc Cypresshead Formation

Tci Chironelle Formation

Tmc Miccosukee Formation

Tic Intracoastal Formation

Tt Tamiami Formation

Tjb Jackson Bluff Formation

Miocene/Pliocene

Thcc Hawthorn Group, Coosawhatchie Formation, Charlton Member

Thp Hawthorn Group, Peace River Formation

Thpb Hawthorn Group, Peace River Formation, Bone Valley Member

Miocene

Trm Residuum on Miocene sediments

Tab Alum Bluff Group

Th Hawthorn Group

Thc Hawthorn Group, Coosawhatchie Formation

Ths Hawthorn Group, Stateville Formation

Tht Hawthorn Group, Torreya Formation

Tch Chatahoochee Formation

Tsmk St. Marks Formation

Oligocene/Miocene

Tha Hawthorn Group, Arcadia Formation

That Hawthorn Group, Arcadia Formation, Tampa Member

Oligocene

Tro Residuum on Oligocene sediments

Ts Suwannee Limestone

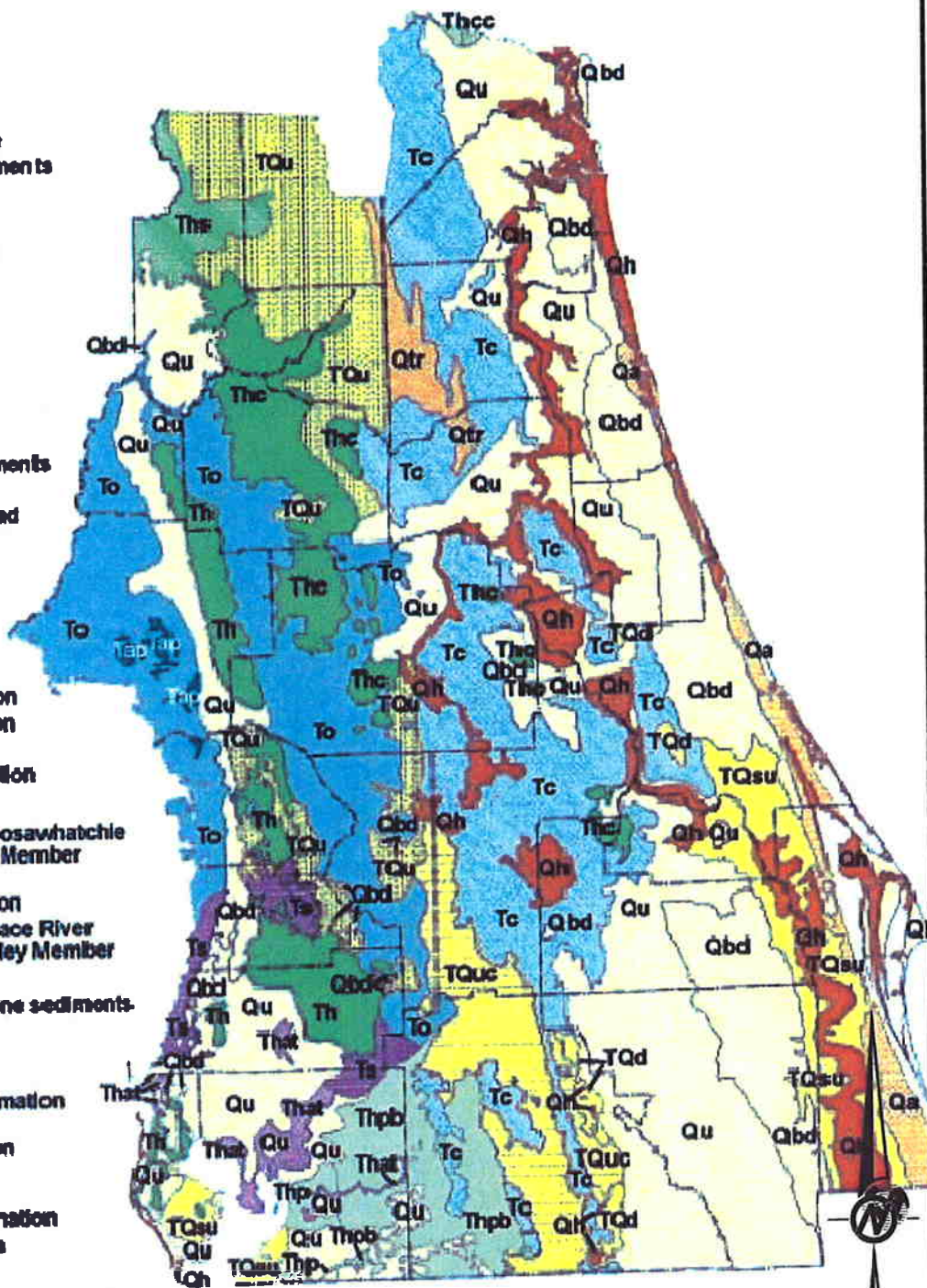
Tsm Suwannee Limestone - Marianna Limestone undifferentiated

Eocene

Tre Residuum on Eocene sediments

To Ocala Limestone

Tap Avon Park Formation



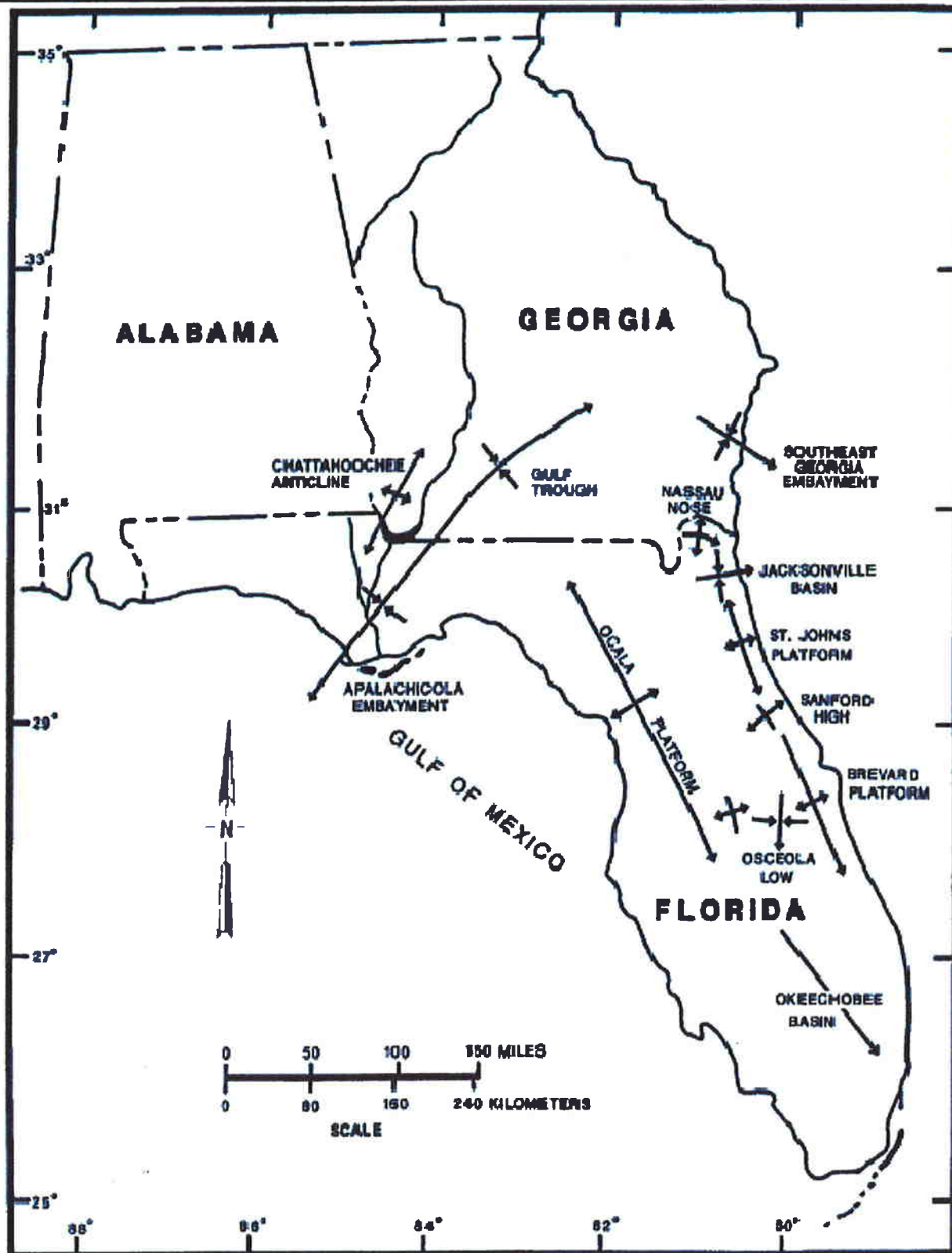
PROJECT	PROGRESS ENERGY - FLORIDA CRYSTAL RIVER UNIT 3 POWER UPRATE PROJECT CITRUS COUNTY, FLORIDA			
TITLE	NORTHERN PENINSULA GEOLOGIC MAP			
PROJECT No.	073-89531	FILE No.	07389531B004	
DESIGN	MEF	04/24/07	SCALE	AS SHOWN REV. 0
CADD	GAV	04/24/07		
CHECK	MEF	04/30/07		
REVIEW	MM	04/30/07		



FIGURE 2.3.1-1

REFERENCES

- 1.) FLORIDA GEOLOGICAL SURVEY OPEN FILE REPORT 80, 2001



PROJECT
 PROGRESS ENERGY - FLORIDA
 CRYSTAL RIVER UNIT 3
 POWER UPRATE PROJECT
 CITRUS COUNTY, FLORIDA

TITLE
FLORIDA GEOLOGIC STRUCTURES

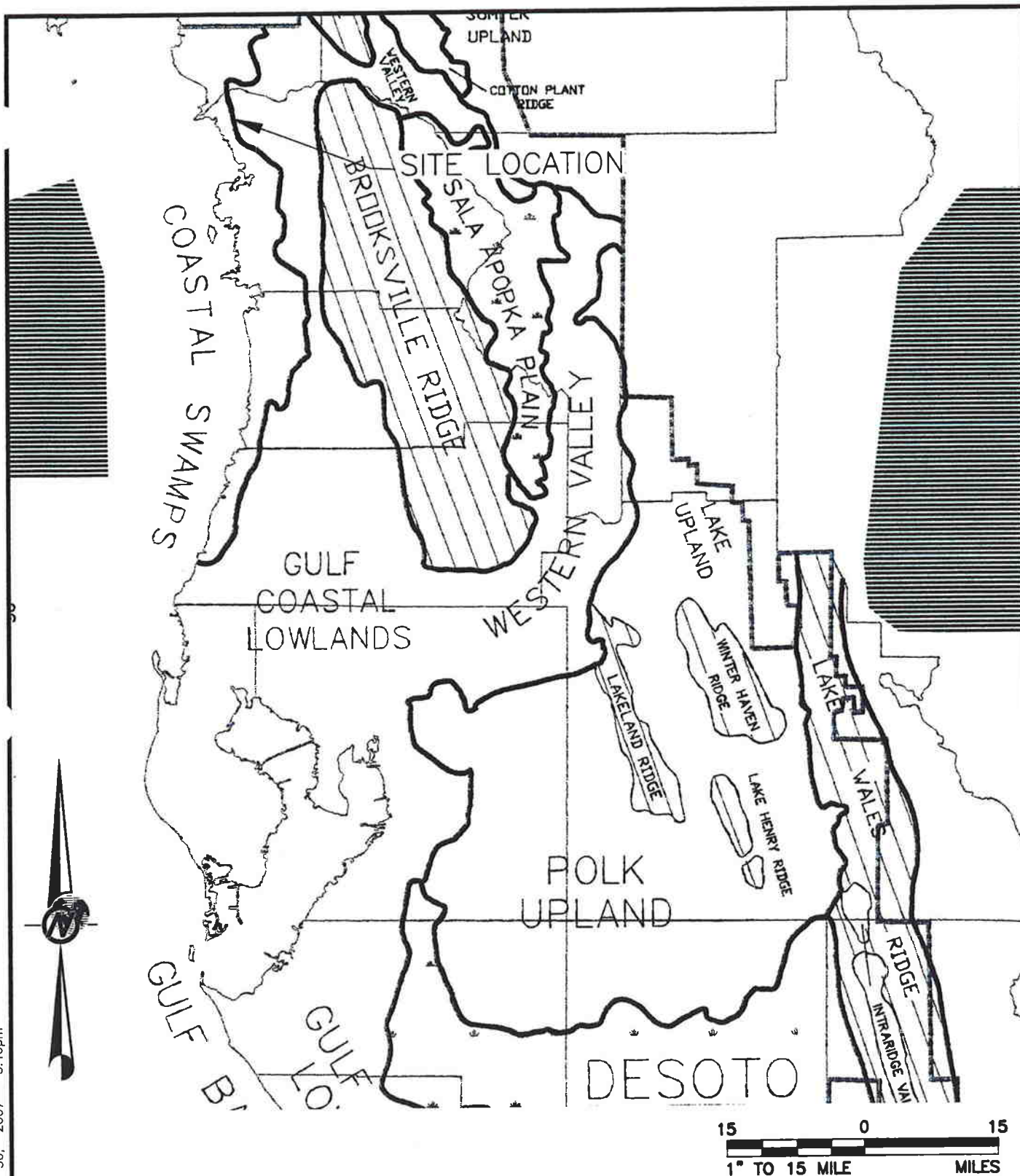
REFERENCES

- 1.) FLORIDA GEOLOGICAL SURVEY OPEN FILE REPORT 80, 2001



PROJECT No.	073-89531	FILE No.	07389531B005
DESIGN	MEF	04/24/07	SCALE AS SHOWN REV. 0
CADD	GAV	04/24/07	
CHECK	MEF	04/30/07	
REVIEW	MM	04/30/07	

FIGURE 2.3.1-2

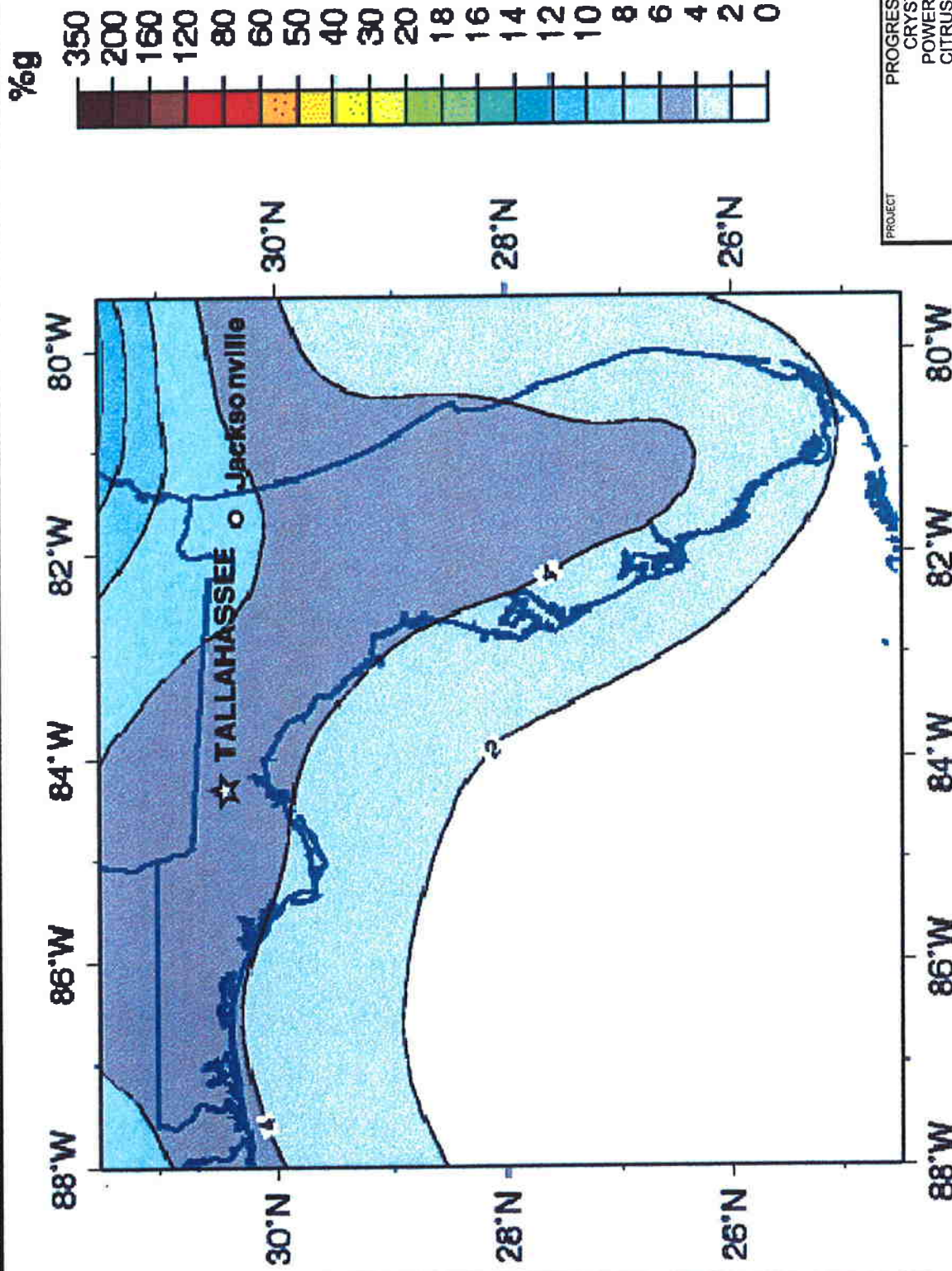


REFERENCES

- 1.) FLORIDA GEOLOGICAL SURVEY GEOLOGICAL OVERVIEW OF CRYSTAL RIVER, FLORIDA 1992.

PROJECT		PROGRESS ENERGY - FLORIDA CRYSTAL RIVER UNIT 3 POWER UPRATE PROJECT CITRUS COUNTY, FLORIDA			
TITLE		GEOMORPHOLOGIC FEATURES OF SWFWMD WATER MANAGEMENT DISTRICT			
 Golder Associates Tampa, Florida		PROJECT No.	073-89531	FILE No.	07389531B006
		DESIGN	MEF	04/24/07	SCALE AS SHOWN
		CADD	GAV	04/27/07	REV. 0
		CHECK	MEF	04/27/07	
		REVIEW	MM	04/30/07	

FIGURE 2.3.1-3



PROJECT
PROGRESS ENERGY - FLORIDA
CRYSTAL RIVER UNIT 3
POWER UPRATE PROJECT
CITRUS COUNTY, FLORIDA

TITLE

**PEAK ACCELERATION WITH 2%
PROBABILITY OF EXCEEDANCE IN 50
YEARS**

 Golder Associates Tampa, Florida		PROJECT No.	073-89531	FILE No.	07389531B007
		DESIGN	MEF	04/24/07	SCALE AS SHOWN REV. 0
		CADD	GAV	04/24/07	
		CHECK	MEF	04/20/07	
		REVIEW	MM	04/30/07	

FIGURE 2.3.1-4

FIGURE 2.3.1-4

REFERENCES

- 1.) NATIONAL SEISMIC HAZARD MAPPING PROJECT SITE:NEHRP
B-C BOUNDARY



1.) FLORIDA GEOLOGICAL SURVEY OPEN FILE REPORT 80,
2001

 Golden Associates Tampa, Florida	PROJECT No.	073--89531	FILE No.	07389531B019	
	DESIGN	MEF	04/30/07	SCALE	AS SHOWN
	CADD	MEF	04/30/07	REV.	0
	CHECK	MM	04/30/07	FIGURE 2.3.1-6	
	REVIEW	MM	04/30/07		

GEOLOGIC CROSS-SECTION B

PROJECT
PROGRESS ENERGY-FLORIDA
CRYSTAL RIVER UNIT 3
POWER UPRATE PROJECT
CITRUS COUNTY, FLORIDA

TITLE 5

LEGEND



SAND



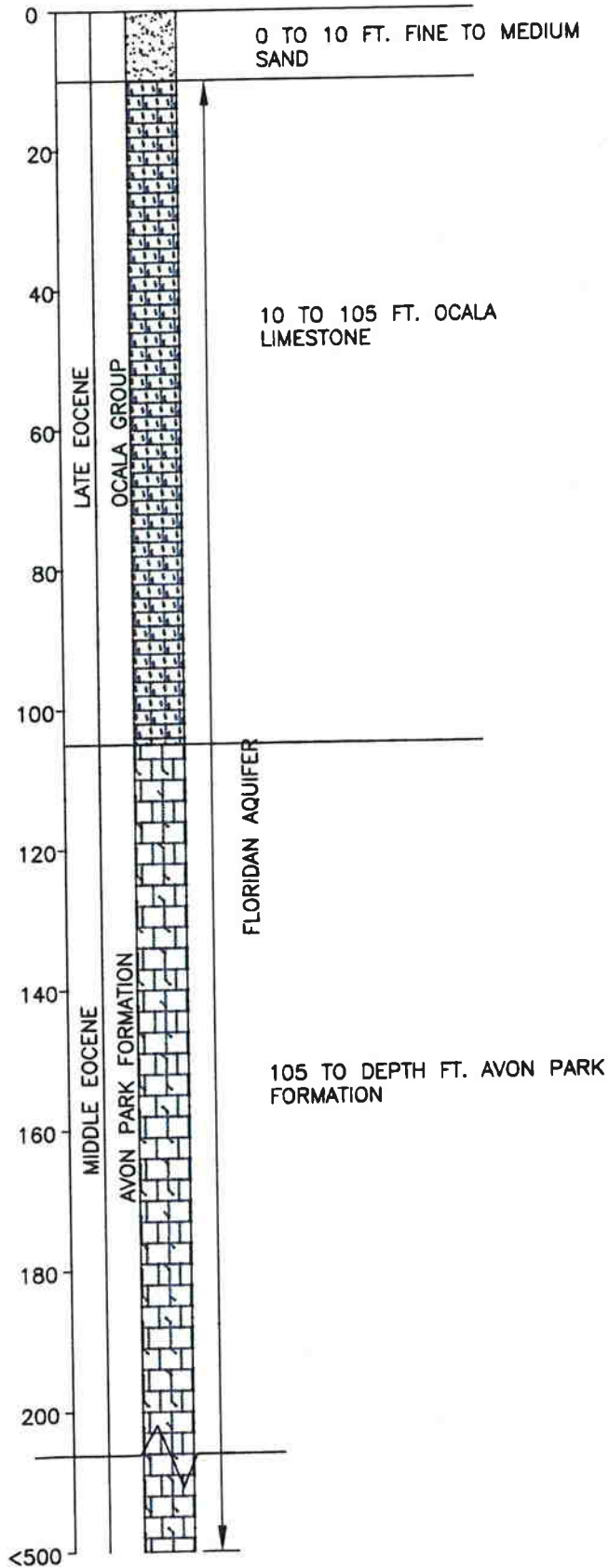
FRACTURED LIMESTONE



LIMESTONE

REFERENCES

- 1.) GERAGHTY AND MILLER, INC, 1977.

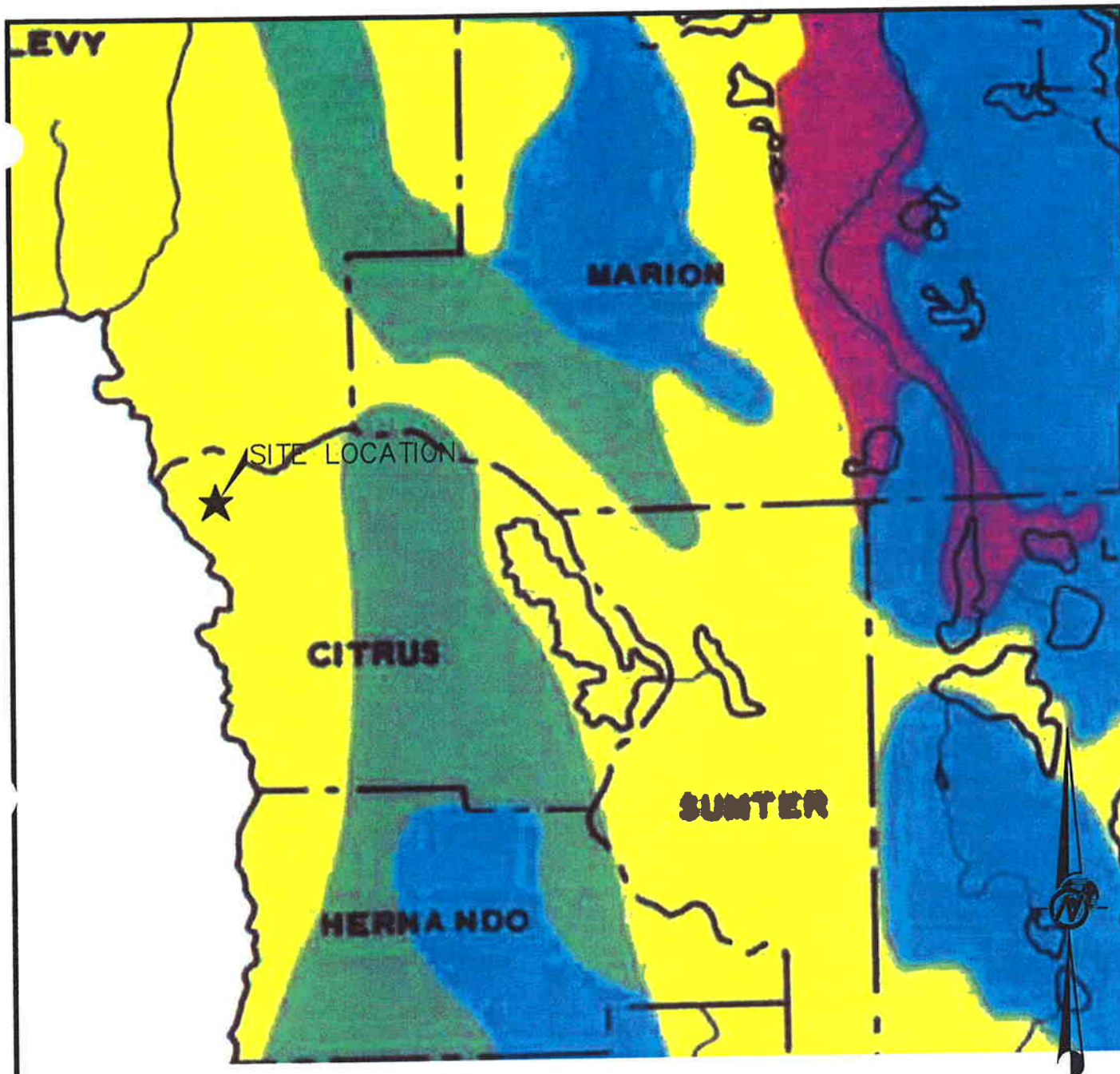


0 00 00 00
SCALE: 1" = 00'

PROJECT		PROGRESS ENERGY-FLORIDA CRYSTAL RIVER UNIT3 POWER UPRATE PROJECT CITRUS COUNTY, FLORIDA	
TITLE		GENERALIZED STRATIGRAPHIC COLUMN	
PROJECT No.		073-89531	FILE No. 0789531B020
DESIGN	MEF	04/30/07	SCALE AS SHOWN REV. 0
CADD	MEF	04/30/07	
CHECK	MM	04/30/07	
REVIEW	MM	04/30/07	



FIGURE 2.3.1-7



LEGEND

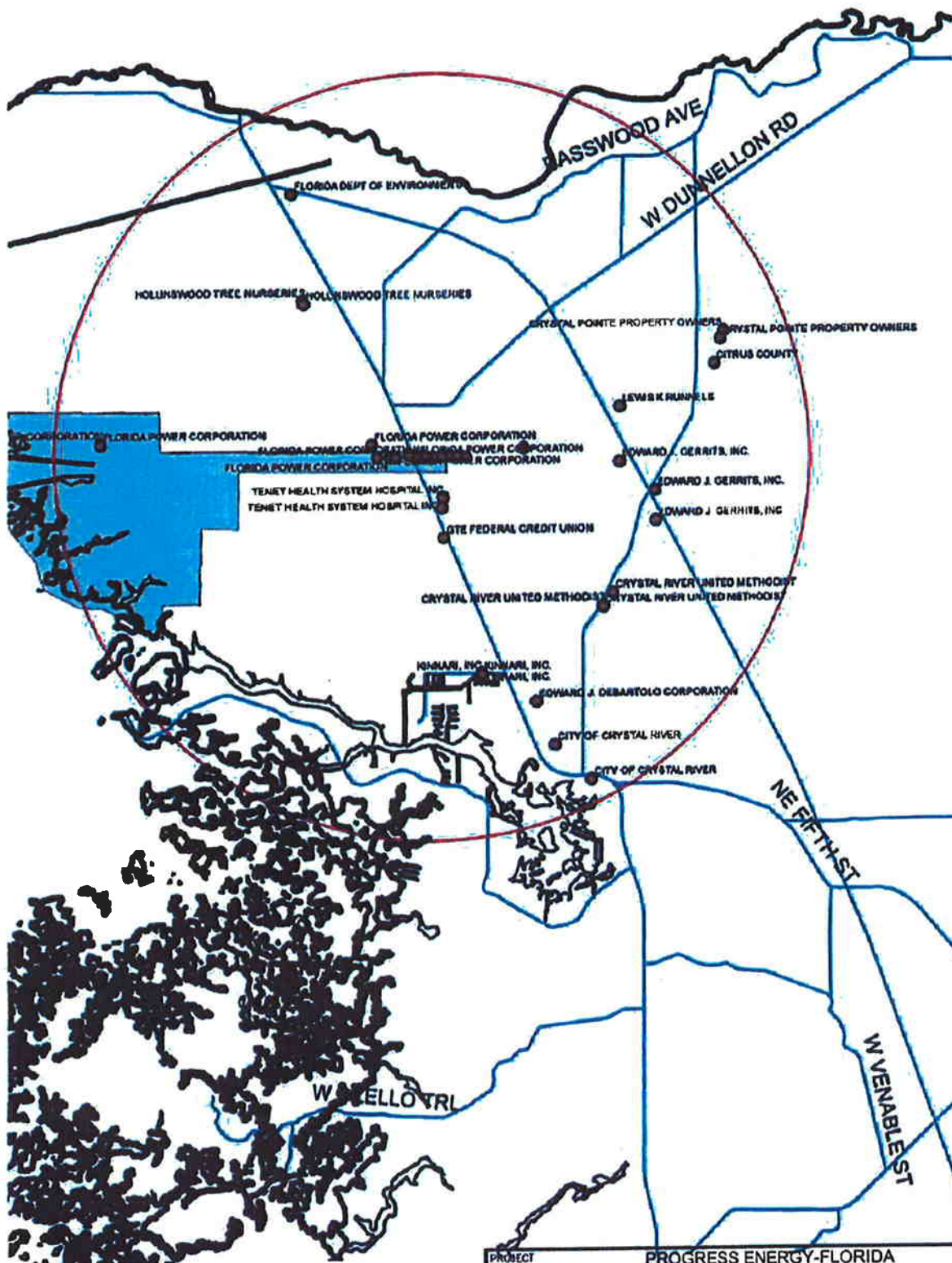
- AREA I. BARE OR THINLY COVERED LIMESTONE**
Sinkholes are few, generally shallow and broad, and develop gradually. Solution sinkholes dominate
- AREA II. COVER IS 30 TO 200 FEET THICK**
Consists mainly of incohesive and permeable sand. Sinkholes are few, shallow, of small diameter, and develop gradually. Cover-subsidence sinkholes dominate
- AREA III. COVER IS 30 TO 200 FEET THICK**
Consists mainly of cohesive clayey sediments of low permeability. Sinkholes are most numerous, of varying size, and develop abruptly. Cover-collapse sinkholes dominate
- AREA IV. COVER IS MORE THAN 200 FEET THICK**
Consists of cohesive sediments interlayered with discontinuous carbonate beds. Sinkholes are very few, but several large diameter, deep sinkholes occur. Cover-collapse sinkholes dominate.



REFERENCES

1.) FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION
MAP SERIES 110

PROJECT		PROGRESS ENERGY - FLORIDA CRYSTAL RIVER UNIT 3 POWER UPRATE PROJECT CITRUS COUNTY, FLORIDA	
TITLE		SINKHOLE TYPE, DEVELOPMENT AND DISTRIBUTION IN FLORIDA MAP	
 Golder Associates Tampa, Florida		PROJECT No. 073-89531	FILE No. 07389531B017
		DESIGN MEF 04/24/07	SCALE AS SHOWN REV. 0
		CADD GAV 04/24/07	
		CHECK MM 04/30/07	
		REVIEW MM 04/30/07	
		FIGURE 2.3.2-1	

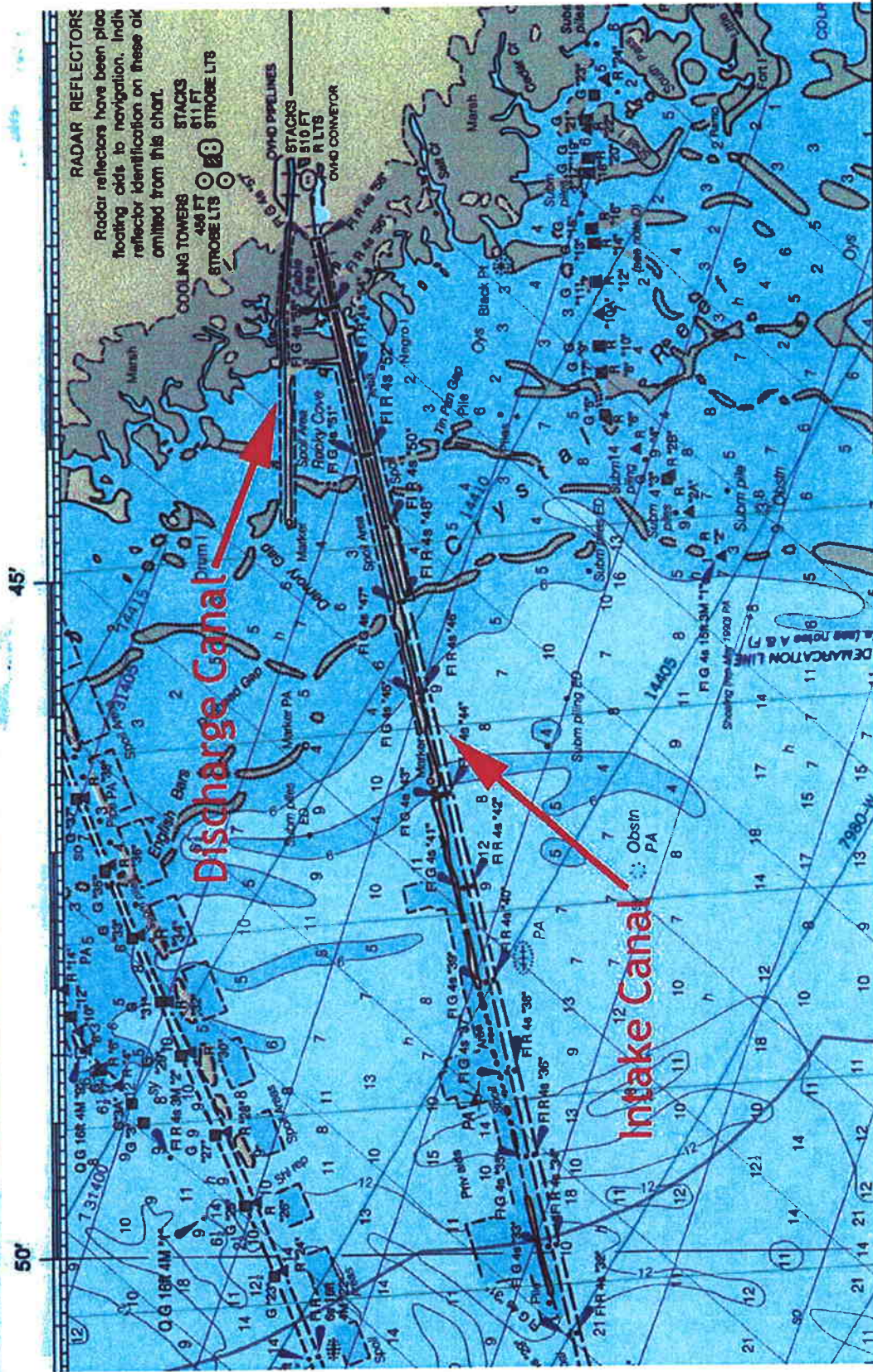


REFERENCES

- 1.) PROGRESS ENERGY FLORIDA, WUP APPLICATION, 2006

PROJECT		PROGRESS ENERGY-FLORIDA CRYSTAL RIVER UNIT3 POWER UPRATE PROJECT CITRUS COUNTY, FLORIDA	
TITLE		SWFWMD PERMITTED WATER USE WELLS WITHIN 5 MILES OF CREC	
PROJECT No. 073-89531		FILE No. 0789531B028	
DESIGN	MEF	05/21/07	SCALE AS SHOWN
CADD	MEF	05/21/07	REV. 0
CHECK	MM	05/21/07	FIGURE 2.3.3-1
REVIEW	MM	05/21/07	





PROJECT
PROGRESS ENERGY-FLORIDA
CRYSTAL RIVER UNIT 3
POWER UPRATE PROJECT
CITRUS COUNTY, FLORIDA

CREC INTAKE AND DISCHARGE CANALS

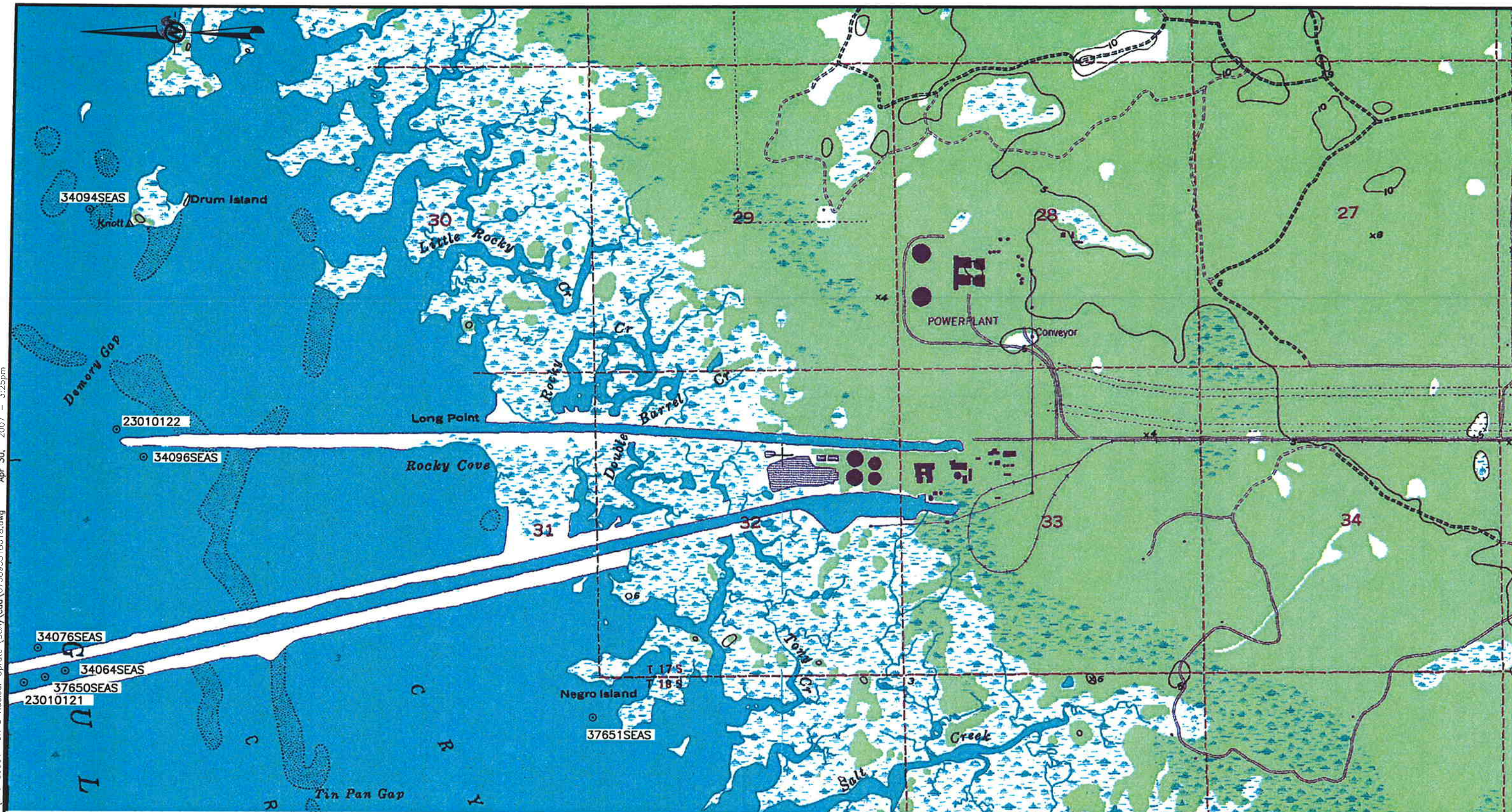
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	CHECK	MM	04/30/07	
	REVIEW	MM	04/30/07	

FIGURE 2.3.4-1

REFERENCES

- ### 1.) NOAA NAUTICAL CHART

Drawing file: F:\PROJECTS\2007 PROJ\073-89531 CR 3 Nuclear Uprate (SCA)\07389531B018.dwg Apr 30, 2007 - 3:25pm



REFERENCES

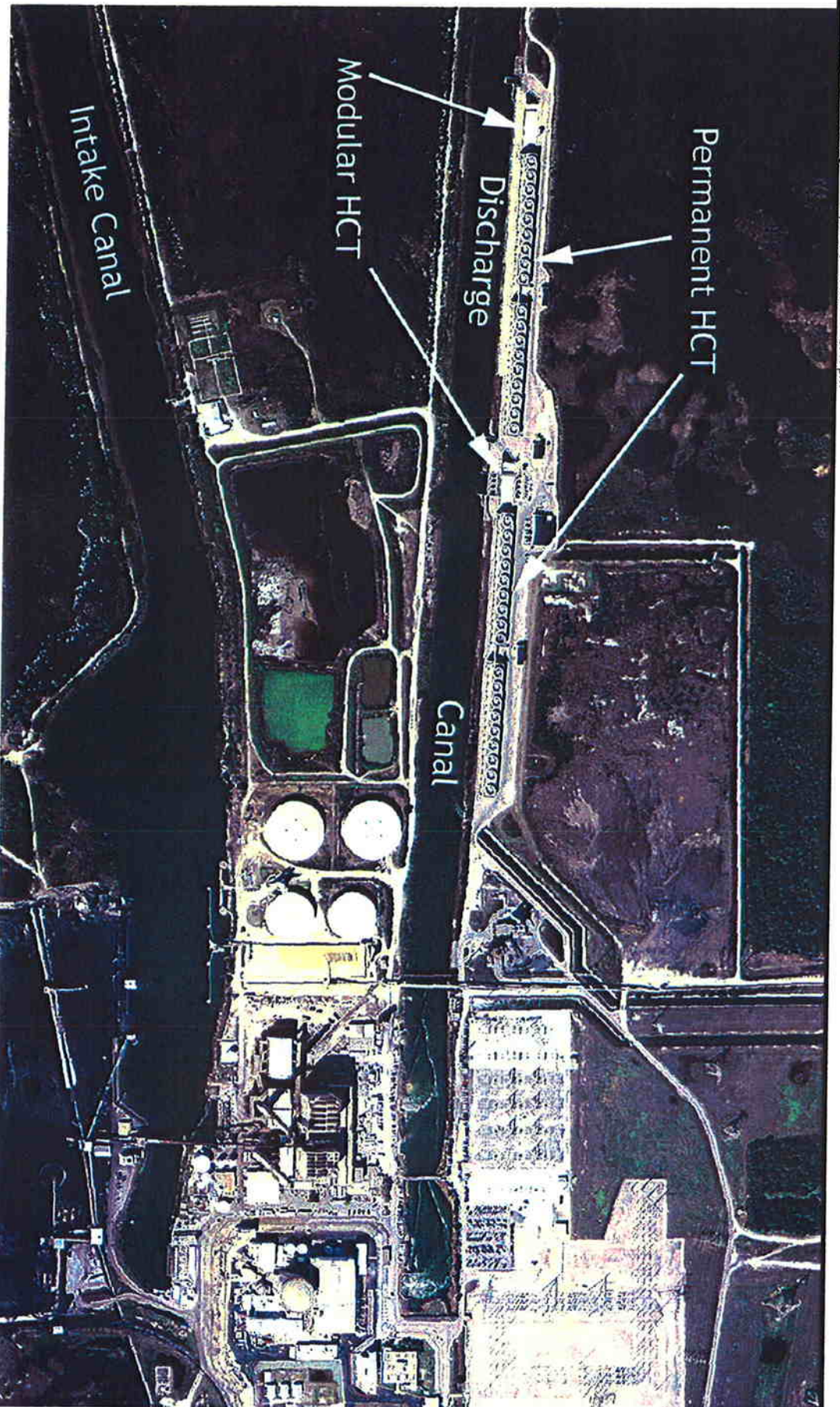
- 1.) USGS 7.5 MIN DRG (FLORIDA)
RED LEVEL

LEGEND

- CRYSTAL BAY WATER QUALITY STATION

0 2,500 5,000
SCALE: 1" = 5,000'

PROJECT		PROGRESS ENERGY - FLORIDA CRYSTAL RIVER UNIT 3 POWER UPRATE PROJECT CITRUS COUNTY, FL			
TITLE		WATER QUALITY STATIONS			
 Golder Associates Tampa, Florida		PROJECT No.	073-89531	FILE No.	07389531B018
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		CHECK	MEF	04/27/07	
		REVIEW	NM	04/30/07	
		FIGURE 2.3.4-2			



**EXISTING CR 1,2,3 HEAT DISSIPATION
SYSTEM FEATURES**

PROJECT
PROGRESS ENERGY-FLORIDA
CRYSTAL RIVER UNIT 3
POWER UPRATE PROJECT
CITRUS COUNTY, FLORIDA

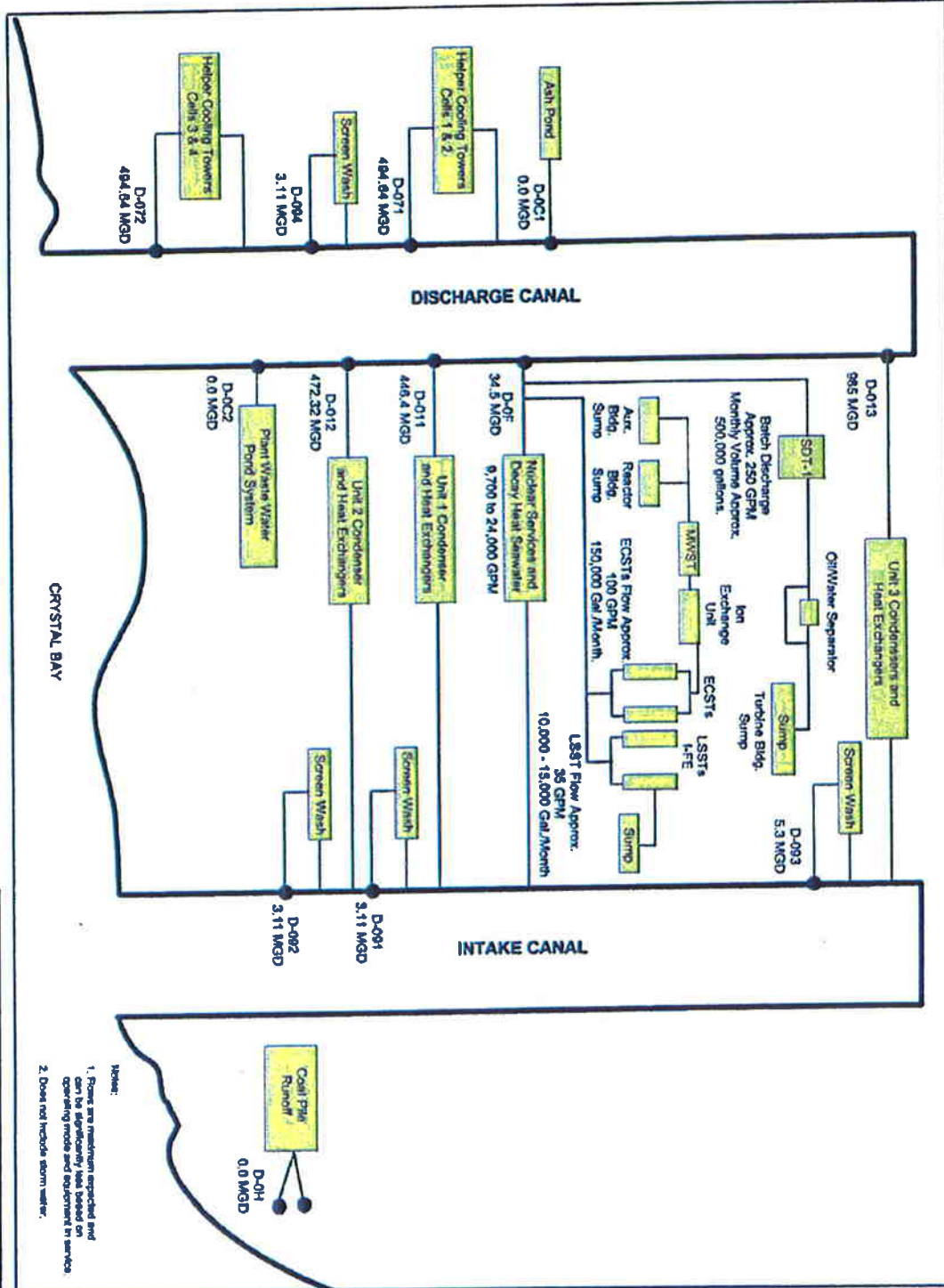
TITLE



**Golder
Associates**
Tampa, Florida

PROJECT No.	073-89531	FILE No.	07389531B025
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CADD	MEF	04/30/07	REV. 0
CHECK	MM	04/30/07	
REVIEW	MM	04/30/07	

FIGURE 2.3.4-3



REFERENCES

1.) NPDES FLOW DIAGRAM #FL0000159

EXISTING CR 1,2,3 WATER USE FLOW DIAGRAM

PROJECT

PROGRESS ENERGY-FLORIDA
CRYSTAL RIVER UNIT 3
POWER UPGRATE PROJECT
CITRUS COUNTY, FLORIDA

TITLE

EXISTING CR 1,2,3 WATER USE FLOW
DIAGRAM



PROJECT No.

073-89531

FILE No.

07389531B022

DESIGN	HE	04/30/07	SCALE	AS SHOWN	REV.	0
CADD	MEF	04/30/07				
CHECK	MM	04/30/07				
REVIEW	MM	04/30/07				

FIGURE 2.3.4.4

Figure 2.3.4-5 Once Through Cooling Water Flow

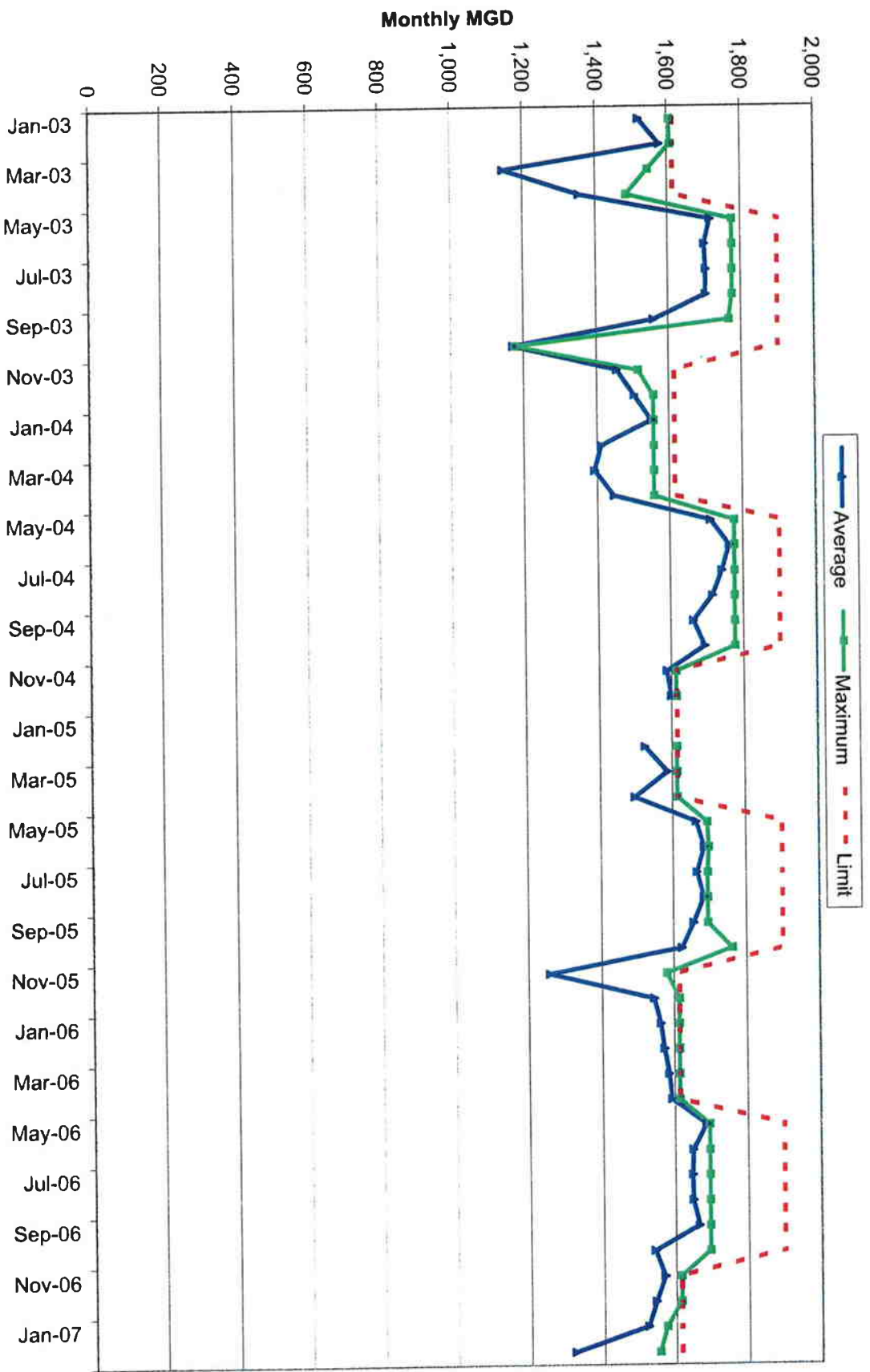


Figure 2.3.4-6 Total Dissolved Solids in the Discharge Channel

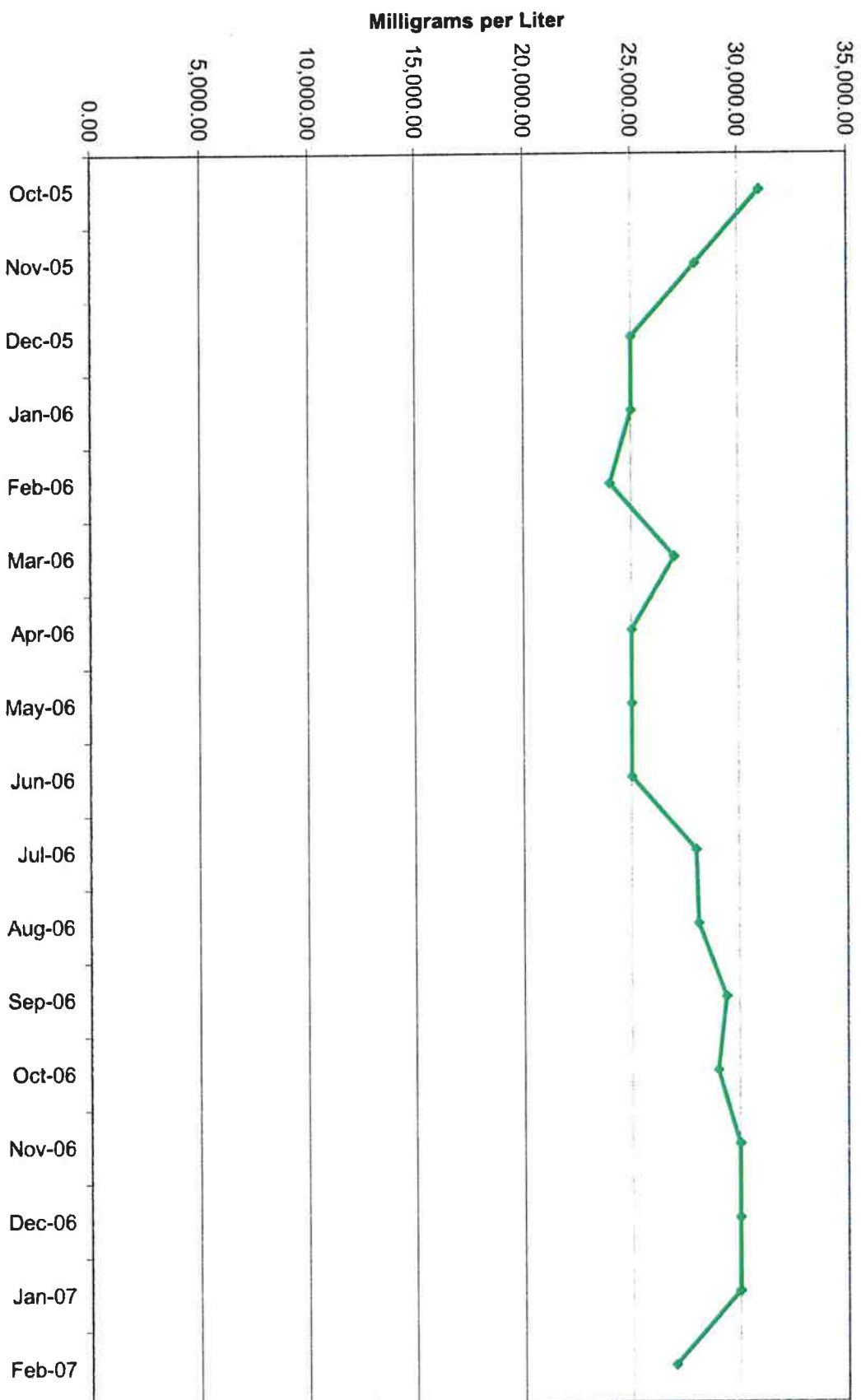


Figure 2.3.4-7 Once Through Cooling Water Temperatures

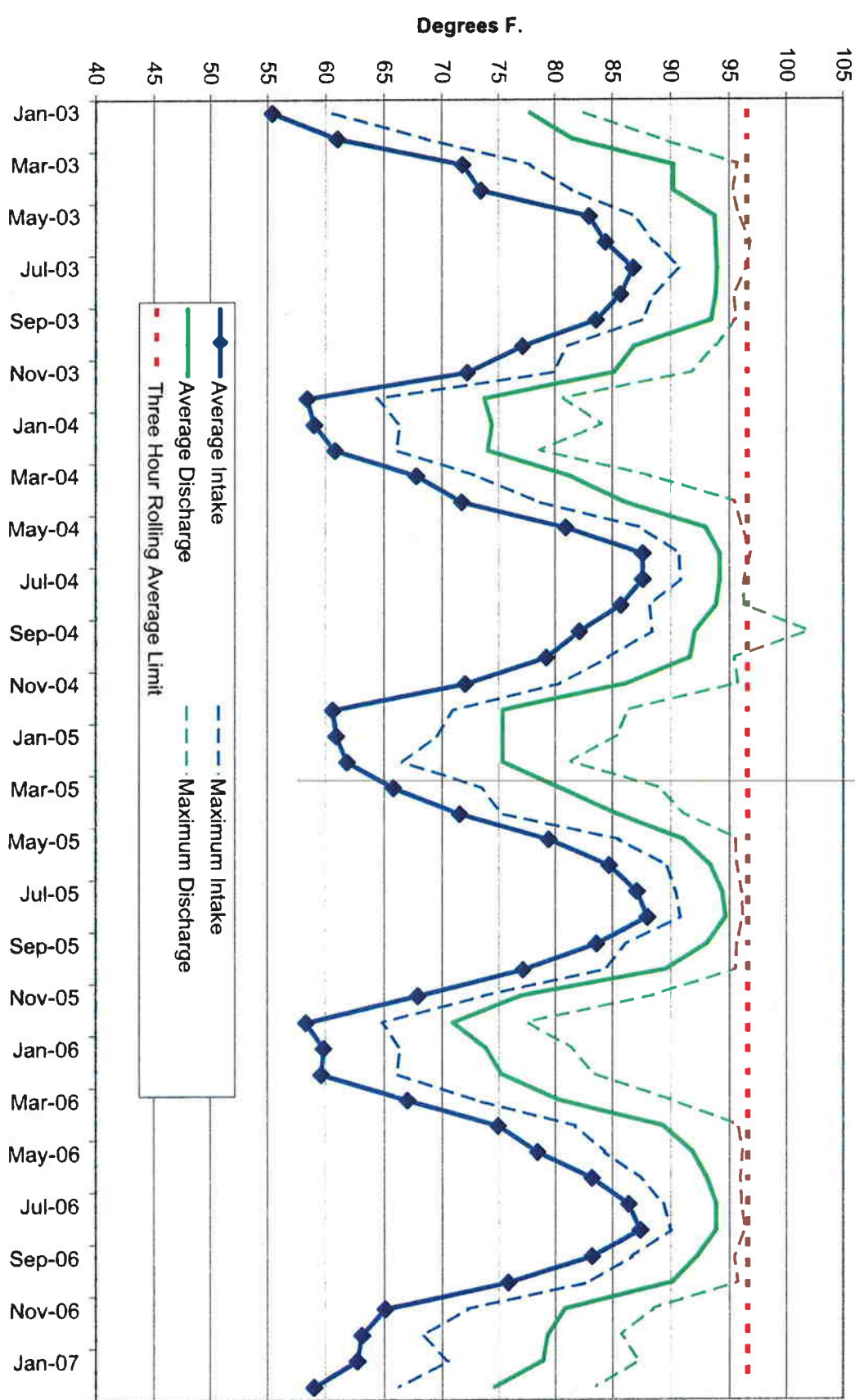
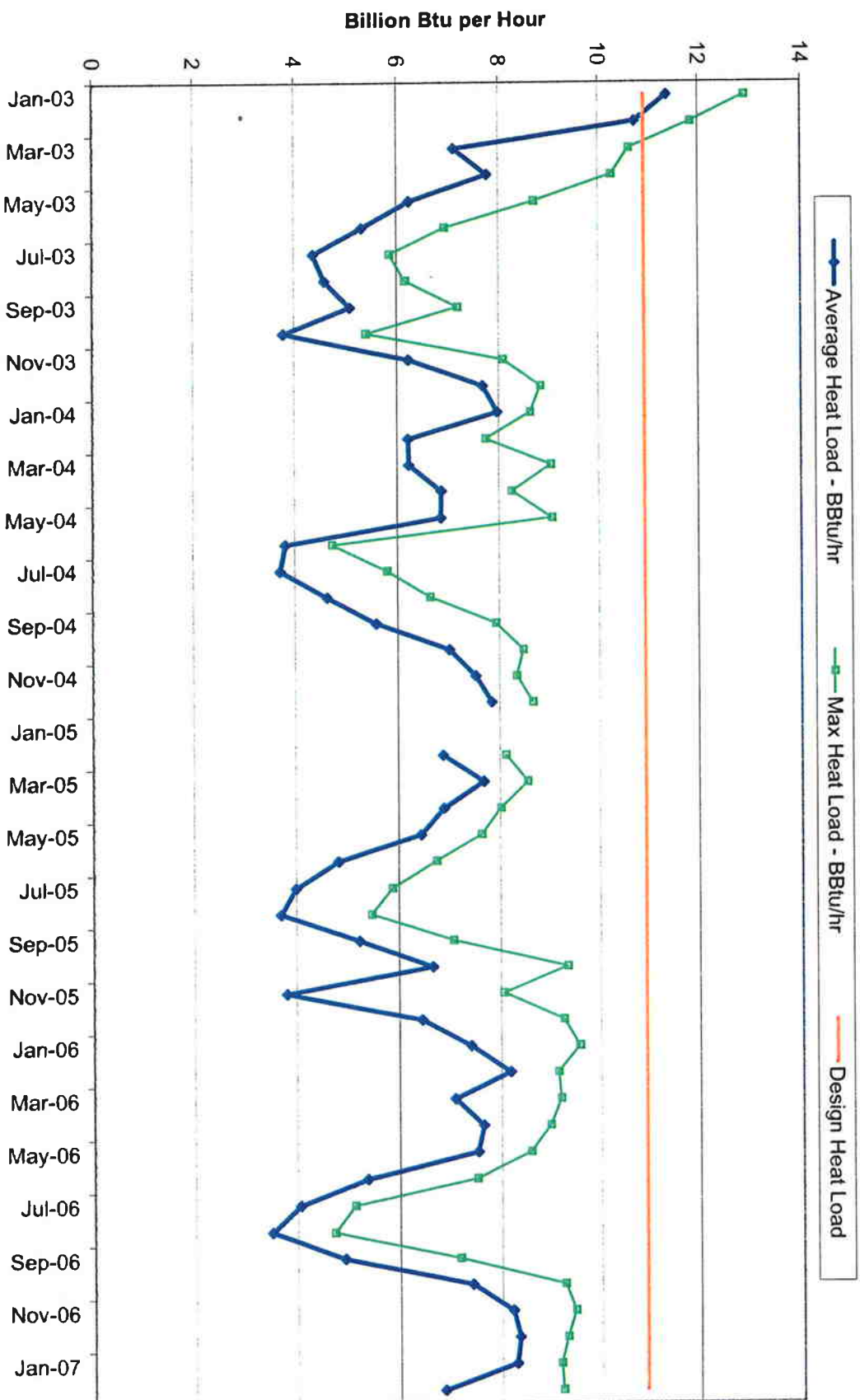
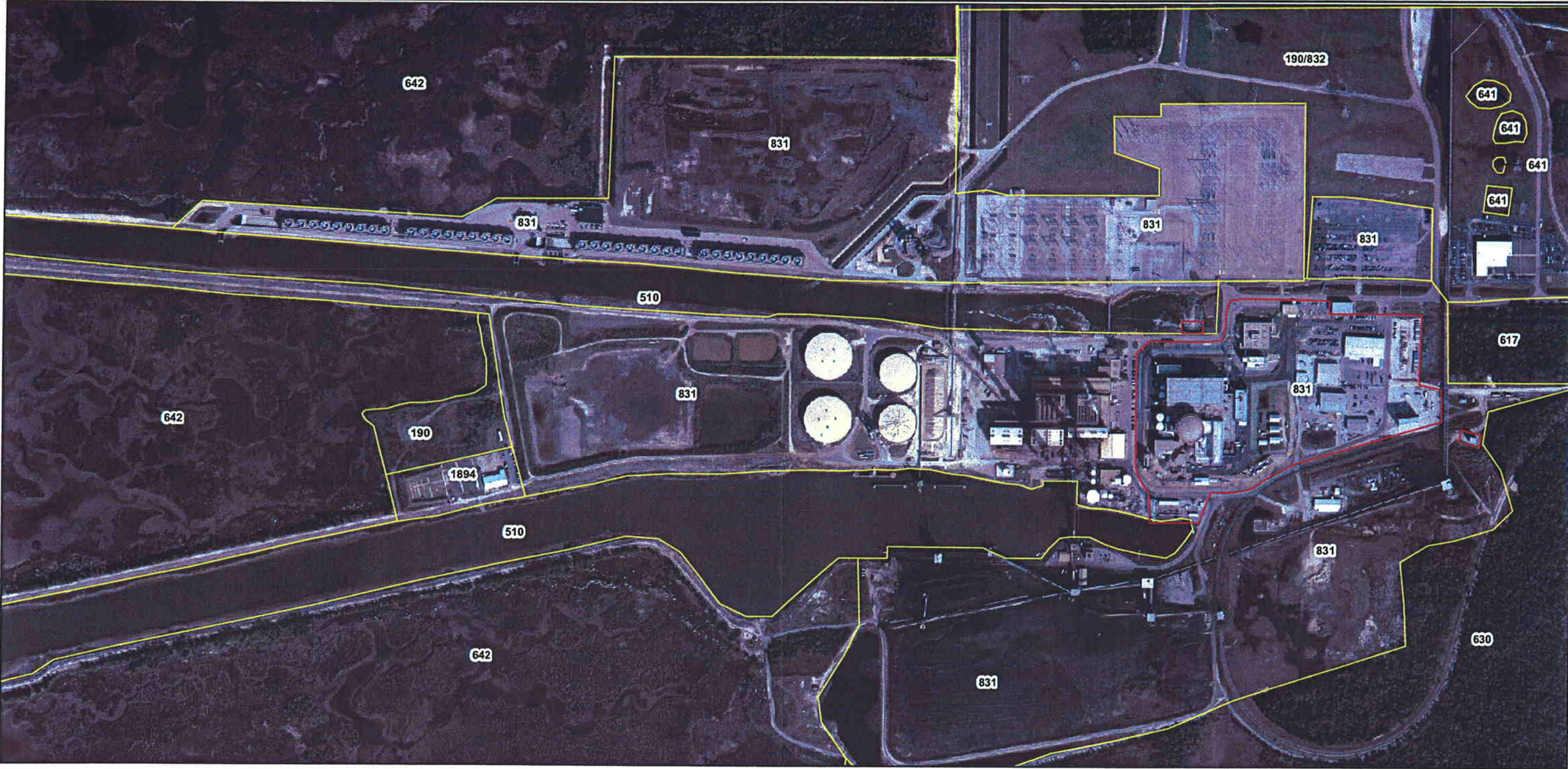


Figure 2.3.4-8 Discharge Canal Heat Load





LEGEND

- Crystal River Nuclear Unit 3 Site Location
- FLUCFCS

REFERENCE

1. 2006 Southwest Florida Water Management Aerial.
2. Crystal River Unit 3 Site Location by Golder Associates Inc.
3. FLUCFCS by Golder Associates Inc.

FLUCFCS	Description
1894	Shooting Range
190	Open Land
190/832	Open Land/Electric Power Transmission
510	Intake/Discharge Canals
617	Mixed Wetland Hardwoods
630	Wetland Forested Mixed
641	Freshwater Marsh
642	Saltwater Marsh
831	Electric Power Facilities

5000500

SCALE 1:6,000

N

PROJECT

PROGRESS ENERGY FLORIDA, CRYSTAL RIVER
NUCLEAR UNIT 3 UPRATE PROJECT

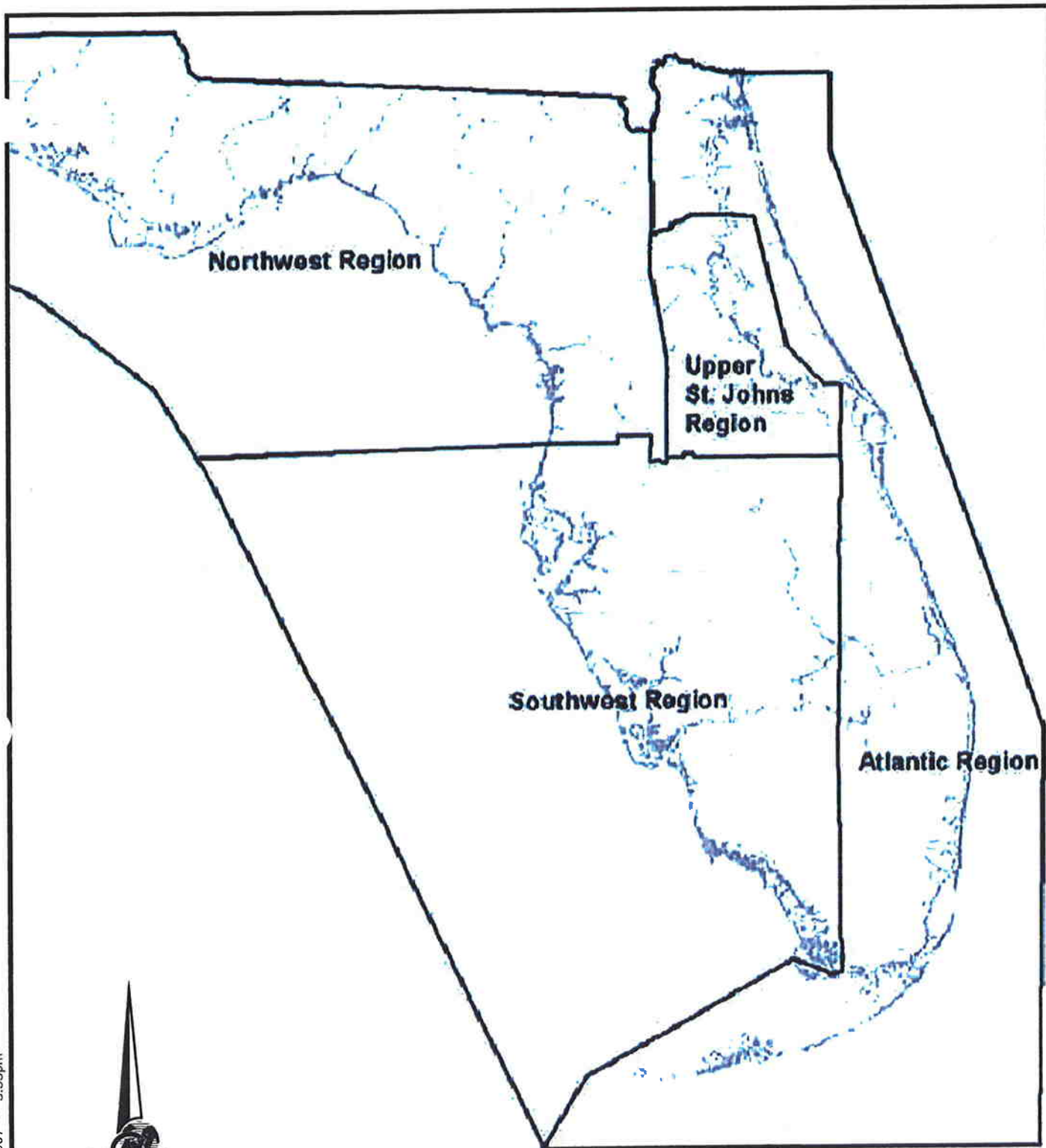
TITLE

FLORIDA LAND USE, COVER, AND FORMS
CLASSIFICATION SYSTEM MAP

Golder
Associates
Tampa, Florida

PROJECT No.	073-89531	SCALE AS SHOWN	REV. 0
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GIS	JG June 01, 2007		
CHECK	KG June 01, 2007		
REVIEW	MM June 01, 2007		

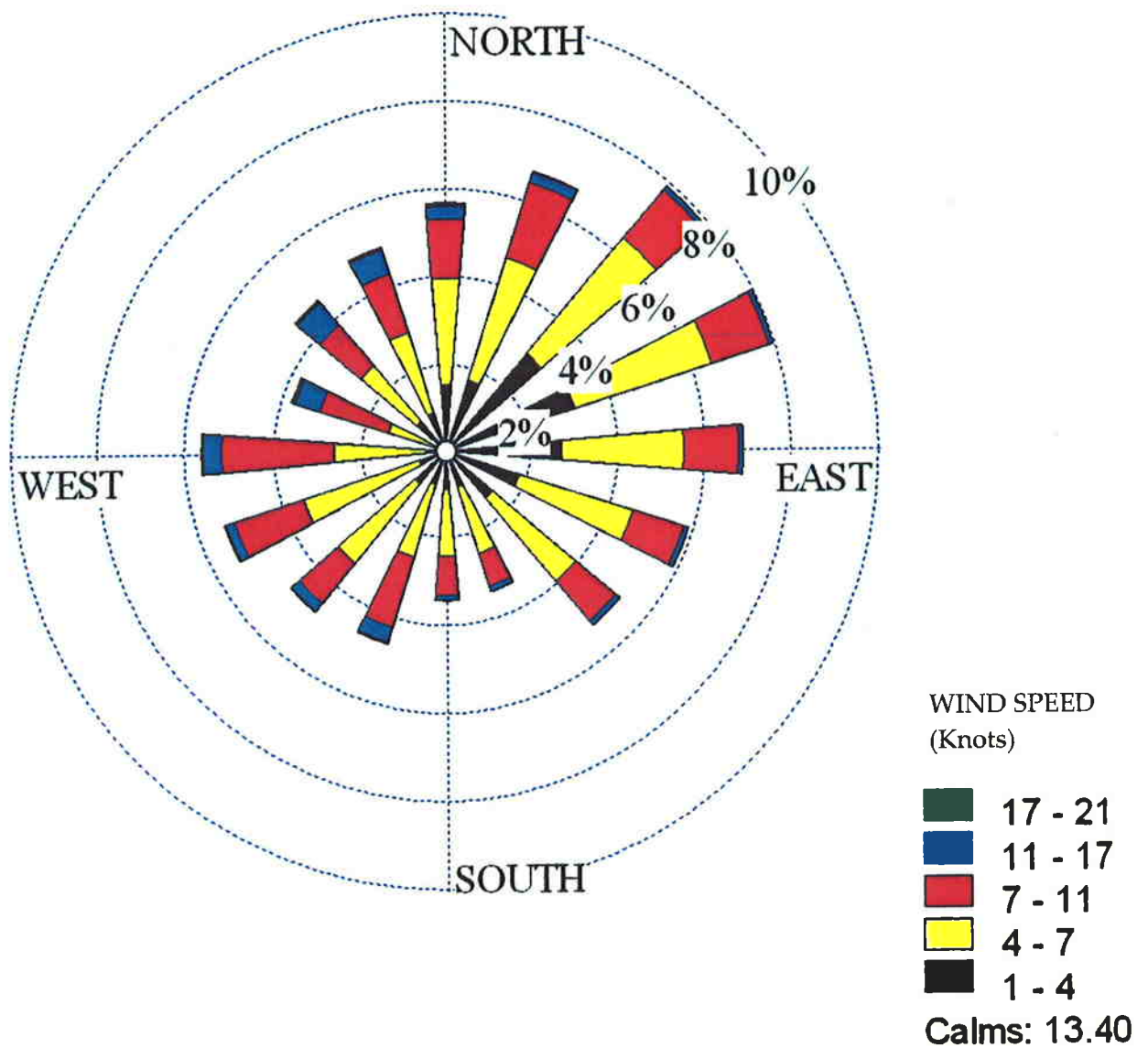
FIGURE
2.3.5-1



REFERENCES

- 1.) USFWS 2001.

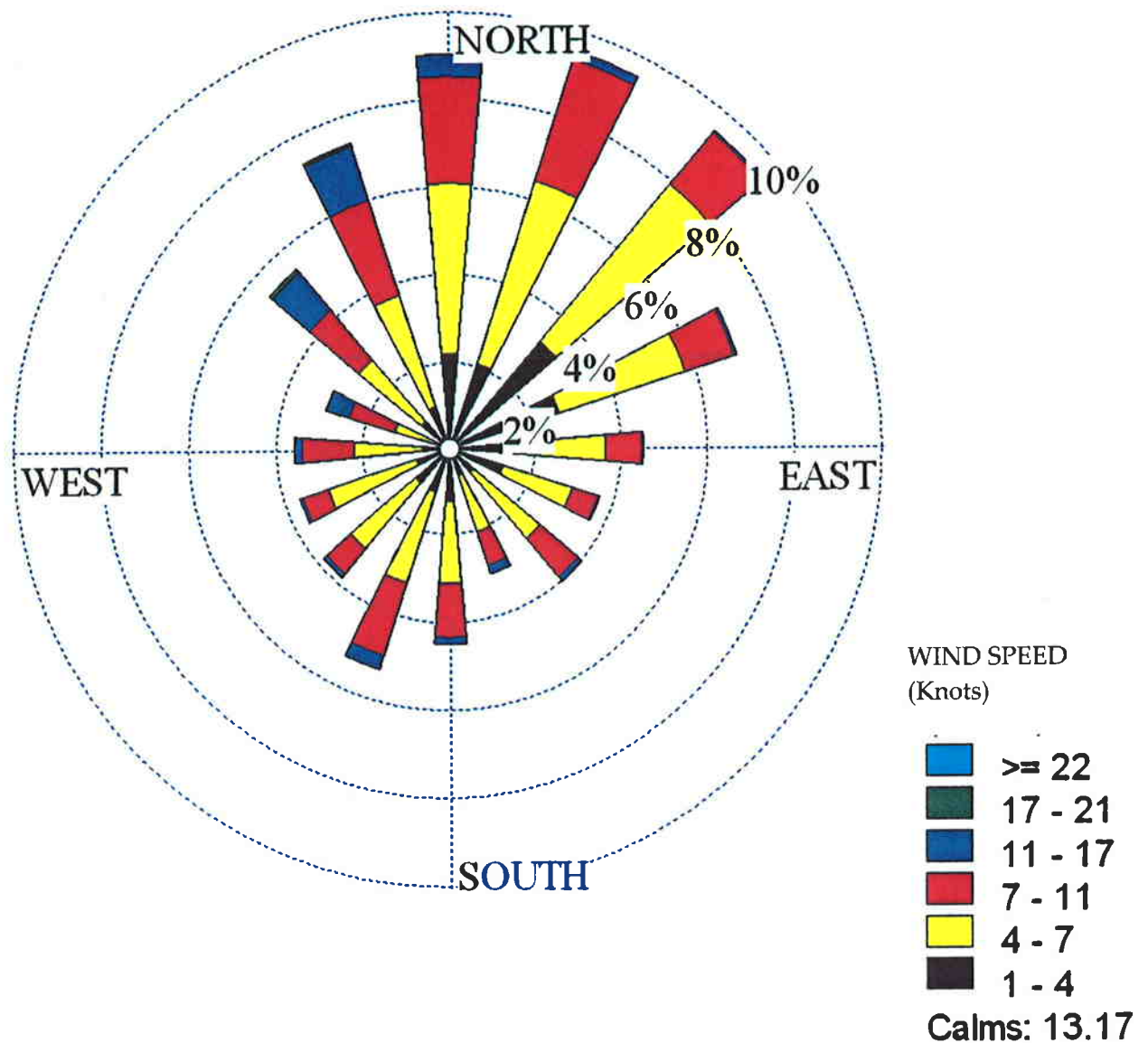
PROJECT		PROGRESS ENERGY-FLORIDA CRYSTAL RIVER UNIT3 POWER UPRATE PROJECT CITRUS COUNTY, FLORIDA				
TITLE		SUBPOPULATIONS OF THE MANATEE IN FLORIDA				
 Golder Associates Tampa, Florida	PROJECT No.		073-89531	FILE No.		0789531B026
	DESIGN	AP	04/30/07	SCALE	AS SHOWN	REV. 0
	CADD	MEF	04/30/07	FIGURE 2.3.6-1		
	CHECK	MM	04/30/07			
	REVIEW	MM	04/30/07			



Average Wind Speed	5.73 Knots
Calm Winds	13.4 %
Note: 1 knot = 1.151 miles per hour.	

Figure 2.3.7-1.
Annual Wind Rose for 2001 to 2005
Tampa International Airport (Station No. 12842)

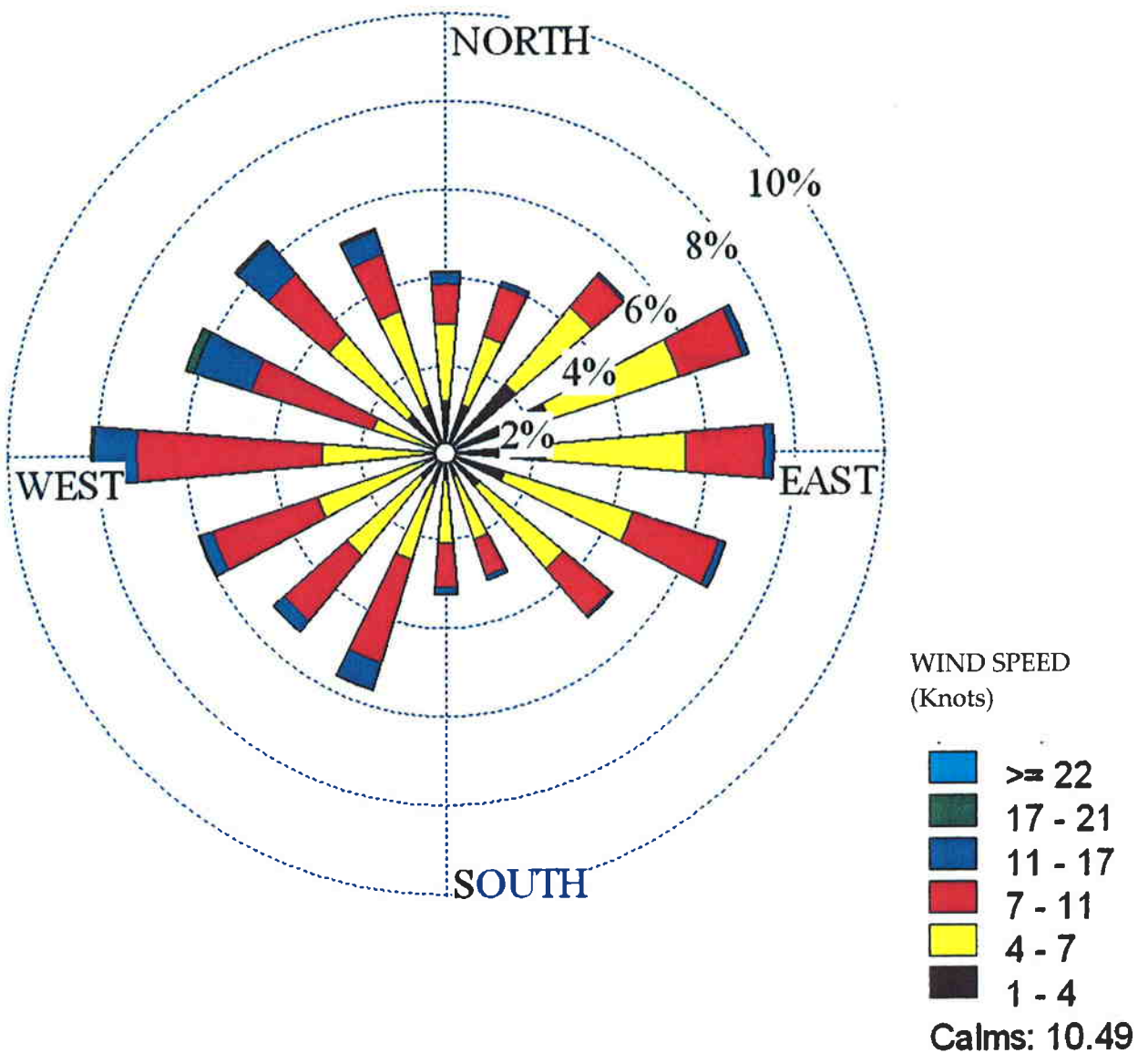
Source: National Climatic Data Center. 2001-2005.



Average Wind Speed	5.74 Knots
Calm Winds	13.17 %
Note: 1 knot = 1.151 miles per hour.	

Figure 2.3.7-2.
 Winter Wind Rose for 2001 to 2005
 Tampa International Airport (Station No. 12842)

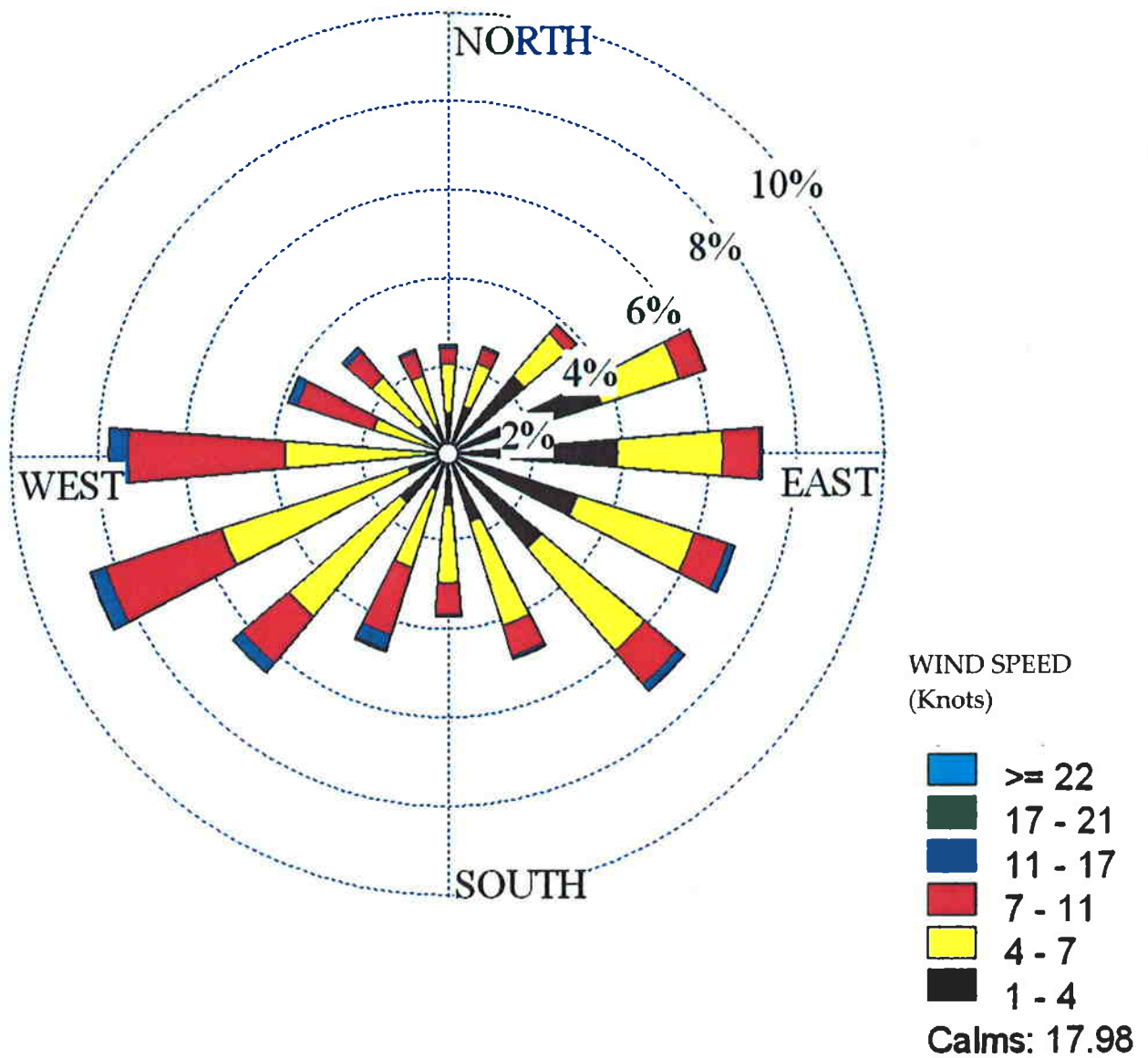
Source: National Climatic Data Center. 2001-2005.



Average Wind Speed	6.39 Knots
Calm Winds	10.49 %
Note: 1 knot = 1.151 miles per hour.	

Figure 2.3.7-3.
Spring Wind Rose for 2001 to 2005
Tampa International Airport (Station No. 12842)

Source: National Climatic Data Center, 2001-2005.



Average Wind Speed 4.98 Knots

Calm Winds 17.98 %

Note: 1 knot = 1.151 miles per hour.

Figure 2.3.7-4.
Summer Wind Rose for 2001 to 2005
Tampa International Airport (Station No. 12842)

Source: National Climatic Data Center. 2001-2005.

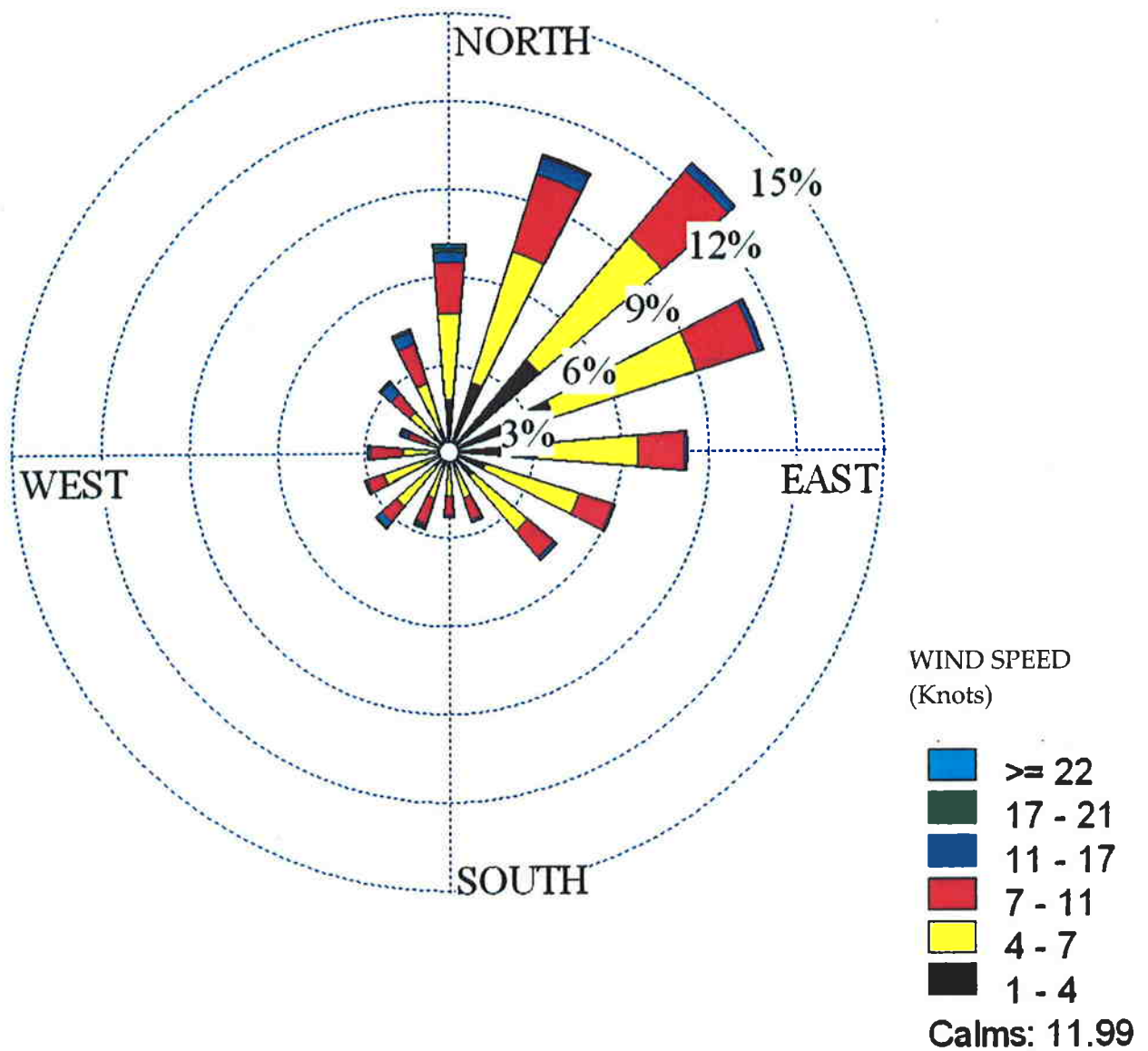
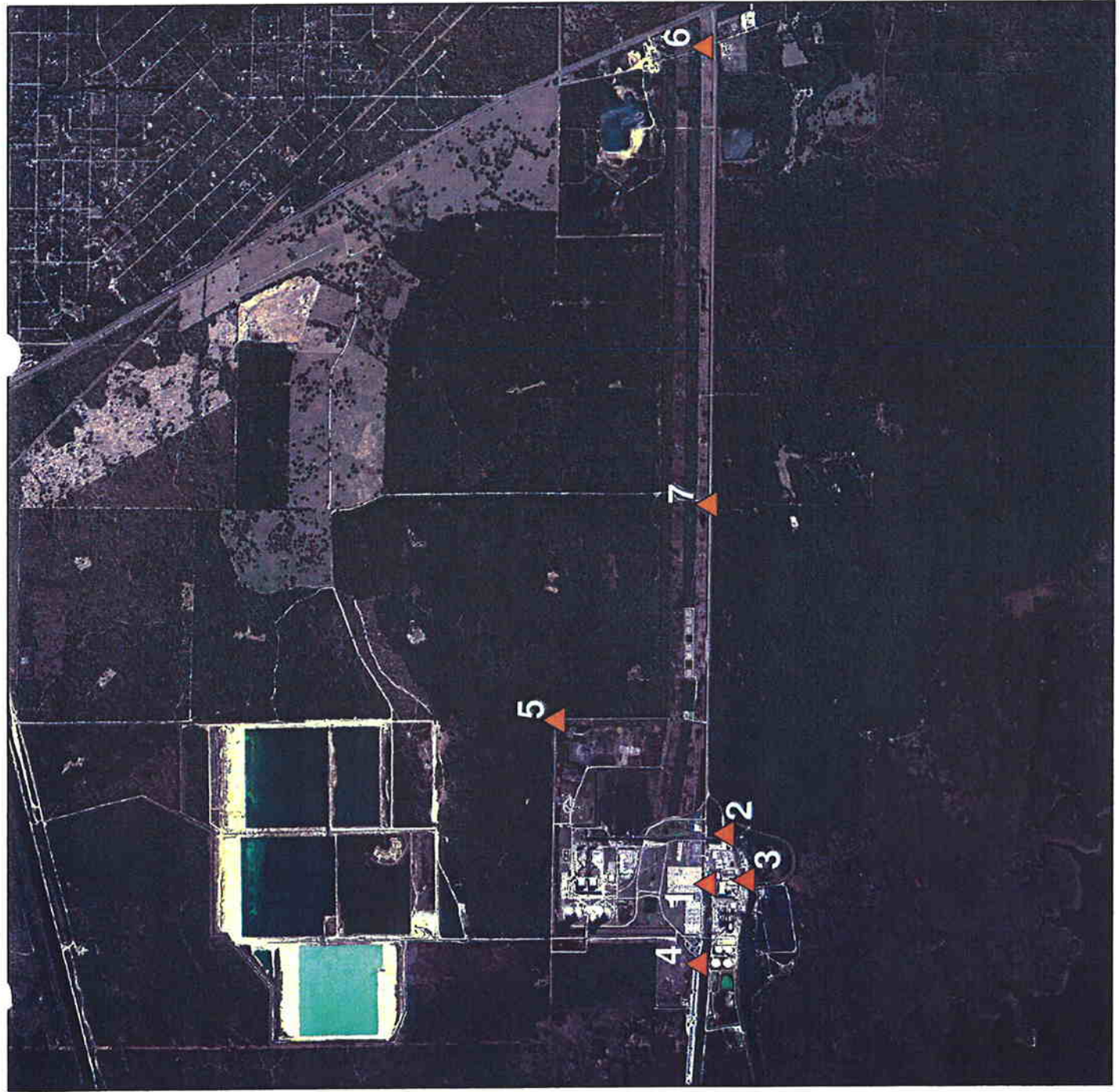


Figure 2.3.7-5.
Fall Wind Rose for 2001 to 2005
Tampa International Airport (Station No. 12842)

Source: National Climatic Data Center. 2001-2005.



LEGEND

▲ Noise Monitoring Locations

REFERENCE

Projection: Transverse Mercator Datum: NAD 1983 Coordinate System: UTM Zone 17N



PROJECT

Crystal River Power Plant

TITLE

Noise Monitoring Locations

 Golder Associates Gainesville, Florida	PROJECT No. 07-0501	SCALE AS SHOWN	REV. 0
	DESIGN: JH	03 May 2007	
	QA: JH	03 May 2007	
	REVIEW: JH	03 May 2007	

Figure 2.3.8-1

3.0 THE PLANT AND DIRECTLY ASSOCIATED FACILITIES

3.1 Background

PEF plans to add 180 MW of electrical generation resources to its system in order to continue to provide reliable, safe, and cost-effective service to its customers. The CR3 Uprate Project is an innovative application of technological advancements and efficiencies that will increase the power output of the plant approximately 180 MW, from 900 MW to 1,080 MW. The extra power output will result from improving the performance of the steam turbine and from using more highly enriched fuel which will result in increased thermal MWs produced in the reactor core. The additional heat will raise the temperature exchange between the primary and secondary systems, creating more steam for turning the turbines.

To safely proceed with the uprate, modifications to supporting equipment are necessary to accommodate the additional heat created from the more highly enriched fuel and to accommodate all designed conditions in the plant.

The uprate project will occur over two phases. The first phase (Phase I) will occur during a 2009 planned refueling outage and scheduled steam generator replacement. The improvement to the turbine line components will increase the efficiency of power production resulting in decreasing consumer costs. The existing steam turbine high-pressure rotor was designed in the 1960s and is a multi-piece assembly which causes more drag than current technology deems necessary. PEF will replace the outdated rotor with current rotor blade technology, a single piece model, which will effectively decrease the drag factor. Replacing the outdated turbine technology will enable the turbines to increase megawatt output by 40 MW with the same steam input.

Phase II will take place during the 2011 planned refueling outage. The second phase will result in an additional 140 MW of power and include alterations that will elevate temperatures within the reactor and the use of the enriched uranium fuel. In order to ensure that fusion reactions inside the core are maintained safely, cooling water flow rates will be increased and adjustments will be made to the safety systems. A larger pumping capacity than currently exists in the water flow system supplying the steam generators is required in order to elevate the flow rate. Therefore, modifications to or replacement of pumps and heat exchangers will occur. In order to determine appropriate replacement and modification needs, an engineering evaluation will be conducted to characterize the most cost effective upgrade necessary for each motor and pump to achieve the optimal flow rate.

3.1.1 Description of Other Onsite Projects

There are a number of projects which are currently being implemented at CR3 over the next several years. Several of the projects are ongoing and are described below as current and base-line conditions and may be referenced throughout the SCA. None of these projects are the subject of this SCA.

- Main step-up transformer replacement. The main step-up transformer will be replaced due to degradation which has led to recent on-line failures which adversely impact plant availability.
- Measurement Uncertainty Recapture. Since 2002, CR3 has been licensed to 2,568 MWt (megawatts thermal) based on maintaining a standard two percent measurement uncertainty margin to the requisite analyses and system evaluations performed at 2,619 MWt. Relatively recent guidance allows a reduction of this margin based on improved instrumentation so the plant can be licensed to operate at a slightly higher power level. The application for this increase was submitted to the NRC on April 25, 2007 to allow a restart from the 2007 outage at this slightly higher power level. This project can be implemented with existing permits and regulatory approvals.
- CR3 License Renewal. The license renewal is a comprehensive assessment of CR3 operations to demonstrate compliance with NRC regulatory requirements. The relicensing process will allow an additional 20 years of plant operation beyond the current CR3 licensed operating period of 40 years. It is anticipated that the License Renewal Application will be submitted to the NRC early in 2009.
- Steam Generator Replacement Project (SGRP). The once-through steam generators will be replaced in 2009 due to long-term degradation that will not support reliable operation to the end of plant life. The project will necessitate the utilization of a number of undisturbed areas for lay-down areas, transportation off-loading and equipment assembly areas. Many of these same areas will also be utilized to support the CR3 Upate Project. The appropriate environmental permits to authorize the disturbance of these areas will be obtained separate from the site certification process.

3.1.2 Description of CR3 Upate Project

The project that triggers the need for this application is power level upgrades scheduled for 2009 through 2011. The most substantial of the plant modifications will be installed during the refueling outages scheduled for 2009 and 2011. While not all the final engineering decisions have been made, the current plans include:

- In 2009, CR3 is planning to refurbish the low pressure turbines and electrical generator. Several main feed-water heat exchangers and main steam re-heaters will be modified or replaced. The net impact of these modifications is a substantially more efficient secondary plant. Thus, while the NRC licensed power level will remain constant; the electrical generation will be increased and the heat released to the environment will be

lessened. The net generation increase from current levels is expected to be approximately 40 MW.

- Leading up to 2011, PEF will seek NRC license changes to allow operation of CR3 at the increased output. It will be necessary to make a large number of smaller, yet substantial, modifications to assure long term reliability of all plant systems at the conditions necessary to support this higher licensed power level. The most environmentally significant of these modifications is an increase in circulating water flow and an increase in discharge temperatures to the existing discharge canal. The higher, licensed power level is currently anticipated to result in a net electrical generation increase of 180 MW above current levels.

3.2 Site Layout

The CREC contains four coal-fired steam electric generating units - CR 1, 2, 4, and 5, and a single nuclear unit - CR3. The CREC is the largest power-producing complex in the state of Florida with a total generating capacity of 3,140 MW. Figure 3.2.1-1 provides the property boundary and Figure 3.2.1-2 provides the general layout of the various facilities within the CREC.

3.3 Fuel

The CR3 Uprate Project will not significantly alter fuel utilization as part of any of the above referenced projects. The primary fuel involved is the nuclear fuel used directly in power production. There will be no change in the nature of the fuel; no increase in maximum fuel enrichment and no substantial change in fuel assembly mechanical design will be required. There will be increases in the size of the refueling batch necessary to supply the necessary energy to support operation at the higher power levels.

Diesel fuel is used in a number of emergency generators. The main station emergency generators may be increased in capacity which will increase fuel use. However, these generators are for stand-by use only. Other than testing, these diesels, as well as a number of others, which power fire and emergency feedwater pumps, etc, are not routinely operated. Diesel fuel is delivered and unloaded as needed. The size of storage and refilling frequency is not expected to change significantly. There is no expected increase in use of other fuels.

3.4 Air Emissions and Controls

3.4.1 Air Emission Types and Sources

The entire CREC, including the nuclear unit's associated process equipment, is currently addressed under the site's Title V (TV) air operating permit. This permit (Final Permit No. 0170004-015-AV) is active until December 31, 2009, when renewal is required. The TV permit addresses four coal-fired fossil fuel steam generating units; two natural draft cooling towers; helper mechanical draft cooling towers; modular cooling towers; coal, fly ash and bottom ash handling facilities and relocatable diesel-fired generators. Although CR3 (the nuclear generating unit) is not considered an emission generating unit under the TV permit, certain emissions units associated with CR3 are appropriately considered.

The CREC is classified as an existing major facility. A "major facility" is defined as any 1 of 28 named source categories that have the potential to emit 100 tons per year (TPY) or more or any other stationary facility that has the potential to emit 250 TPY or more of any pollutant regulated under CAA. "Potential to emit" means the capability, at maximum design capacity, to emit a pollutant after the application of control equipment. A modification to an existing major facility that results in a significant net emissions increase equal to or exceeding the significant emissions rates (SER) listed in Section 62-212.400, Table 62-212.400-2, F.A.C., is classified as a major modification and will be subject to the PSD preconstruction permitting program for those pollutants that exceed the PSD SERs. The procedures for determining applicability of the Prevention of Significant Deterioration (PSD) permitting program to the project are specified in Rule 62-212.400(2), F.A.C. For each regulated pollutant, PSD is triggered as a result of a modification at an existing unit if the difference between the projected actual emissions and the baseline actual emissions equals or exceeds the SER for that pollutant, as defined at Rule 62-210.200(243), F.A.C.

The scope of the proposed project includes an uprate of 40 MW associated with equipment modifications made during the 2009 refueling outage and 140 MW to be added after upgrades to the plant during the 2011 refueling outage. The uprate will increase the electrical output from CR3 and the associated circulating intake water flow rate. The air emission impacts associated with increased intake water flow (i.e., increased flow through additional new cooling towers) will trigger PSD for particulate matter (PM), but not for PM less than 10 microns (PM₁₀). Other regulated air emissions (e.g., NO_x and SO₂) will not be affected, as there will be no additional fuel combustion sources (e.g., additional diesel generator capacity) that may trigger PSD for these pollutants.

The project design is still evolving; however, as stated above, the engineering and design data currently indicate that the Project will be characterized as a major source subject to PSD. Therefore, this SCA addresses Best Available Control Technology (BACT) for PM emissions, which are the significant emission increase of concern. Federal PSD requirements are contained in 40 CFR 51.166, *Prevention of Significant Deterioration of Air Quality*. The state of Florida's PSD regulations are found in Rule 62-212.400, F.A.C.

The types and sources of air emissions associated with the CR3 Upgrade Project will consist of a potential new mechanical draft cooling tower to be designated the South Cooling Towers (SCT). PM and PM₁₀ emissions will result from cooling tower operation in the form of drift. Drift is water aerosols emitted from the cooling tower containing dissolved minerals from the water circulating in the cooling tower. The dissolved minerals become PM, including PM₁₀, when the water in the drift is evaporated. Cooling tower drift will be controlled using mist eliminators that will be designed to limit drift to no more than 0.0005 percent of the circulating water rate of the cooling tower.

In addition to adding a cooling tower to remove the incremental heat required to be dissipated by the uprate project, PEF is considering replacement of the existing modular cooling towers with additional permanent cooling towers (the South Cooling Tower (SCT)). Based on the relative design heat dissipation rates, approximately 11 additional cells similar to the existing permanent helper cooling tower cells will be required to replace the modular cooling tower in full. Coupled with the six cells required to dissipate the incremental heat rejected due to the uprate project, a total of 17 cells would be required. The status of the existing modular cooling tower is unknown, therefore, in order to present a worst-case air quality assessment, it is assumed that the new SCT will include a safety factor (of at least one cell) and consist of 18 cells arranged in a 9 by 2 configuration. The estimated cooling water flow into the proposed 18 cell SCT is estimated at approximately 342,306 gpm. Again, this estimate assumes that the existing bank of modular towers would be replaced by the proposed SCT associated with this uprate project, which may not necessarily be the case.

Figure 3.4.1-1 presents the proposed location of the air emission sources. Estimated hourly emission rates, as a result of the proposed cooling tower addition are presented in Table 3.4.1-1, for both PM and PM₁₀ emissions. In addition, the proposed cooling tower design parameters and annual PM/PM₁₀ emissions estimates are provided in Table 3.4.1-2 for the maximum operating load. That is, the information presented is for the proposed cooling tower design that represents the worst-case emissions and flow characteristics. Appendix 10.1.5, the PSD Application, presents the basis for the

emission rates and maximum annual emissions of regulated pollutants, as well as unit performance. As indicated, PSD review is triggered for PM (i.e., due to cooling tower impacts associated with the uprate).

3.4.2 Air Emission Controls

State-of-the-art air pollution control equipment will be installed on the project to minimize air emissions. The control techniques proposed for this project are based on an evaluation of economic, energy, and environmental impacts and have been determined to represent BACT on similar projects. The following subsection presents a summary of the Control Technology and the BACT analysis, which is presented in the PSD permit application in Appendix 10.1.5.

3.4.3 Control Technology Description/Best Available Control Technology

BACT review is required under FDEP rules and EPA regulations pertaining to PSD. Federal regulations are codified in 40 Code of Federal Regulations (CFR) Parts 51.166 and 52.21, and FDEP has adopted PSD rules in Rule 62-212.400, F.A.C. The BACT review is part of the evaluation of control technology under the Florida PSD rules. BACT is applicable to all pollutants for which PSD review is required and is pollutant-specific. It is an emission limitation that is based on the maximum degree of reduction for each regulated pollutant, which is determined to be appropriate after taking into account energy, environmental, economic impacts, and other costs. BACT cannot be any less stringent than the federal New Source Performance Standards (NSPS) applicable to the source under evaluation.

The FDEP and EPA have established a policy for BACT review in which the most stringent control alternatives are evaluated first. The alternatives are either rejected based on technological, environmental, energy or economic reasons or they are proposed as BACT. This procedure is referred to as the "top-down" approach. For the project, BACT is applicable for emissions of PM.

Appendix 10.1.5 of the SCA for the project contains a complete PSD Application. The PSD Application includes the BACT evaluation for the project and addresses those pollutants for which BACT is applicable. A discussion of the environmental, economic, and energy aspects of alternative control techniques and methods are included. The remainder of this section briefly describes those control technologies that are proposed for the CR3 Uprate Project.

PM emissions will be emitted from the cooling towers in the form of drift. Cooling tower drift will be controlled through the use of mist eliminators that will be designed to limit drift to no more than 0.0005 percent of the circulating water rate of the cooling tower. This level of control represents the best that is currently available. The total circulation water use will be limited to 1.8 E11 gallons per year, based on 8,760 hours per year at a maximum circulation rate of 342,306 gallons per minute (gpm).

3.4.4 Design Data for Control Equipment

Design information for the air pollution control equipment is presented in Section 5.0 of Appendix 10.1.5 (PSD Application).

3.4.5 Design Philosophy

The project minimizes air pollutant emissions by using efficient design and state-of-the-art air pollution control equipment that will meet a BACT emission rate. In addition, by maximizing the megawatt output per unit of cooling water consumed, the air pollutant emissions per megawatt output are minimized. Collectively, the design of the CR3 Uprate Project will incorporate features that will make it one of the most efficient and lowest emitting, with respect to the amount of air emissions emitted per MWs produced.

3.5 Plant Water Use

The primary water use for the CR3 Uprate Project will be an increase in cooling water flow through the CR3 condenser to cool the increased heat rejected by the CR3 condenser. The quantitative water use diagram for the existing CR 1, 2, and 3 is shown in Figure 2.3.4-4. This figure does not show the evaporative losses from the existing HCTs, however, that evaporation is estimated to range up to a maximum of only about 9,957 gpm. The only significant change in flow rates anticipated as a result of the CR3 Uprate Project is that of the potential increase of condenser cooling water flow for CR3 by approximately 150,000 gpm.

A new SCT has been proposed both to offset the increased circulating water rejected heat and to replace the existing modular HCT. A small portion of the increased flow associated with the uprate project (up to about 1,288 gpm) will be evaporated in the recirculating portion of the new SCT, which will be used to dissipate the increase in rejected heat. The new SCT has also been designed to avoid

any increase in flow into the intake canal from Crystal Bay/Gulf of Mexico, and to avoid any increase in heat load or temperature rise leaving the discharge canal to Crystal Bay/Gulf of Mexico. For the purpose of this SCA, a conservative and conceptual design plan for the South Cooling Tower has been proposed. Detailed design will be addressed as part of the NPDES renewal process in 2009.

3.5.1 Heat Dissipation System

In Section 2.3.4, the design value of the existing heat rejection rate via the condenser cooling water for CR3 was quantified as 5.88 Billion Btu per hour. CR3 currently produces approximately 900 MWe (megawatts electrical) and 2,609 MWt (megawatts thermal). The net result of the uprate project will be to increase CR3's output to approximately 1,080 MWe and 3,014 MWt. These quantities can all be converted to Btu per hour by the formula 1 watt = 3.412141 Btu/hour. The result is shown in the table below, Heat Dissipation System Comparison. The difference between MWt and MWe is the amount of heat produced by the unit that is not converted to electricity and which is therefore rejected via the condenser cooling water system. The net increase in heat rejection is 225 MWt, which is equivalent to 0.768 Billion Btu per hour, and represents an increase of about 13.2 percent relative to the current baseline heat rejection rate of 5.88 Billion Btu per hour for CR3, and about seven percent for the design three-unit heat rejection rate of 10.91 Billion Btu per hour currently leaving the discharge canal.

The size and shape of the discharge thermal plume varies with plant and meteorological conditions. The thermal plume is generally proportional to the amount of heat rejected, which is a function of the product of the flow rate and the temperature rise. PEF is proposing additional recirculating cooling towers to remove the increased rejected heat anticipated by the uprate project (0.768 Billion Btu/hour), therefore, the size of the thermal plume will not increase beyond existing conditions.

As described in Section 2.3.4, CR 1, 2 and 3 currently operate both permanent and modular HCTs. The permanent HCT consists of four separate tower structures, each containing nine cells.

Heat Dissipation System Comparison		
	Pre-Existing (Baseline) Unit 3	Post-Uprate Unit 3
MWe	900	1,080
MWt	2,609	3,014
Billion Btu per hour (electrical)	3.070	3.685
Billion Btu per hour (thermal)	5.831	6.599
Increase in Billion Btu per hour (electrical)	Base	0.615
Increase in Billion Btu per hour (thermal)	Base	0.768

Each cell has a water flow rate of 19,017 gpm, and a heat dissipation rate of 0.127 Billion Btu per hour. To achieve the dissipation of the increase of 0.768 Billion Btu per hour, a preliminary estimate indicates that a new cooling tower consisting of six cells, similar to the permanent HCT cells, would be required. A six-cell cooling tower would be approximately 50 ft wide by 300 ft long by 55 ft tall, or roughly 2/3 the size of one of the existing permanent HCT.

PEF has the option during the uprate of increasing either the CR3 condenser cooling water flow rate, or temperature rise, or both. The amount of heat that the new cooling towers must dissipate is independent of the specific choice of flow rate and temperature rise. If the CR3 flow rate is held constant at the existing 680,000 gpm, the temperature rise is expected to increase from 17.5 °F to 19.8 °F for CR3, and the overall temperature rise for the 3-unit flow rate of 1,318,000 gpm *prior to the use of HCT* is expected to increase from 16.7 to 17.9 °F. The use of the existing HCT and the new SCT in the helper mode would then reduce the combined discharge temperature rise down to 7.7 °F, assuming the full use of all HCT and ignoring the HCT evaporation. This is the same temperature rise that would be expected under the same conditions with the existing plant configuration.

Similarly, if the condenser cooling water flow rate for CR3 is increased to 830,000 gpm, and to 1,468,000 gpm for all three units, the delta T for CR3 will be reduced to approximately 14.3 °F, whereas the combined three-unit temperature rise will decrease from 16.74 °F to 15.03 °F prior to the use of HCT. The use of the existing HCT and the new six-cell cooling tower in the helper mode would then reduce the combined discharge temperature rise down to 6.46 °F. This is a temperature 1.24 °F less than would be expected under the same conditions with the existing plant configuration, and is less because the three-unit flow rate has been increased by 150,000 gpm, which is about

11.4 percent of the present three-unit flow rate. Although the flow rate has been increased, the rate of heat rejection remains at the existing level, as evidenced by the reduction in temperature rise.

However, in order to avoid incremental intake entrainment impacts due to the uprate, PEF proposes to increase the size of the new SCT and to run a portion of the facility in the recirculating mode (i.e., with the cold water return routed back to the intake canal rather than to the discharge canal). At the maximum expected condenser cooling water flow rate increase of 150,000 gpm, the size of the recirculating portion of the SCT thus needs to be eight cells (flow rate of 152,136 gpm).

In addition to adding the new cooling tower to remove the incremental heat required to be dissipated by the uprate project, PEF could potentially replace the existing modular cooling towers with an additional permanent HCT. Based on the relative design heat dissipation rates, approximately 11 additional cells equivalent to the existing permanent HCT cells would be required. Coupled with the six cells required to dissipate the incremental heat rejected due to the uprate project, this means a total of 17 cells would be required, assuming additional cells were not required for intake canal flow reduction. The break point for this is the six-cell flow rate of 114,102 gpm; at a condenser cooling water flow rate increase less than 114,102 gpm no additional recirculation for intake flow reduction is needed. If the condenser cooling water flow rate increase exceeds 114,102 gpm additional recirculating cells are required for intake flow reduction. In the worst case, at the maximum increase of 150,000 gpm, this would entail two additional recirculating cells. However, the other result of increasing the flow rate is that the discharge temperature is reduced. Because the HCT are designed solely to reduce the discharge temperature to not exceed a value of 96.5 °F on a rolling three-hour average, the reduced temperature rise results in the fact that less cooling is needed from the HCT. The resultant amount of reduction in HCT heat transfer is about 0.5 Billion Btu per hour, which is equivalent to about four cooling tower cells. Thus, while this case requires two extra cells for intake flow reduction, it decreases the number of helper cells required by four. In summary, the two cases are described in the following table:

Case	Minimum condenser cooling water flow increase (0 gpm)	Maximum condenser cooling water increase (150,000 gpm)
Required number of cells in recirculating mode	6	8
Required number of cells in helper mode	11	7
Total number of required cells	17	15

PEF may propose to install the new permanent SCT, between the intake and the discharge canal as shown in Figure 3.5.1-1, which will include a safety factor (of at least one cell) and consist of 18 cells arranged in a 9 by 2 configuration. Depending on the final amount of the increase in condenser cooling water, between six and eight cells will be operated full time in the recirculating mode, and from 12 to 10 respectively would be operated in the helper mode as required. Figure 3.5.1-1 provides a simplified water use diagram showing the expected division of flow for the latter case. The flow from eight cells is estimated to be 152,136 gpm, which is more than the potential maximum CR3 condenser cooling water flow rate increase of 150,000 gpm. Therefore, the CR3 Uprate Project should actually cause some slight reduction in entrainment relative to the existing conditions.

Through-screen velocity is anticipated to increase from 1.45 fps (max at MLW) to as much as 2.02 fps (max at MLW) with the CR3 Uprate Project. This is because the four existing cooling water pumps will be modified to deliver as much as 207,778 gpm each. This increased velocity could result in an increase in impingement mortality. The installation and operation of the proposed recirculating six to eight cells of the SCT will slightly reduce entrainment impacts due to the slightly reduced overall intake flow from Crystal Bay, and may also reduce impingement mortality by reducing the number of organisms available to be impinged.

As necessary PEF intends to request modification of the NPDES permit to authorize the operation of the new SCT and an increase in circulating water flow at CR3 from 680,000 gpm/923 MGD to as much as 830,000 gpm/1,195 MGD. Overall, the proposed CR3 Uprate Project will not increase flow to the intake canal from Crystal Bay and there will be no net increase in the thermal discharge at the NPDES POD. The CR3 Uprate Project will not have a negative impact to fisheries or the aquatic environment.

3.5.2 Domestic/Sanitary Wastewater

The CR3 Uprate Project will not require any increase in permanent staff; therefore, no changes will be made to the existing and permitted Domestic/Sanitary Wastewater system, which is described in Section 2.3.4.

3.5.3 Potable Water Systems

The CR3 Uprate Project will not require any increase in permanent staff; therefore, no changes will be made to the existing and permitted Potable Water system, which is described in Section 2.3.4.

3.5.4 Process Wastewater Systems

The process wastewaters are described in Section 2.3.4. They are not anticipated to change with the CR3 Uprate Project.

3.6 **Chemical and Biocide Waste**

The CR 1, 2, and 3 NPDES permit currently authorizes the use of Spectrus CT1300 to control biofouling for the CR3 service water system, which is presently completed subject to the timing and concentration limits specified in the NPDES permit (Appendix 10.4). The CR3 Uprate Project will cause no change in the use of Spectrus CT1300.

These processes will not change as a result of the CR3 Uprate Project.

3.7 **Solid and Hazardous Waste**

The CR3 Uprate Project is not expected to significantly increase solid and hazardous waste on site. During construction, solid and hazardous wastes are anticipated to increase and will be temporarily stored and prepared for offsite disposal in accordance with state, federal and NRC regulations. The CR3 Uprate Project will result in a small increase in the spent fuel discharge rate. These fuel assemblies will continue to be stored in the onsite NRC approved spent fuel storage facilities.

CREC generates wastes categorized as regulated waste, universal waste, hazardous waste, mixed waste, and radioactive waste. Whenever possible, wastes are recycled or minimized by chemical control management. All vendors used for handling, recycling, or disposal of wastes are approved

vendors by PEF. Quantities of wastes differ due to outage requirements and types/quantities of waste generally remain the same unless new processes are added or different maintenance tasks are required. PEF, the CR3 Hazardous Waste Coordinator and the CR3 Environmental Specialist determine the appropriate waste characterization, waste profiles, and waste disposal methods including land disposal or incineration while complying with state, federal and NRC regulations. Minimal quantities of wastes are stored on site in a segregated area, inventoried weekly, and managed by the Hazardous Waste Coordinator.

Very little opportunity exists for spills to pervious surfaces. However, a spill of this type would be managed in accordance with state and federal regulations. The CR3 site has a percolation pond system and approved groundwater monitoring plan with ground water monitoring wells located at various locations on site. The facility Spill Prevention and Countermeasure (SPCC) Plan and Best Management Practices (BMP) Plan help ensure pollution prevention at the CR3.

3.8 On-Site Drainage System

The current onsite drainage system at CREC meets all applicable local, regional, state and federal requirements including those outlined by the National Pollution Discharge Eliminations System (NPDES) and 40 CFR 112. As detailed in the CR3 SPCC Plan, runoff controls, and contamination prevention for stormwater drains by fuel oil, lubricating oil, and mineral oil associated with machinery, transformers and scheduled shutdowns of the CR3, are in place (Progress Energy 2006). A diversionary structure provides drainage protection for all in-service step up transformers. In the occurrence of a large leak, oil will flow down through a rock-filled trench into a retention basin. Secondary containment is provided for all above ground storage tanks, and any rainwater which collects in secondary containments is procedurally monitored and evaluated for oily sheens prior to drainage. The storm drains located onsite are additionally safeguarded from contamination during oil unloading operations by personnel trained in proper operating procedures and the use of storm drain covers.

3.9 Materials Handling

3.9.1 Construction Materials and Equipment

Construction material and equipment will be delivered to the CR3 site by the existing roadway, U.S. Highway 19. Equipment and component parts will be unloaded to various laydown and

assembly areas and moved around the site using portable cranes and trucks. Pollution control measures will be in place for the laydown areas and roads as necessary to control dust and runoff.

3.9.2 Roads

During normal plan operations, CREC averages approximately 1400 employees and 125 daily truck trips. During the uprate project, employee and construction traffic will vary between 2009 and 2012 and use U.S. Highway 19 to access the CR3 site.

3.10 References

Florida Department of Environmental Protection. 2004. Crystal River NPDES Permit FL0000159.

Golder Associates Inc. 2006. Crystal River Energy Complex Proposal for Information Collection NPDES Permit No. FL000159.

Progress Energy, 2006. Spill Prevention and Countermeasure Plan.

SWEC (Stone & Webster Engineering Corporation), 1985. Crystal River Units 1, 2 and 3. 316 Studies – Final Report.

U. S. Nuclear Regulatory Commission, 2002. “NRC Approves Power Uprate for Crystal River 3.” News release, Dated December 6. [Online] Available: <http://www.nrc.gov/reading-rm/doc-collection/news/2002/02-140.html>.

TABLES

TABLE 3.4.1-1
Potential PM and PM₁₀ Emissions

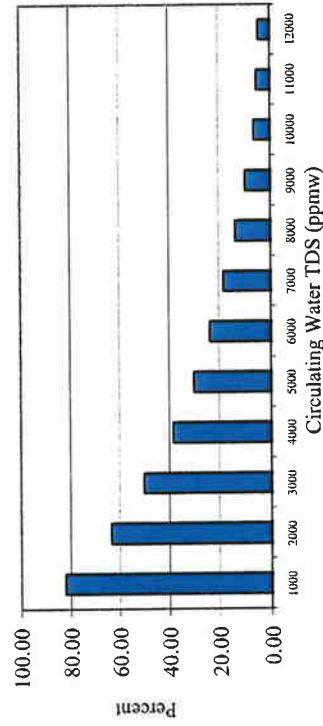
TDS (ppmw)	PM Emission Rate (lb/hr)	Percent of Emissions < or = PM10 %	PM10 Emissions (lb/hr)
1000	0.88	82.04	0.722
2000	1.76	63.50	1.118
3000	2.64	50.00	1.320
4000	3.52	38.33	1.349
5000	4.40	29.97	1.319
6000	5.28	23.59	1.246
7000	6.16	18.20	1.121
8000	7.04	13.57	0.955
9000	7.92	9.65	0.764
10000	8.80	6.28	0.553
11000	9.68	5.11	0.495
12000	10.56	4.46	0.471
25307	22.27	1.07	0.238
29000	25.52	0.82	0.209
89600	78.85	0.22	0.173

Calculated PM10 % < or = PM10	82.04
	63.50
	50.00
	38.33
	29.97
	23.59
	18.20
	13.57
	9.65
	6.28
	5.11
	4.46
	1.07
	0.82
	0.22

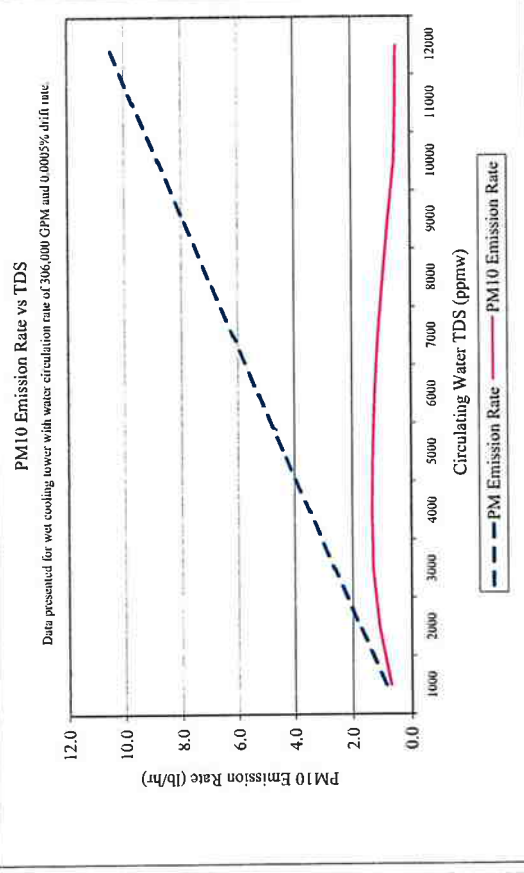
Tower Circulation Rate (GPM)	342,306
Drift Rate %	0.0005

Salt water density (lb/gal)	8.57
swd	64.2 lb per cu ft

Percentage of Drift PM that Evaporates to PM10



Source: Reisman, Joel and Gordon Frisbie, *Calculating Realistic PM10 Emissions from Cooling Towers*, Abstract No. 216, Greystone Environmental Consultants, Inc.



Data presented for wet cooling tower with water circulation rate of 306,000 GPM and 0.0005% drift rate

Reisman, Joel and Gordon Frisbie, *Calculating Realistic PM10 Emissions from Cooling Towers*, Abstract No. 216, Greystone Environmental Consultants, Inc.

TABLE 3.4.1-2.
Physical, Performance, and Annual Emissions Data for the HCT

Parameter	Vendor (TBD)
<u>Physical Data</u>	
Number of Cells	18
Deck Dimensions, ft	
Length	50
Width	50
Height(Tower Height)	55
Stack Dimensions	
Height, ft	TBD
Stack Top Effective Inner Diameter, per cell, ft	TBD
Effective Diameter, all cells, ft	TBD
<u>Performance Data (per cell)</u>	
Discharge Velocity, ft/min	TBD
Circulating Water Flow Rate (CWFR), gal/min	342,306
Design hot water temperature, °F	103
Design Air Flow Rate per cell, acfm, (estimated)	TBD
Hours of operation	8,760
<u>Emission Data</u>	
Drift Rate ^a (DR), percent	0.0005
Total Dissolved Solids (TDS) Concentration ^b , average ppm	25,307
Solution Drift ^c (SD), lb/hr	880.1
PM Drift ^d , lb/hr	22.3
tons/year	97.6
PM ₁₀ Drift ^e	
PM ₁₀ Emissions, lb/hr	1.35
tons/year	5.9

^a Drift rate is the percent of circulating water.

^b A TDS of 25,307 Average Value from Historical Data (Ron Johnson email 12/13/05)

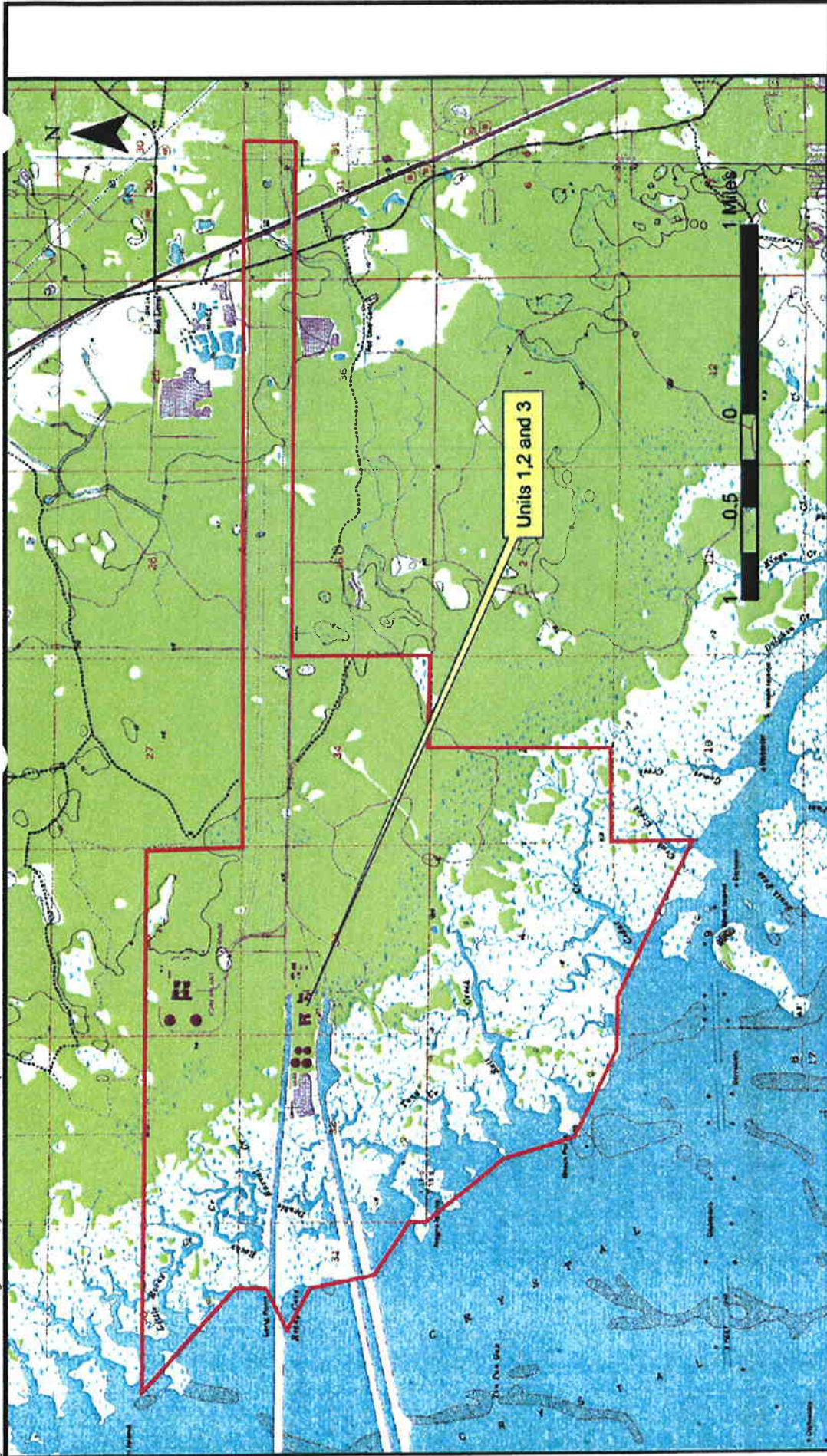
^c Includes water and based on circulating water flow rate and drift rate
 (CWFR x DR x 8.57 lb/gal x 60 min/hr).

^d PM calculated based on total dissolved solids and solution drift (TDS x SD).

^e PM₁₀ based on Cooling Tower PM₁₀ emissions study see Attachment A.

Source: Progress Energy, 2007; Golder, 2007.

FIGURES



PROJECT
 PROGRESS ENERGY-FLORIDA
 CRYSTAL RIVER UNIT 3
 POWER UPRATE PROJECT
 CITRUS COUNTY, FLORIDA

TITLE

CREC PROPERTY BOUNDARY

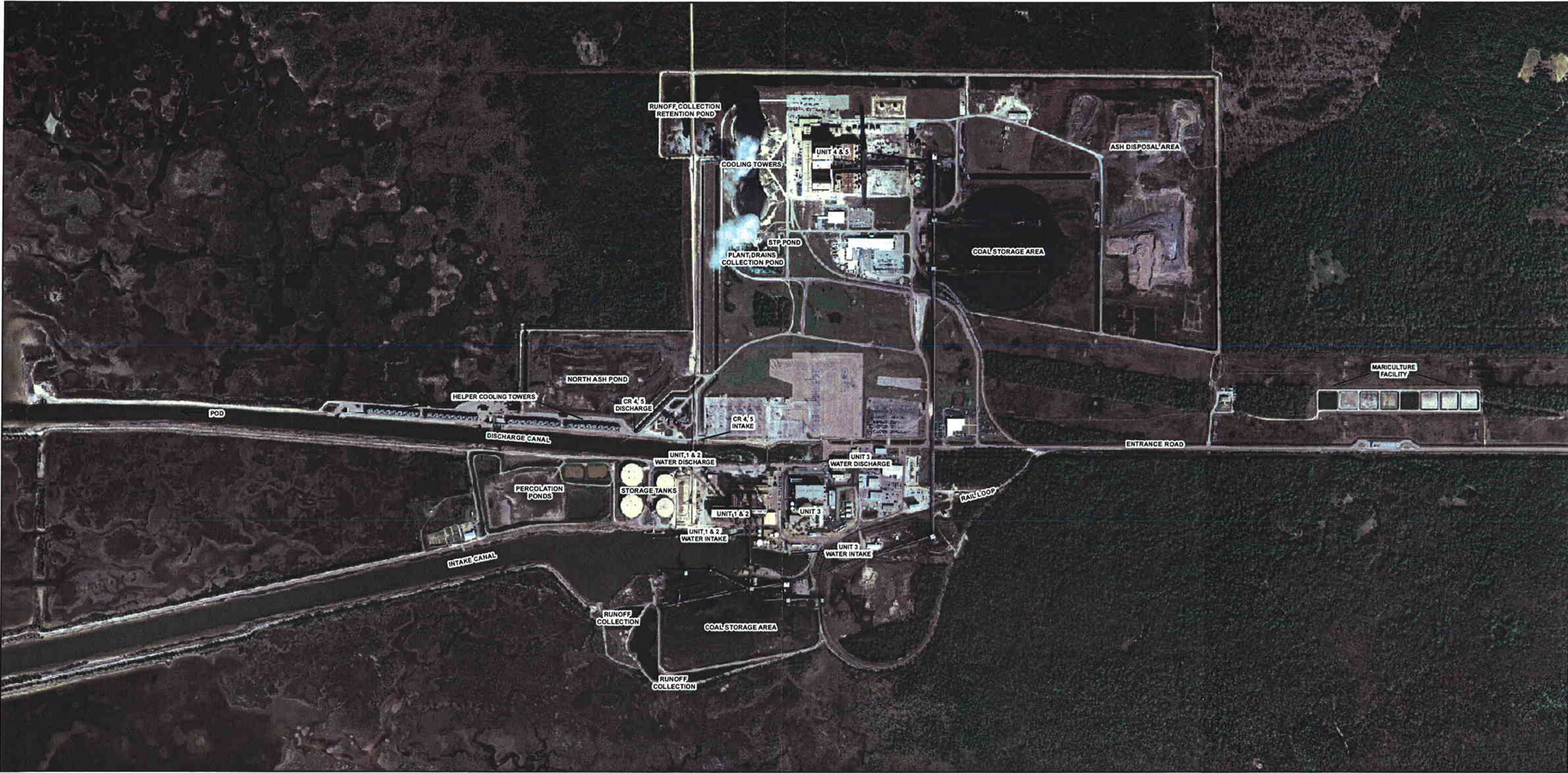
REFERENCES

- 1.) USGS 7.5 MINUTE QUADRANGLE RED LEVEL, FLORIDA



PROJECT No.	073-89531	FILE No.	07389531B023
DESIGN	MM	04/30/07	SCALE AS SHOWN REV. 0
CADD	MEF	04/30/07	
CHECK	MM	04/30/07	
REVIEW	MM	04/30/07	

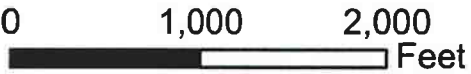
FIGURE 3.2.1-1



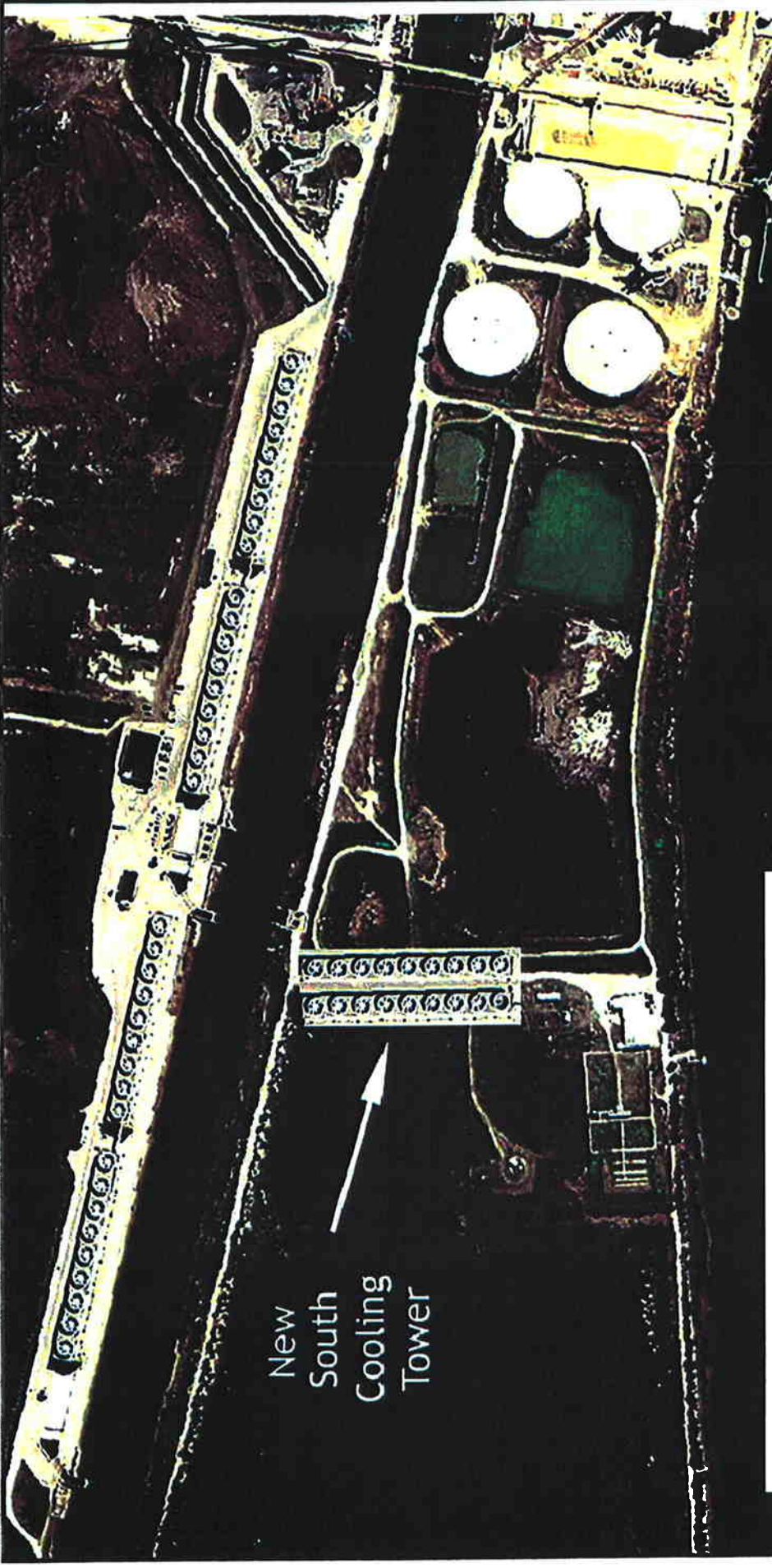
LEGEND

REFERENCE

1. 2006 Southwest Florida Water Management District Aerials.



PROJECT		PROGRESS ENERGY FLORIDA, CRYSTAL RIVER NUCLEAR UNIT 3 UPRATE PROJECT			
TITLE		CRYSTAL RIVER NUCLEAR UNIT 3 UPRATE PROJECT			
		PROJECT No. 073-89531		SCALE AS SHOWN	REV. 0
		DESIGN	JG	Mar. 15, 2007	FIGURE 3.2.1-2
		GIS	JG	April 30, 2007	
		CHECK	KG	April 30, 2007	
		REVIEW	MM	April 30, 2007	



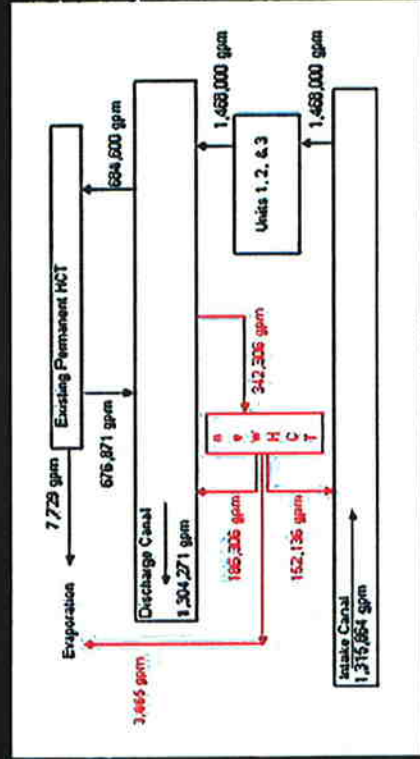
New
South
Cooling
Tower

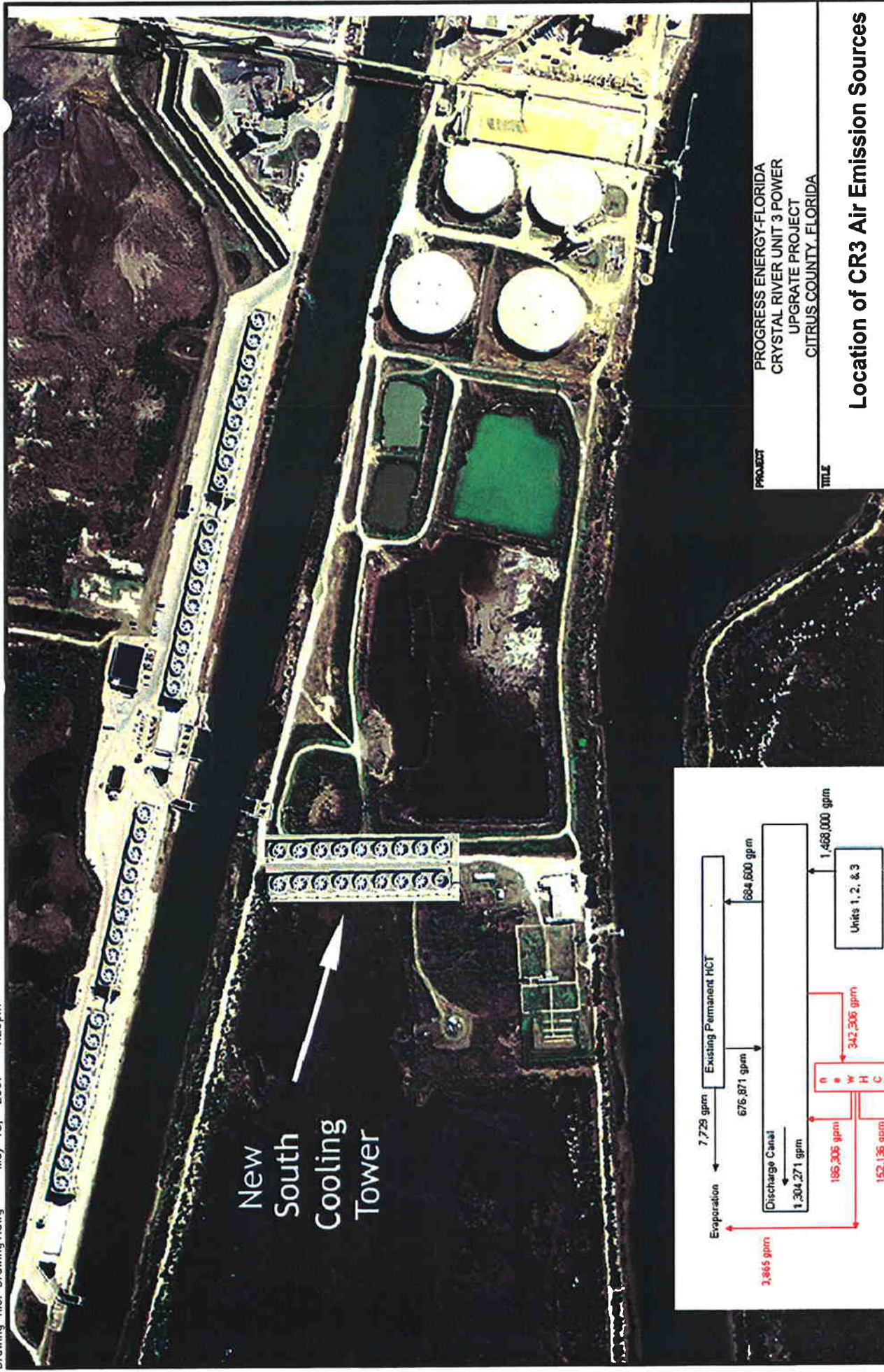
PROJECT
PROGRESS ENERGY-FLORIDA
CRYSTAL RIVER UNIT 3 POWER
UPGRADE PROJECT
CITRUS COUNTY, FLORIDA

TITLE

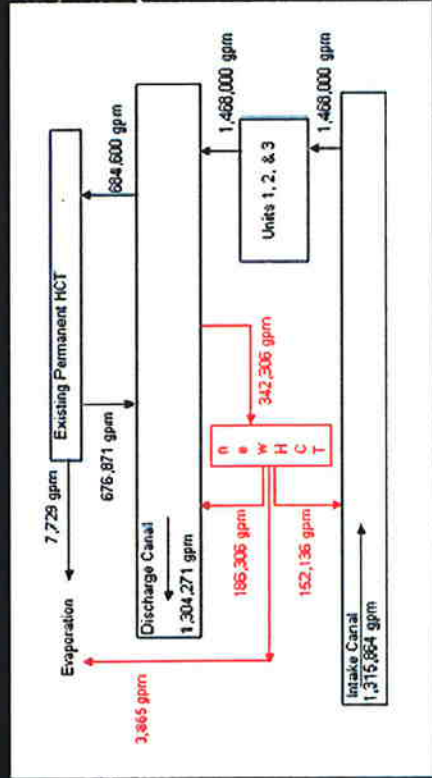
CR3 UPRATE PROJECT SOUTH COOLING TOWER LAYOUT

 Golder Associates TAMPA, FLORIDA		PROJECT No.	07380331	FILE No.	07380331/0072/000
		DESIGN	HF	DATE	04/20/07
		CADD	SH	DATE	06/18/07
		CHECK	MM	DATE	06/18/07
		REVIEW	MM	DATE	06/18/07
		FIGURE 3.5.1-1			





New
South
Cooling
Tower



PROJECT PROGRESS ENERGY-FLORIDA
CRYSTAL RIVER UNIT 3 POWER
UPGRADE PROJECT
CITRUS COUNTY, FLORIDA

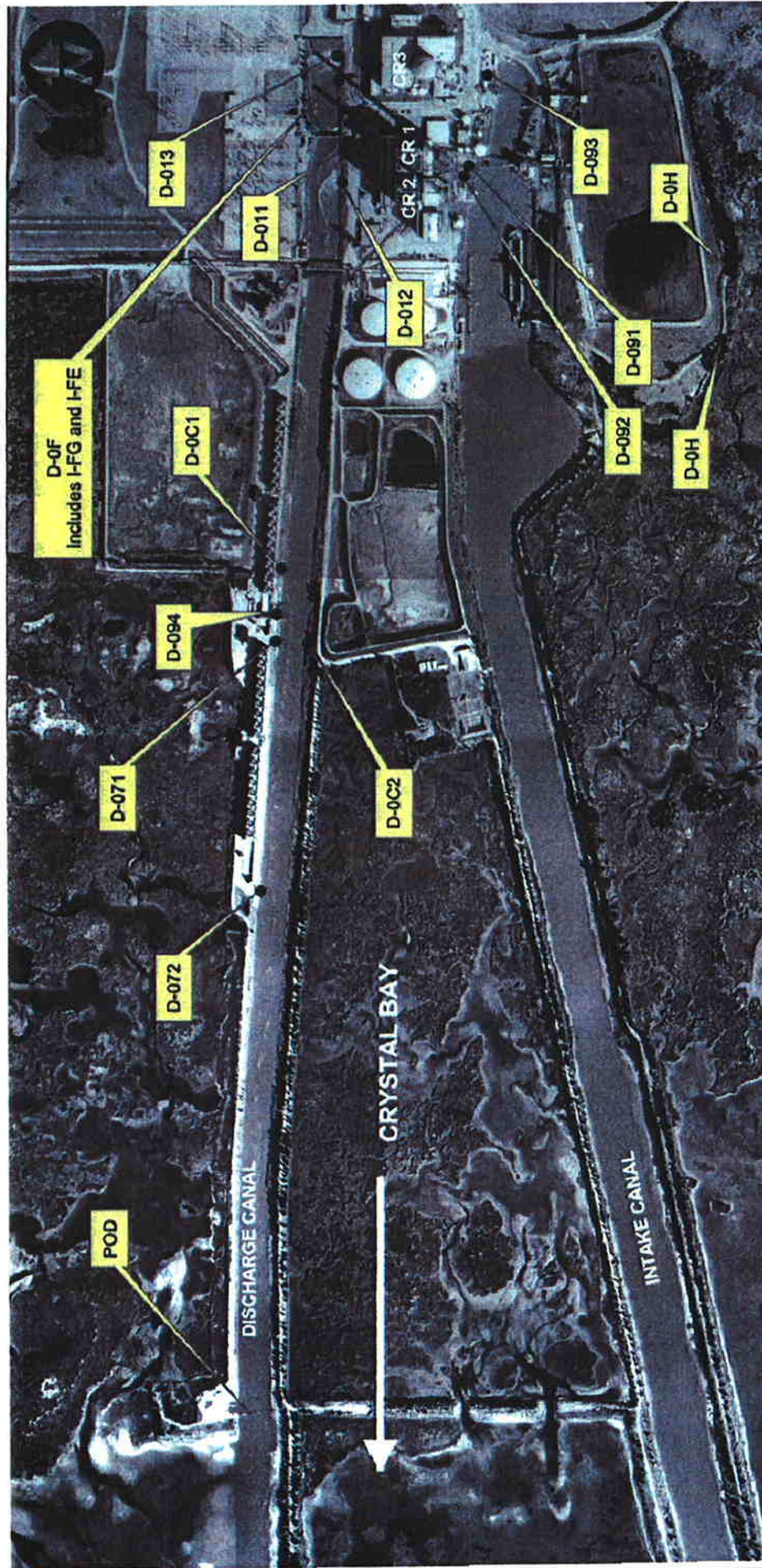


Location of CR3 Air Emission Sources



PROJECT No.	07386531	FILE No.	07386531B030.DWG
DESIGN	HF	DATE	04/20/07
CHECK	SH	SCALE	AS IS
REVIEW	MM	DATE	06/18/07

FIGURE 3.4.1-1



PROJECT: PROGRESS ENERGY-FLORIDA
CRYSTAL RIVER UNIT 3
POWER UPRATE PROJECT
CITRUS COUNTY, FLORIDA

TITLE

CR 1,2,3 NPDES DISCHARGE POINTS

REFERENCES

- 1.) NPDES DISCHARGE POINTS #FL0000159



PROJECT No.	073-89531	FILE No.	07389531B024
DESIGN	MM	04/30/07	SCALE AS SHOWN
CADD	MEF	04/30/07	REV. 0
CHECK	MM	04/30/07	
REVIEW	MM	04/30/07	

FIGURE 3.5.4-1

SECTION 4.0

4.0 ENVIRONMENTAL EFFECTS OF SITE PREPARATION AND PLANT AND ASSOCIATED FACILITIES CONSTRUCTION

The purpose of this section is to describe the environmental effects of site preparation and construction of the proposed CR3 Uprate Project.

The CR3 Uprate Project will occur during two phases. The first phase (Phase I) will occur during a 2009 planned refueling outage and scheduled steam generator replacement. The improvement and retrofit of the low pressure turbines and electrical generator and replacement of the main steam reheaters will increase the efficiency of power production at CR3 and increase megawatt output by 40 MW.

During the second phase (Phase II), PEF will retrofit the high-pressure turbine, turbine/generator coolers and replace the circulating water pumps, condensate and feedwater booster pumps, and motors resulting in an additional 140 MW of power output.

As previously discussed, PEF will request authorization to support site disturbance of those areas that will be used to support construction activities related to the SGRP and subsequently the CR3 Uprate Project through a separate Environmental Resource Permit (ERP).

A new South Cooling Tower has been proposed to offset the increased circulating water rejected heat from the CR3 Uprate Project and to replace the existing modular HCT. Land, topography, soil, surface water and ecology impacts associated with the construction of the South Cooling Towers will be addressed during the submittal of an ERP (and other appropriate environmental permits), separate from the site certification process. Detailed design will be addressed as part of the NPDES renewal process in 2009.

4.1 Land Impacts

4.1.1 General Construction Impacts

The CR3 site includes the reactor building, turbine building, access/security building, auxiliary building, maintenance training facility, reactor head storage building and miscellaneous warehouses and other buildings and comprises approximately 26.86 acres of developed land within the CREC.

During the construction phases associated with the CR3 Uprate Project, a total of 17.24 acres will be utilized to support construction activities (Figure 4.1.1-1). Construction laydown and parking areas will be constructed at the existing site elevation.

Foundation installation and dewatering activities are not required. Fugitive dust generation is not anticipated and explosives will not be used during the demolition and construction phase of the CR3 Uprate Project.

Solid waste materials generated during construction will be disposed of in accordance with applicable rules and regulations. Construction and demolition wastes, such as scrap wood and metal, will be transferred to a specified storage area on the CR3 site where they will be separated for salvage and recycling. General waste materials (i.e., typical of municipal solid wastes) will be collected in appropriate waste collection containers for disposal at an approved offsite location. All hazardous wastes generated during construction activities will be properly stored, transported and disposed of in accordance with applicable regulations and internal procedures.

During construction, the construction labor force will use portable chemical toilets and/or permitted holding tanks. A licensed contractor will pump all sanitary sewage from the portable toilets and holding tanks as needed and will transport the waste to an approved offsite treatment facility.

Potable water for consumption during construction will be obtained from bottled potable water. Potable water for emergency eyewash and shower stations will be supplied from temporary potable water systems.

4.1.2 Roads

Primary access to CR3 is provided via U.S. Highway 19, which is located east of the site. No new roads are proposed to connect with state roads.

4.1.3 Flood Zones

The CR3 Uprate Project is located within Zone VE, an area potentially inundated by 100-year flooding with velocity hazard (wave action) (Figure 2.1.5-1). Construction activities associated with

the CR3 Uprate Project will not adversely impact site flood elevations for adjacent areas and will not cause any adverse flooding or related impacts to offsite property (Section 2.1.5).

4.1.4 Topography and Soils

Grading and filling activities will not be required for the CR3 Uprate Project. Site topography will not be affected by construction-related activities. Slight changes in percolation rates in localized areas may occur following construction of laydown and parking areas associated with the SGRP; however, no changes in percolation rates are anticipated with the CR3 Uprate Project.

No effects on existing aesthetics or view shed due to changes in the topography of the plant are anticipated. Elevations of the land surface after construction will be similar to existing elevations; no significant changes in topography will be observable from offsite locations. Offsite groundwater levels will not be affected by the CR3 Uprate Project.

4.2 **Impact on Surface Water Bodies and Uses**

4.2.1 Impact Assessment

Due to the existing nature of the CR3 site, surrounding surface waters will not be adversely affected by the CR3 Uprate Project. Equipment modification and retrofit activities will not impact wetlands and nearby surface waters.

4.2.2 Measuring and Monitoring Program

There are no construction impacts to surface water bodies from the CR3 Uprate Project; therefore, no new measuring and monitoring programs are proposed.

4.3 **Groundwater Impacts**

4.3.1 Impact Assessment

Due to the existing nature of the CR3 site, groundwater will not be adversely affected by the CR3 Uprate Project.

4.3.2 Measuring and Monitoring Program

There are no construction impacts to groundwater from the CR3 Uprate Project; therefore, no new measuring and monitoring programs are proposed.

4.4 **Ecological Impacts**

4.4.1 Impact Assessment

Due to the existing nature of the CREC and CR3 site, and limited amount of disturbance associated with the uprate project, no adverse impacts to threatened or endangered species are anticipated as a result of the CR3 Uprate Project.

4.4.2 Measuring and Monitoring Programs

There are no impacts to aquatic/wetland systems or threatened and endangered species, therefore, no new measuring and monitoring programs are proposed.

4.5 **Air Impacts**

4.5.1 Air Emissions

Construction activities will result in the generation of fugitive particulate matter (PM) emissions and vehicle exhaust emissions. Fugitive PM emissions will result primarily from vehicular travel over paved and unpaved roads from the existing site. Vehicular traffic will include heavy-equipment traffic and traffic due to construction workers entering and leaving the CREC Site. Construction personnel and equipment will enter the site exclusively via the U.S. Highway 19 and the existing entrance roadway. Exposed land areas may also generate fugitive dust due to wind erosion. Table 4.5.1-1 presents the estimated air emissions during construction.

Emissions of fugitive PM from these activities are difficult to quantify because of their variable nature. They can only be estimated since emissions are dependent upon a number of factors, including specific activities conducted, level of activity, meteorological conditions, and control measures utilized.

Both EPA and FDEP have promulgated AAQS for PM₁₀. Fugitive PM₁₀ emissions may result from vehicles entering and leaving the CREC site and from wind erosion from open areas around the site. The areas subject to wind erosion will generally be small due to the nature of construction activities and control measures taken, such as seeding.

For PM₁₀, the PSD significant emission rate is 15 TPY. The estimated PM₁₀ emissions are not cumulative since the construction activities are preformed in series. The estimated fugitive emissions are not expected to significantly affect air quality outside the CREC boundary, given their small magnitude compared to the PSD significant emission rate.

Combustion-related emissions will result from onsite construction equipment and onsite vehicle traffic. Construction equipment will consist of fork lifts, cranes, trucks, compressors, and/or electrical air compressors. This equipment, as well as onsite vehicular traffic, will produce emissions of PM₁₀, NO_x, SO₂, CO, and VOC. Emissions estimates were based on EPA emission factors for non-road diesel engines, assumptions on vehicle miles traveled, and fuel consumption. These emission estimates are presented in Table 4.5.1-1. Emission levels of this magnitude will not cause significant impacts to air quality in the vicinity of the CREC site.

4.5.2 Control Measures

A number of control measures will be implemented during the construction period in order to minimize air emissions and potential impacts. After grading, the lightly traveled areas will be either paved or vegetated to minimize fugitive PM and wind erosion. Heavily traveled unpaved construction laydown areas and unpaved roads may be stabilized with rock. Watering will be conducted on an as-needed basis to control fugitive dust from highly traveled areas. The entrance roads are paved, which minimizes dust emissions from vehicles entering the CREC Site.

4.6 **Impact on Human Populations**

Construction projects can affect human populations by altering demographic patterns; by placing demands on infrastructure elements such as housing, transportation, and educational facilities; and by contributing noise to the environment. Due to the patterns of local employment, traffic patterns and daily commuting, the demographic impact of the CR3 Uprate Project is expected to be minimal.

Section 7.0 of this SCA provides analysis of the income, employment, tax revenue and service needs associated with the uprate project workforce. This section is limited to a discussion of workforce requirements and the minor impacts of project-related traffic, housing, education and noise.

4.6.1 Construction Workforce

A traffic study was prepared to review the expected impact on the roadway transportation network during construction of the CR3 Uprate Project (See Appendix 10.6).

Construction is anticipated to commence in 2009 and conclude in the 2011. The majority of construction workers are expected to commute to the CR3 site from within a distance of up to 75 miles. Contractors will be responsible for hiring the construction workforce. During outage and construction activities, PEF will generally implement practices which stagger construction workers and/or stage truck trips in order to prevent congestion within the CREC. A more detailed discussion of the workforce, payrolls, and economic impacts of the workforce is found in Section 7.0.

4.6.2 Construction Traffic

Peak CR3 construction employment is estimated to increase the total of onsite employees to approximately 2,950 workers in late 2009. The magnitude of the traffic impact will be directly related to the number of construction workers. A traffic impact study was completed to identify the impact of the CR3 Uprate Project to traffic operations.

Traffic volumes were projected for the peak construction period in 2009 by adding the trips generated as a result of the CR3 Uprate Project to the 2007 existing traffic volume using a linear 3.1 percent annual growth rate based on the annual average daily traffic volumes for U.S. Highway 19 for the previous five years (Figure 4.6.2-1).

Trips generated by the project in the A.M. peak hour are expected to be more than the P.M. peak hour. Therefore, the roadway capacity analysis was based on the A.M. peak hour trips. In the future 2009 construction scenario, the CR3 Uprate Project is anticipated to generate 969 new (temporary) trips to the roadway network in the A.M. peak hour (Table 4.6.2-1).

Table 4.6.2-1
Roadway Capacity Analysis Summary

Road Name	From/To	Lanes	Peak Hour Service Volume LOS D	2009 Peak Hour Project Volume	Percent Impact
U.S. Highway 19/98	South of Powerline Street	4D	5,140	656	12.76%
	North of Powerline Street	4D	5,140	313	6.09%
West Power Line Road	West of U.S. Highway 19/98	2U	1,190	969	81.4%

(1) Level of Service D Capacity obtained from Table 4-6 of the Florida Department of Transportation 2002 Q/LOS Manual.

A four lane divided uninterrupted flow highway for a Level of Service (LOS) B has a peak hour two-way traffic volume of 2,800 vehicles (DOT, 2002 Quality/Level of Service Handbook). U.S. Highway 19/98 operates below the 2,800 two-way peak hour traffic volume established by FDOT for a Level of Service B four lane divided uninterrupted flow highway (Table 4.6.2-2).

Table 4.6.2-2
Two-Way Peak Hour Traffic Volumes Summary

Time Period	Florida Dot Generalized Los B Two-Way Peak Hour Traffic Volume	2009 No-construction		2009 Construction	
		NB	SB	NB	SB
A.M. peak hour	2,800	919	687	1,575	1000
P.M. peak hour	2,800	1,092	902	1,268	1,024

NB = Northbound

SB = Southbound

Traffic generated during the construction activities is considered a temporary condition. Additionally, the peak construction period includes construction activities associated with other activities that will be ongoing at the CREC. The capacity analyses demonstrate that the intersection is anticipated to perform at a LOS D in the A.M. peak hour and at a LOS B in the P.M. peak hour (Table 4.6.2-3). The sections of U.S. Highway 19/98 north and south of Powerline Street are expected to operate at or better than LOS B.

Table 4.6.2-3
Intersection Capacity Analysis Summary

Intersection	Time Period	Existing 2007		No-Build 2009		Build 2009	
		LOS	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)
U.S. Highway 19/ U.S. Highway 98 and West Power Line Road	A.M. peak hour	B	19.8	B	2.0	D	40.7
	P.M. peak hour	A	8.4	A	8.5	B	13.1

The CR3 Uprate Project represents less than a one percent impact to the LOS service volume for both U.S. Highway 19/98 and Powerline Street. Due to the temporary and fluctuating conditions expected in 2009, PEF intends to consider Travel Demand Management techniques (i.e., flexible work hours, staging of truck deliveries, etc.) to help facilitate peak operating conditions. Additionally, PEF will monitor the intersection at U.S. Highway 19/98 and Powerline Street and coordinate special events with the local public agencies, such as the Citrus County Sheriff's Department, to help ensure acceptable traffic operations as necessary.

4.6.3 Housing

The number of employees will vary during the CR3 Uprate Project, with a total construction and permanent employment peak of 2,950 employees at CREC. Many of these 800 construction employees for CR3 Uprate will be employed for only a portion of the period due to the changing skill requirements of the CR3 Uprate Project. There is a significant labor pool of construction workers in the surrounding counties and metropolitan Tampa area, as a result, it is expected that few construction workers will be relocating to the area for the construction term. Most workers that do relocate will use the available lodging accommodations in Citrus County (approximately 2,259 licensed lodging units).

4.6.4 Education

Because of the relatively short duration of employment, few construction workers are expected to relocate with their families. As a result, there will be little immigration of school-aged children

resulting from project construction. No significant adverse effects on local elementary, middle, or high school enrollment are anticipated.

4.6.5 Construction Noise Impacts

The impacts of noise on human populations are dependent upon the proximity of institutional and residential land uses to construction activities and the type and extent of noise sources. The nearest locations that could potentially be impacted by noise (i.e., critical receptor) from the proposed facility construction area are located approximately three miles south of the power block. The location is Fort Island County Park in the city of Crystal River.

Construction of the CR3 Uprate Project will require demolition of the current steam turbine and erection of the new steam turbine and cooling system. The use of construction equipment, such as dump trucks, cranes, bulldozers, front-end loaders, air compressors, grinders, and welders will be required. These sources have maximum noise levels ranging from about 70 to 90 dBA (measured at a distance of 50 ft).

The evaluation of noise impacts from construction activities was performed using previous results from noise propagation computer programs to estimate noise levels (CADNA A). Noise source levels are entered as octave band sound power levels. The user can specify coordinates, either rectangular or polar. To determine noise impacts from the CR3 Uprate Project's construction activities, the receptor grid used for the modeling was 10 x 10 meters out to a distance of 4 kilometers. All noise sources are assumed to be point sources; line sources can be simulated by several point sources. Sound propagation is calculated by accounting for hemispherical spreading and three other user-identified attenuation options: atmospheric attenuation, path-specific attenuation, and barrier attenuation. Atmospheric attenuation is calculated using the data specified by the American National Standard Institute Method for the Calculation of the Absorption of Sound by the Atmosphere (ANSI, 1999). Path specific attenuation can be specified to account for the effects of vegetation, foliage, and wind shadow. Direction source characteristics and reflection can be simulated using path-specific attenuation. Giving the coordinates and height of the barrier can specify attenuation due to barriers. Barrier attenuation is calculated by assuming an infinitely long barrier perpendicular to the source-receptor path. Total and A-weighted SPLs (filtered to approximate human hearing) are calculated. Background noise levels can be incorporated into the program and are used to calculate overall SPLs.

The model was performed to predict the maximum noise levels produced by a combination of likely noise sources with and without background noise levels. A conservative estimate of the number and types of construction equipment was assumed to calculate construction noise levels.

Table 4.6.5-1 lists the major types of equipment expected to be used during the construction of the Project and their associated noise characteristics. For the purpose of the construction noise impact analyses, all of the equipment was conservatively assumed to be operating simultaneously at peak power. Mechanical and electrical installation activities may occur at night; however, these activities have minimal noise levels and are much less than the existing plant.

The noise levels resulting from these combinations of equipment were input as multiple sources to the model. Octave bands were estimated from *Noise from Construction Equipment and Operations, Building Equipment, and Home Appliance* (EPA, 1971). It is unlikely that all the equipment would be operating simultaneously and continuously, and, therefore, this impact assessment is conservative. Background SPL values were incorporated into the model to calculate impacts at the locations identified in Section 2.3.8. Only the atmospheric attenuation option was enabled during the noise modeling runs.

The construction noise impacts at three plant property-line monitoring locations shown in Figure 4.6.5-1 are presented in Table 4.6.5-2. The L_{10} and L_{eq} are from background noise monitoring and the background with construction impacts are presented in the table. As shown in Table 4.6.5-2, the estimated L_{eq} noise levels during the construction of the Project are estimated to be less than 73 dBA. The predicted noise levels are not expected to adversely impact the sensitive receptors identified in the vicinity of the Project Area. The noise estimates are conservative and include only atmospheric attenuation. The actual or measured noise levels due to construction are expected to be lower than predicted. Elevated noise during initial start up is not accounted for in these predictions.

4.7 Impacts on Landmarks and Sensitive Areas

Results of a search of the Florida Master Site File conducted for the CR3 Uprate Project indicates that within Citrus County, there are 174 known archaeological sites, eight known structures, and two recorded cemeteries. Activities related to the CR3 Uprate Project will not affect the cultural resources in the identified review area.

4.8 Special Features

There will be no unusual products, raw materials, solid waste disposal, incinerator effluents, or residues produced during the construction activities associated with the CR3 Uprate Project that will have influence on the environment or ecological systems of the CREC, or adjacent areas.

4.9 Benefits of Construction

The construction phase associated with the CR3 Uprate Project will contribute both short and long-term economic benefits to the surrounding region. Construction benefits will include construction employment that will average several hundred over the four year construction period. Construction wages will increase the demand for goods and services in the region. Direct purchases of construction materials will have both direct and indirect economic benefits. Construction activities will increase tax revenues to the county and state governments due to sales taxes from the purchase of equipment and material to support construction activities. This includes construction materials (e.g., concrete and steel for foundations), rental equipment (e.g., construction cranes, pumps), food services, and transportation services. These benefits are presented in detail in Section 7.0.

4.10 Variances

No variances from applicable regulatory standards due to the construction of the CR3 Uprate Project are being sought as part of this SCA.

4.11 References

Florida Department of Transportation 2002 Q/LOS Manual.

Trans Associates. Progress Energy CR3 Uprate Project, Traffic Impact Study, 2007.

TABLES

TABLE 4.4.1-1
Estimated Air Emissions During Construction of CR3 Uprate Project

Construction Activity	Type Operation	Amount	Units	Pollutant	Emissions	Units	Controls
Site Preparation Equipment	IC Engines	65,000	gallons/yr	PM ₁₀	0.20	tons/yr	EPA Non-Road Tier 3
				NO _x	3.65	tons/yr	EPA Non-Road Tier 3
				SO ₂	0.22	tons/yr	EPA Non-Road Tier 3
				CO	3.52	tons/yr	EPA Non-Road Tier 3
				VOC	0.41	tons/yr	EPA Non-Road Tier 3
Open Areas	Wind Erosion	5	acres	PM ₁₀	0.6	tons/yr	Watering
Vehicle Traffic	Paved Roads	847,321	VMT	PM ₁₀	5.3	tons/yr	Watering as necessary
Installation	IC Engines	155,040	gallons/yr	PM ₁₀	0.48	tons/yr	EPA Non-Road Tier 3
				NO _x	8.72	tons/yr	EPA Non-Road Tier 3
				SO ₂	0.53	tons/yr	EPA Non-Road Tier 3
				CO	8.39	tons/yr	EPA Non-Road Tier 3
				VOC	0.97	tons/yr	EPA Non-Road Tier 3

Note: VMT = vehicle miles traveled; acres based on open areas at any one time.

Sources: USEPA, 1992 Fugitive Dust Background and Technical Information Document for Best Available Control Measures;

Section 2.3.1.3.3, Wind Emissions from Continuously Active Piles.

USEPA, 2006; AP-42, Section 13.2.4 for Aggregate Handling and Storage Piles.

USEPA, 2001; AP-42, Section 11.12 Concrete Batching.

USEPA, 2006; AP-42, Section 13.2.2 Unpaved Roads.

USEPA, 2004; Exhaust and Crankcase Emissions Factors for Nonroad Engine Modeling-Compression Ignition.

TABLE 4.6.5-1

Summary of Demolition and Construction Noise Sources Associated with Heavy Construction Activities												
Source	Modeled Source Height ^a (m)	Sound Power Level (dB) for Octave Band Center Frequency (Hz)									Overall Sound Power Level	
		31.5	63	125	250	500	1K	2K	4K	8K	(dB)	(dBA)
Front End Loader 1	1.8	0.0	111.6	118.6	116.6	114.6	109.6	104.6	98.6	92.6	122.4	115.5
Front end Loader 2	1.8	0.0	111.6	118.6	116.6	114.6	109.6	104.6	98.6	92.6	122.4	115.5
Truck 1	1.8	0.0	0.0	118.6	116.1	113.1	109.6	106.1	102.1	0.0	121.7	115.3
Truck 2	1.8	0.0	0.0	118.6	116.1	113.1	109.6	106.1	102.1	0.0	121.7	115.3
Truck 3	1.8	0.0	0.0	118.6	116.1	113.1	109.6	106.1	102.1	0.0	121.7	115.3
Bulldozer 1	1.8	0.0	106.6	103.6	101.6	102.6	99.6	96.6	94.6	96.6	105.3	110.9
Bulldozer 2	1.8	0.0	106.6	103.6	101.6	102.6	99.6	96.6	94.6	96.6	105.3	110.9
Crane 1	1.8	0.0	111.6	118.6	116.6	114.6	109.6	104.6	98.6	92.6	122.4	115.5
Crane 2	1.8	0.0	111.6	118.6	116.6	114.6	109.6	104.6	98.6	92.6	122.4	115.5
Welder 1	1.8	0.0	102.6	110.6	105.6	98.6	98.6	93.6	88.6	84.6	103.6	112.7
Welder 2	1.8	0.0	102.6	110.6	105.6	98.6	98.6	93.6	88.6	84.6	103.6	112.7
Grinder 1	1.8	0.0	102.6	110.6	105.6	98.6	98.6	93.6	88.6	84.6	103.6	112.7
Grinder 2	1.8	0.0	102.6	110.6	105.6	98.6	98.6	93.6	88.6	84.6	103.6	112.7
Grinder 3	1.8	0.0	102.6	110.6	105.6	98.6	98.6	93.6	88.6	84.6	103.6	112.7

Golder Associates

TABLE 4.6-5-2

Baseline and Impacts of Construction

Baseline Site	Location	Time	Baseline Sound Levels (dBA)		Sound Levels with New Unit (dBA)		Increase (dBA)	
			L ₁₀	Leq	L ₁₀	Leq	L ₁₀	Leq
5	Northeast corner of fence line	Day	51	50	51	50	<1	<1
		Night	57	55	57	55	<1	<1
6	Intersection of Tallahassee and Powerline Rd	Day	56	53	56	53	<1	<1
		Night	74	73	74	73	<1	<1
7	Middle of Powerline Rd	Day	62	59	62	59	<1	<1
		Night	47	46	47	46	<1	<1

Source: Golder, 2007

FIGURES



LEGEND

- SGRP Construction/Laydown/Parking Areas
- CR3 & Ancillary Facilities

REFERENCE

1. 2006 Southwest Florida Water Management District Aerial.
2. Laydown Area's provided by Progress Energy.



PROJECT			
PROGRESS ENERGY FLORIDA, CRYSTAL RIVER NULCEAR UNIT 3 UPRATE PROJECT			
TITLE			
CRYSTAL RIVER UNIT 3 UPRATE CONSTRUCTION SITE PLAN			
	PROJECT No. 073-89531		SCALE AS SHOWN
	DESIGN	JG May 01, 2007	FIGURE 4.1.1-1
	GIS	JG May 25, 2007	
	CHECK	KG May 25, 2007	
	REVIEW	MM May 25, 2007	
Tampa, Florida			

AM PEAK HOUR



PM PEAK HOUR



SCALE: N.T.S.



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Tampa, Florida 33602 / (813) 386-3630

PROJECT NO. GOLAS00-07109

PROJECT: CR3 UPRATE PROJECT

TITLE: CR3 2009 CONSTRUCTION TRAFFIC VOLUME

FIGURE

4.6.2-1

D.B. cad
C.B. cad
REV.

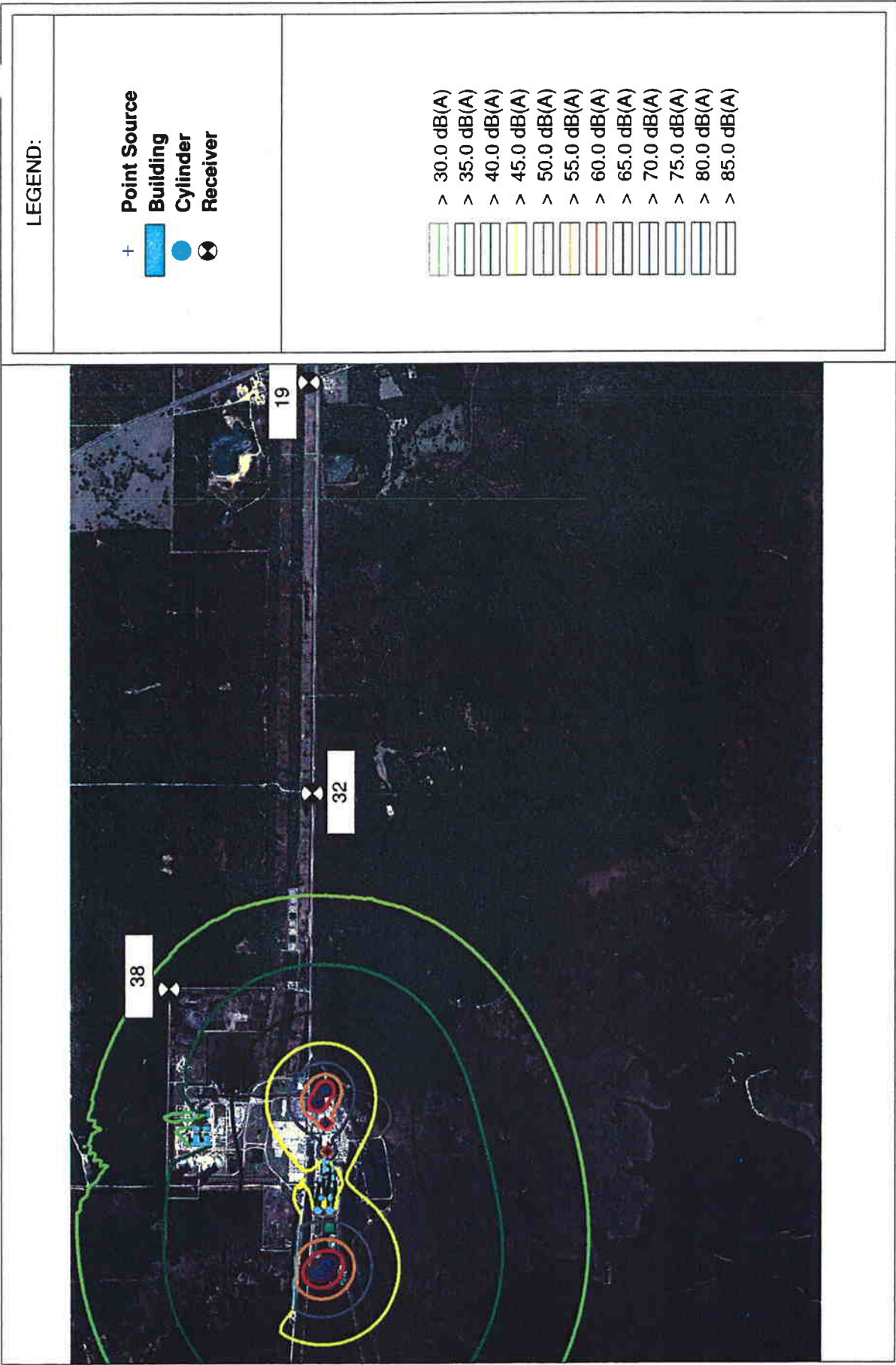


Figure 4.6.5-1
Construction Noise Map
Progress Energy Florida
Crystal River Unit 3 Upstate Project

5.0 EFFECTS OF PLANT OPERATION

5.1 Effects of the Operation of the Heat Dissipation System

5.1.1 Temperature Effect on Receiving Body of Water

As described in Section 3.5, the final condenser cooling water flow rate for CR3 has not been determined, however, the potential will range up to a maximum expected flow rate of 830,000 gpm from the current 680,000 gpm. The corresponding flow rate for CR 1, 2, and 3 will thus range up to 1,468,000 gpm (potential maximum). The use of the proposed new SCT will ensure that the heat rejection rate from the three units will be limited so as not to exceed the present maximum rate of 10.91 Billion Btu per hour at the POD. Because the temperature rise is proportional to the heat rejection rate, the full load temperature rise at the maximum expected flow rate, without the use of the existing HCT but using the recirculating portion of the new SCT, will be 13.79 °F.

Since the discharge temperature from CR 1,2 and 3 prior to use of the new SCT is estimated to range between the present value of up to 16.74° F, to a future value between 13.79 ° F and 16.74° F, there is not expected to be any measurable thermal impact due to change in combined flow discharge temperature. Also, because the total quantity of heat rejected via the discharge canal at the POD is not changing, the shape and extent of the thermal plume (the location and amount of acreage enclosed within each temperature isotherm) is not expected to change with the CR3 Uprate Project.

5.1.2 Effects on Aquatic Life

PEF has been in the process of quantifying baseline aquatic impingement and entrainment impacts at the CREC in order to develop a Comprehensive Demonstration Study (CDS) for submittal to the FDEP in compliance with the federal Clean Water Act 316(b) rule. However, the U.S. Court of Appeals for the Second Circuit recently remanded most of the substantive portions of the USEPA's July 2004 316(b) Rule. PEF anticipates that EPA will re-promulgate the Phase II 316(b) regulations at some time in the future. In the interim, PEF intends to continue to evaluate impingement and entrainment impacts associated with the CR3 Uprate Project within the CREC existing monitoring program. This data will be used to evaluate impacts and identify measures to reduce aquatic impacts during the next CREC NPDES permit renewal (scheduled in late 2009).

The magnitude of any changes in overall facility effects on aquatic life due to the uprate project is expected to be small.

There are no expected changes in effects on aquatic organisms due to changes in the release of heat, because there is no change in the quantity of heat at the POD as measured in Btu per hour, and because the temperature rise associated with the release of heat will be the same as, or slightly reduced from, the current discharge temperatures.

As described in Section 3.5, the total quantity of water withdrawn from the Gulf of Mexico through the intake canal will not be increased by the uprate project; therefore, the total rate of entrainment should also not increase. In fact, since the amount of cooling water that will be recirculated by the six-cell portion of the new cooling towers (152,136 gpm) exceeds the potential increase in cooling water flow associated with the uprate project (150,000 gpm), the net inflow into the intake canal from the Gulf of Mexico is estimated to decrease slightly with the uprate project.

Impingement mortality is generally considered a function of both through-screen velocity and of total flow rate. Although the uprate may cause the through-screen velocity to increase by as much as 22 percent (from 1.65 fps maximum to 2.02 fps maximum), the actual concentration of impingeable organisms is more likely controlled by the velocity entering the intake canal, as that is the velocity those organisms must overcome to escape impingement. As described in Section 2.3.4, the existing intake canal velocity which corresponds with the maximum through-screen velocity (at MLW) is estimated to be about 1.3 fps. Since the uprate project will actually reduce the overall cooling water flow into the intake canal from 1,318,000 gpm to at most 1,315,684 gpm (1,468,000 gpm – 152,136 gpm), the maximum intake canal velocity would be expected to be reduced slightly, on the order of about 0.002 fps.

Based on the discussion above, PEF proposes to continue to evaluate the entrainment and impingement impacts associated with CREC ongoing facility operations as well as the impacts associated with the CR3 Uprate Project. PEF intends to quantify aquatic impacts to offset impacts during the CREC NPDES renewal (scheduled for submittal in 2009) process. Pending the outcome of the ongoing studies, PEF will propose the best technology available for minimizing impacts. Based on current information, the proposal may include a physical barrier, diversion technology or expanded onsite restoration (i.e., expansion of the Mariculture Center).

5.1.3 Biological Effects of Modified Circulation

The CR3 uprate project is not expected to cause any significant modification to water circulation in the site vicinity. The existing condition includes the circulation patterns superimposed by the CREC on the ambient environment. As described in section 5.1.2 above, the magnitude of the change to the velocity entering the intake canal is estimated to be a reduction of approximately 0.002 fps. Changes of this magnitude are not measurable.

5.1.4 Effects of Offstream Cooling

Because the new SCT withdraws water from the discharge canal, it is withdrawing water that has already been screened and passed through a condenser. Therefore, that withdrawal of water will not cause any increase in impingement mortality or entrainment relative to the existing levels.

5.2 **Effects of Chemical and Biocide Discharges**

5.2.1 Industrial Wastewater Discharges

Compliance with applicable state and federal discharge regulations and water quality standards for industrial wastewaters, is presently being achieved through the implementation of the CR 1, 2, and 3 NPDES permit. The CR3 Uprate Project will not cause any changes in the quantity or characteristics of industrial wastewaters generated by the facility; therefore, no change in that compliance achievement status due to the uprate project is expected.

5.2.2 Cooling Tower Blowdown

The proposed new SCT associated with the CR3 Uprate Project will not generate any "blowdown". Additionally, the evaporation associated with the recirculating portion of the new SCT is not expected to exceed 1,718 gpm, an amount that will not significantly increase the TDS of the cooling water discharge. At this maximum expected evaporation rate, the change in TDS concentration assuming an existing value of 28,000 mg/L would only be about 37 mg/L or 0.1 percent. This effect is insignificant relative to the natural range of TDS of 7,000 mg/L (31,000 – 24,000) at the CREC site as shown on Figure 2.3.4-6.

The facility's existing NPDES Permit requires monitoring to demonstrate compliance with applicable state and federal regulations and water quality standards for industrial wastewaters, and will continue to do so after the CR3 Uprate Project.

5.3 Impacts on Water Supplies

5.3.1 Surface Water

The CR3 Uprate Project will not cause any changes in hydrologic or water quality conditions due to diversion, interception, or additions to surface water flow.

5.3.2 Groundwater

The CR3 Uprate Project will not require any changes in the withdrawal rates of ground water by CREC. It will also not cause any change in the impacts of plant pollutants on ground water.

5.3.3 Drinking Water

There will be no quality, quantity, or hydrological changes due to the CR3 Uprate Project water use, either by withdrawal or discharge to a drinking water source. Therefore, the uprate will have no impacts on drinking water.

5.3.4 Leachate and Runoff

The CR3 Uprate Project includes no coal or materials storage areas, ash and wastewater ponds, or flue gas desulphurization storage areas or ponds. Therefore, the uprate will have no impacts on ground or surface water quality, or on terrestrial and aquatic environments, due to leachate or runoff from such facilities.

5.3.5 Measurement Programs

No such programs are applicable.

5.4 Solid/Hazardous Waste Disposal Impacts

5.4.1 Solid Waste

The uprate will have no impact to disposal of solid wastes on-site, or to directly affected off-site landfilling operations. The CR3 Uprate Project will result in a small increase in the spent fuel discharge rate. These fuel assemblies will continue to be stored in the onsite NRC approved spent fuel storage facilities.

5.4.2 Hazardous Wastes

The uprate will have no impact on hazardous waste handling and/or disposal at CREC.

5.5 Sanitary and Other Waste Discharges

The uprate will not result in any increase of on-site staff, so will not generate any additional domestic wastewater. It will not require any changes in configuration or operation of the existing extended aeration domestic wastewater treatment plant.

5.6 Air Quality Impacts

This section presents a summary of the air quality requirements, air modeling methodology, and results of air quality impact analyses for the CR3 Uprate Project. Detailed information is contained in Appendix 10.1.5, Air Construction and PSD Application.

5.6.1 Impact Assessment

Wet cooling towers such as the proposed SCT for the CREC site provide direct contact between cooling water and air passing through the tower. Cooling tower drift is created when a small amount of the cooling water becomes entrained in the air stream and carried out of the tower. PM emissions from cooling towers are related to the total dissolved solids (TDS) and amount of drift through the cooling tower. Drift eliminators will be used to reduce the amount of drift and secondarily reduce the amount of PM emissions.

5.6.1.1 Regulatory Applicability

The permitting of the drift from the new SCT to be installed to maintain increasing thermal conditions at the CREC site requires an air construction permit and PSD approval. The new SCT for the CR Uprate Project will be a modification to an existing major air emissions source. The U.S. Environmental Protection Agency (EPA) has implemented regulations requiring PSD review for new or modified sources that increase air emissions above certain threshold amounts. That increase results from increased PM emissions from the new SCT.

EPA's PSD regulations are promulgated under Title 40 of the Code of Federal Regulations (CFR), Parts 51.166 and 52.21, and are implemented in Florida through the approved PSD program of the FDEP. FDEP has adopted PSD regulations codified in Rule 62-212.400, Florida Administrative Code (F.A.C.).

PSD applicability for the Project is summarized below.

Pollutant	Annual Emissions (TPY)	PSD Threshold (TPY)	PSD Review Required (Y/N)
PM	97.6	25	Y
PM ₁₀	5.9	15	N

A PSD review is required for particulate matter (PM) as total suspended particulate matter (TSP).

Citrus County has been designated as an attainment, maintenance or unclassifiable area for all criteria pollutants. The county is also classified as a PSD Class II area for PM₁₀, SO₂, and NO₂. Therefore, the new source review will follow PSD regulations pertaining to such designations.

5.6.1.2 Analysis Approach and Assumptions

Because PM, and not PM₁₀, was the only pollutant that triggered PSD review in the form of drift from the SCT, an air quality impact analysis was not conducted.

5.6.1.3 Additional Impact Analysis

In addition to air quality impact analyses, federal and State of Florida PSD regulations require analyses of the impairment to visibility and the impacts on soils and vegetation that would occur as a result of the proposed source [Rule 62-212.400]. These analyses are to be conducted

primarily for PSD Class I areas. Impacts as a result of general commercial, residential, industrial, and other growth associated with the source also must be addressed.

Because PM was the only pollutant that triggered PSD review, and not PM₁₀, additional analysis of impacts due to the proposed Project on soils, vegetation, visibility, growth, and air quality related values (AQRVs) in the nearest PSD Class I areas were not necessary.

Impacts Due To Direct Growth

Construction of the project will occur during two phases, concurrent with the facility refueling outages in 2009 and 2011. It is anticipated that many of these construction personnel will be drawn from surrounding metropolitan areas and will commute to the job site. The workforce needed to operate the project, once completed, will essentially remain unchanged from current conditions. Finally, there are expected to be no air quality impacts due to associated industrial/commercial growth given the project's location. The existing infrastructure should be more than adequate to provide any support services that the project might require.

Impacts on Soils, Vegetation, Wildlife, and Visibility

Wet cooling towers provide direct contact between cooling water and air passing through the tower. Cooling tower drift is created when a small amount of the cooling water becomes entrained in the air stream and carried out of the tower. PM emissions from cooling towers are related to the total dissolved solids (TDS) and amount of drift through the cooling tower. Drift eliminators will be used to reduce the amount of drift and secondarily reduce the amount of PM emissions.

It should be noted that, although cooling towers will emit particulates in the form of salt, the overall contribution to the area from cooling towers will be minimal. The CREC is located approximately one mile from the Gulf of Mexico. It is expected that the natural contributions of salt deposition from wave action to this area will be substantially greater than that which will be emitted from the cooling towers.

5.6.2 Monitoring Programs

5.6.2.1 *Ambient Air Quality Monitoring*

In accordance with requirements of 40 CFR 52.21(m) and Rule 62-212.400(5)(f), F.A.C., any application for a PSD permit must contain an analysis of continuous ambient air quality data in the area affected by the proposed major stationary facility or major modification. For a new major facility, the affected pollutants are those that the facility would potentially emit in significant amounts. For a major modification, the pollutants are those for which the net emissions increase exceed the significant emission rates, as described above.

An exemption from the preconstruction ambient monitoring requirements is available if certain criteria are met. If the predicted increase in ambient concentrations, due to the proposed modification, is less than specified *de minimis* concentrations, then the modification can be exempted from the pre-construction air monitoring requirements for that pollutant per FDEP rule. The proposed Project will result in PSD review for only PM emissions and, as such, no preconstruction ambient monitoring is required.

5.6.2.2 *Air Emissions Monitoring*

Continuous emission monitoring (CEM) for the pollutant of concern (PM) is not technologically feasible for a project of this type. In lieu of air emissions monitoring, the permittee typically certifies that the cooling towers were constructed and installed to achieve the specified drift rate. This certified drift rate, in combination with monitoring of the circulating water flow rate, serve as a surrogate for demonstrating air emissions compliance.

5.7 **Noise Impacts**

5.7.1 Impacts

Sound propagation involves three principal components: a noise source, a person or a group of people, and the transmission path. While two of these components, the noise source and the transmission path, are easily quantified (i.e., direct measurements or through predictive calculations), the effects of noise to humans is the most difficult to determine due to the varying responses of humans to the same or similar noise patterns. The perception of sound (noise) by

humans is very subjective, and just like odors and taste, is very difficult to predict a response from one individual to another.

The noise predictions for the CR3 Uprate Project were developed using the CADNA A computer model. The noise impacts of the CR3 Uprate Project were evaluated using the sound power levels (L_w) (Appendix 10.5.1) for the various operating equipment associated with the CR3 Uprate Project. The location of each noise source was based on its location in the computerized plot plan. The computerized drawing was imported into the CADNA A model for the noise analysis.

CADNA A is an environmental noise propagation computer program that was developed to assist with noise propagation calculations for major noise sources and projects. Noise sources are entered as octave band sound power levels, L_w . Locations of the noise sources, buildings, and receptors are input directly on the base map and can be edited throughout the modeling process. All noise sources are assumed to be a point, line, area or vertical area source, and can be specified by the user. Sound propagation is calculated by accounting for hemispherical spreading and three other user-identified attenuation options: atmospheric attenuation, path-specific attenuation, and barrier attenuation. Atmospheric attenuation is calculated using the data specified by the Calculation of the Absorption of Sound by the Atmosphere (ANSI, 1999). Path-specific attenuation can be specified to account for the effects of vegetation, foliage, and wind shadow. Directional source characteristics and reflection can be simulated using path-specific attenuation. Barrier attenuation is calculated by assuming an infinitely long barrier perpendicular to the source-receptor path. Total and A-weighted SPLs are calculated. Sources modeled included the cooling towers.

Table 5.7.1-1 presents the noise impacts of the CR3 Uprate Project. When predicted levels from cooling towers are combined with baseline noise levels there is no significant increase to the noise level at monitoring sites 5, 6, and 7. With the exception of Site 6 Night, the predicted noise levels of the baseline sites would be at or lower than Citrus County noise standards for residential land use of 60 dBA during the daytime and 55 dBA during the nighttime. The predicted noise levels are not expected to adversely impact the sensitive receptors identified in the vicinity of the Project Area.

Figure 5.7.1-1 shows the maximum predicted noise level compared with the L_{eq} baseline sound level observed during the nighttime at Site 6. This figure also shows a comparison of various noise sources and their respective sound levels.

Intermittent noise sources during routine startup, testing, and maintenance, and emergency conditions will include steam venting. Such activities would not normally occur simultaneously and would last for a short duration. The noise impacts of these conditions would not be expected to cause a nuisance.

5.8 Changes to Non-Aquatic Species Population

5.8.1 Impacts

No adverse impacts to non-aquatic species are anticipated during the operation of CR3 following completion of the CR3 Uprate Project. All of the CR3 facilities will be located primarily upon previously-impacted areas which does not provide suitable natural areas for wildlife. The existing CR3 site has been disturbed during prior construction of the existing CR3 facilities, including removal of vegetative communities, topographic grading, and hydrologic alteration. The CR3 facility does not provide critical habitat for wildlife; therefore the operation of CR3 is not anticipated to result in the reduction of any populations of non-aquatic species.

No adverse impacts to federal- or state-listed terrestrial plants or animals are expected during facility operations, due to the existing developed nature of the habitat within the site. No long term change in the populations of any threatened or endangered species is anticipated as a result of operation of CR3.

No changes in wildlife populations at the adjacent undeveloped areas are anticipated, including listed species. Noise and lighting impacts are minimal, and not anticipated to deter the continued use of the undeveloped forested areas within the vicinity by listed species of wildlife based upon evidence from existing power facilities in Florida.

5.8.2 Monitoring

Because no significant impacts to non-aquatic species populations are anticipated, no monitoring program is proposed.

5.9 Other Plant Operation Effects

5.9.1 Operations Traffic

A traffic study was prepared to review the expected impact on the roadway transportation network during normal plant operations following the conclusion of the CR3 Uprate Project (Appendix 10.6).

For the purposes of the traffic study, it is anticipated that no increase in operations personnel will occur beyond the conclusion of the construction activities in 2011. The 2012 operations traffic volume assumes that no new trips are projected as compared to the 2007 existing conditions (Figure 5.9.1-1). The future 2012 build-out scenario is anticipated to be completed with no new additional employees (Table 5.9.1-1).

TABLE 5.9.1-1
Roadway Capacity Analysis Summary

Road Name	From/To	Lanes	Peak Hour Service Volume LOS D	2012 Peak Hour Project Volume	Percent Impact
U.S. Highway 19/98	South of Powerline Street	4D	5,140	0	0.0%
	North of Powerline Street	4D	5,140	0	0.0%
West Powerline Street	West of U.S. Highway 19/98	2U	1,190	0	0.0%

(1) Level of Service D Capacity obtained from Table 4-6 of the Florida Department of Transportation 2002 Q/LOS Manual.

The total build-out condition represents a total of 1,400 permanent employees. Results of the 2012 scenario capacity analyses demonstrate that the intersection is anticipated to perform at a Level of Service C in the A.M. peak hour and at a LOS B in the P.M. peak hour. The sections of U.S. Highway 19/98 north and south of Power Line Road are expected to operate at or better the LOS B for the build-out condition. The proposed uprate project does not represent any additional trips at build-out and all roadway LOS conditions are expected to be maintained at the completion of the proposed project. (Table 5.9.1-2).

TABLE 5.9.1-2
Intersection Capacity Analysis Summary

Intersection	Time Period	Existing 2007		Build 2012	
		LOS	Delay (sec)	LOS	Delay (sec)
U.S. Highway 19/98 and West Powerline Street	A.M. Peak Hour	B	19.8	C	20.4
	P.M. Peak Hour	A	8.4	B	10.0

5.9.2 Effect of Train Operations

As indicated in Section 5.9.1, it is expected that trains will continue to be used during normal CREC site operations and will not be impacted or increased by the CR3 Uprate Project.

5.10 Archaeological Sites

No sites of historic or archaeological significance will be impacted due to the operation of CR3. No sites listed, or eligible for listing in the *National Register of Historic Places*, are located in close proximity to the site. No direct or indirect impacts are anticipated from any operation aspect of the CR3 Uprate Project.

5.11 Resources Committed

There are no major irreversible and irretrievable commitments of national, State, and local resources due to the CR3 Uprate Project.

5.12 Variances

No variances from any applicable standards of any State, regional or local government agency are being requested as part of this application.

5.13 References

Level of Service D Capacity obtained from Table 4-6 of the Florida Department of Transportation
2002 Q/LOS Manual.

FIGURES



Figure 5.7.1-1
 Operations Noise Map
 Progress Energy Florida
 Crystal River Unit 3 Uprate Project

AM PEAK HOUR



PM PEAK HOUR



SCALE: N.T.S.



Transportation Solutions for Today and Tomorrow
Park Tower Suite 1140 / 400 North Tampa Street
Tampa, Florida 33602 / (813) 366-3630

PROJECT NO. GOLAS00-07199

PROJECT: CR3 UPRATE PROJECT

TITLE: 2012 Build Traffic Volumes

FIGURE

5.9.1-1

D.B. cad
C.B. cad
REV. _____

6.0 TRANSMISSION LINES AND OTHER LINEAR FACILITIES

CR3 generates electric power at 22 kV which is fed through an isolated phase bus to the unit main transformers where it is stepped up to 500 kV transmission voltage and delivered to the 500 kV substation. The 500 kV substation is a ring bus. The 230 kV substation is connected to the existing Progress Energy Florida transmission network by five lines which leave the site on three independent rights-of-way and terminate in three separate substations. The 500 kV substation is connected to the existing PEF transmission network by two full capacity lines (each line is physically capable of handling full output of Units 3 and 5 generation) which leave the site in independent rights-of-way and terminate in separate substations.

No new off-site electrical transmission facilities or other associated facilities are required for the CR3 Uprate Project.

7.0 ECONOMIC AND SOCIAL EFFECTS OF PLANT CONSTRUCTION AND OPERATION

The purpose of this section is to identify the economic and social effects of construction and operation of the CR3 Uprate Project and quantify the project's benefits and costs in the area surrounding the CR3 site as well as to the Citrus County economy and to the state of Florida. The CREC, being the largest power-producing facility in the state of Florida, currently provides power to over 1.6 million customers in Florida.

Socioeconomic effects are either direct or indirect. Direct effects are those that are the direct result of the construction or operation of the CR3 Uprate Project. Indirect effects are costs and benefits that affect people and business interests near the project who, because of their relative proximity to the CR3 site, may experience changes in their local socioeconomic environment, such as increased spending due to project construction and operation. Some of these effects are estimated through economic studies that rely on generally accepted assumptions to assess the relative values of expected costs and benefits.

This section is divided into two parts. Section 7.1 addresses both the direct and indirect socioeconomic benefits of the project and consists of an analysis of the construction and operational expenditures. Section 7.2 addresses the temporary and long-term indirect costs involving the construction and operation of the CR3 Uprate Project as well as the construction and operational use of private and public services in the vicinity of the site and in Citrus and the surrounding counties. All cost and benefit values are based on 2006 dollar values.

7.1 Socioeconomic Benefits

7.1.1 Direct Socioeconomic Benefits

The CR3 Uprate Project will have two direct economic benefits to the local economy, local communities, and the surrounding area: construction employment opportunities and increased public revenue. Employment opportunities will be associated with the construction-related needs of the CR3 Uprate Project. Increased public revenue will result from the anticipated property tax changes from the facility improvements and additions.

7.1.1.1 Project Economic Profile

PEF currently employs approximately 700 permanent and long-term contract staff at the CR3 site during normal operations. During refueling outages, which are scheduled for 2009 and 2011, approximately 800 additional employees (i.e., craft and technical staff) are anticipated. Construction of the CR3 Uprate Project will take place in two phases. The first phase (Phase I) will occur in the fall of 2009 and the second phase (Phase II) will occur in the fall of 2011. Construction activities associated with the CR3 Uprate Project will occur concurrent with these refueling outages and will result in an additional 650 construction workers in 2009 and 580 construction workers in 2011. It is anticipated that during peak construction activities (in late 2009 and 2011) the total workforce at the CREC site could total up to 2,950 employees (in 2009) and 2,080 employees (in 2011) during completion of both the SGRP and CR3 Uprate Project (Table 7-1).

TABLE 7-1							
CREC EMPLOYEE DATA (Permanent and Temporary)							
	2007	2008	2009	2010	2011	2012	2013
Existing project Information							
CREC	1400	1400	1400	1400	1400	1400	1400
CR3 Refueling Outages ¹	800		800		800		800
Clean Air Project Construction ²	600	600	600				
CR 4 and 5 Trucks ³	125	125	125	285	285	285	285
CR 1 or 2 Outage ⁴	350			300	40	350	100
CR 4 or 5 Outage ⁴	20	350			100	50	100
Steam Generator Replacement Project ⁵			800				
CR3 Uprate Project Information							
Uprate Project	305	400	650	405	580		

1. Employees anticipated onsite during 4 quarter only.
2. Construction employees associated with Clean Air Project (Icon, 2006).
3. Truck trips associated with operation of the CR 4 and 5.
4. Outage scheduled during 1st or 2nd quarter – and does not occur with CR3 outage.
5. Construction employees associated with Steam Generator Replacement Project during 3rd and 4th quarter only.

The additional labor demands associated with construction activities will not create labor shortages. Due to the proximity of the CR3 Uprate Project to the Tampa metropolitan area labor market, which includes Citrus County, the labor demand is expected to be met by labor in Citrus County, the Tampa metropolitan area and nearby counties. Population and housing impacts will be minimal because construction employees are anticipated to currently reside in the area and the potential for migration into the area during construction is anticipated to be modest. The existing communities have sufficient resources to accommodate the expected modest increase in employment, wages, and sales.

The proposed construction activities will require skilled labor for the anticipated installation and equipment modifications; therefore, construction workers could be paid higher wages than the local market pays. This increase in wages will also benefit the surrounding area by using workers within local labor unions that, in turn pay taxes and purchase goods and services within the community. Ongoing operation of the plant will not require additional staff; therefore, the existing workforce of approximately 600 employees will continue following the completion of the CR3 Uprate Project.

The total cost for the CR3 Uprate Project is \$250 million for the installation and equipment upgrade requirements at the CR3 facility. These costs are split between the two construction phases: Phase I has an estimated \$100 million and Phase II has an estimated at \$150 million in project costs. The major costs associated with this construction project include major equipment and materials (about \$200 million) and labor (about \$20 million) over the four-year construction period. The remaining costs of \$30 million for development of the project are associated with engineering, licensing, contingencies, and other miscellaneous costs.

PEF is a private enterprise that provides a service to the public; however, a measurable benefit is accrued through payments received for services rendered. Therefore, financing costs for facility upgrades and modifications are met through cost recovery as a result of electric bill payments made by the consumers.

7.1.1.2 Fiscal Impacts

The net economic impact of a project on its host government and local communities, for the life of the project, is the difference between the total operating revenue and operating costs. Operating revenues consist of *ad valorem* tax revenue, franchise fees, occupational licenses, building permits, utility taxes, state revenue proceeds, charges for county services, etc, paid by project owners to

various governmental agencies. Operating costs include costs for services such as financial and administrative expenses, emergency and disaster relief, legislative and executive expenses, and comprehensive planning incurred by governmental agencies. The county government also earns capital revenues and pays capital expenses. Capital revenues are based on impact fees and capital expenses are costs related to purchases for roads, fire rescue, law enforcement, etc.

The CREC is the largest power-producing facility in the state of Florida and is located entirely within Citrus County. Therefore, annual property taxes are paid to one local government or municipality; Citrus County. Citrus County then distributes these funds to the Board of County Commissioners, the Citrus County Hospital Board, the Citrus County School Board, SWFWMD, the Homosassa Special Water District, the Mosquito Control District, and the county's municipalities to fund their respective operating budgets (Citrus County Tax Collector's website).

For the past four years (2002 through 2005), property taxes from CREC to Citrus County have averaged at \$8,764,210 per year, which has represented a 6.7 percent of Citrus County's total property tax revenue. Table 7-2 presents the total property taxes received by the County, property taxes paid by PEF and the estimated percent of total provided by PEF for the past four years.

TABLE 7-2

Year	Citrus County Total Tax Revenue¹	Progress Energy Property Tax Payment²	Citrus County Percent of Revenues
2002	\$109,976,197	\$10,314,467	9.4
2003	\$118,857,916	\$8,130,644	6.8
2004	\$134,797,365	\$8,044,270	6.0
2005	\$157,764,712	\$8,567,459	5.4

Source:

1. Waldemar, 2007.
2. Citrus County Property Appraiser's Database

The total net economic benefit to Citrus County is based on current tax rates for each taxing authority, as determined for the state of Florida and Citrus County and an estimated property and onsite facility value. As tax rates, property values, and facility values change for each taxing authority over the life of the project, revenues will change accordingly. Following the CR3 Uprate Project, property tax revenues for the overall CREC facility is estimated to increase to approximately

\$10 to 12 million subsequent to construction and commercial operation. This will result in a substantial economic benefit to the County.

Because CR3 and CREC are largely self-sufficient, public utilities or services (i.e., water, wastewater, and transportation links) which are generally provided to property owners by Citrus County will not be required. The *ad valorem* revenue that will accrue to the water management district during the next 20 years of operation period will be used for a wide variety of purposes including environmentally sensitive land acquisition programs and land stewardship of these properties. Payments made to the School Board are applied to operations as well as capital expenditures for new or upgraded facilities.

In addition to local government fiscal benefits and sales tax benefits will accrue to the state of Florida. It is estimated that sales tax revenue will accrue during construction and operation. These taxes will be placed in the state's general fund and will be available for use as deemed appropriate by the state.

7.1.1.3 Economic Impacts

Among the primary direct benefits of plant construction and operation will be the increase in job opportunities for Citrus County and adjacent areas. It is anticipated that construction employment will peak to 650 workers during peak construction-related activities, over the four-year construction period. With the completion of the CR3 Uprate Project in 2012, the CR3 Uprate Project will not result in any new employment positions at the CREC. PEF is currently hiring to meet company needs, but these new hires are not anticipated to be permanently located at the CREC. Therefore, payroll for CR3 employees is estimated to average \$5 million per year during construction and is estimated to remain at approximately \$50 M per year during full operations thereafter.

7.1.2 Indirect Economic Benefits

The proposed project will have several indirect, economic benefits to the local economy, the local communities, and the surrounding area. These benefits include equipment and material purchases and rentals; secondary employment opportunities; increased demand of goods and services; and increased spending power.

It is anticipated that various construction materials such as concrete, fill material, lumber, and miscellaneous buildings materials will be purchased from local suppliers on a competitive basis, as would miscellaneous tools, office supplies, automotive parts, hardware, first aid and safety supplies, fuels, and lubricants. Site contractors could also obtain construction equipment and vehicle rentals from local sources when available in the area. While the large, hardware items to be installed at the facility will be custom-made pieces imported from outside the U.S. based on manufacturing availability, the majority of the construction-related materials and equipment items (as previously mentioned) would provide a substantial benefit to the local businesses and service providers. Additionally, indirect jobs could be created in the county and surrounding areas by expenditures for materials and supplies such as paint, lumber, hardware, office supplies and the like required for construction-related activities as well as ongoing operation and maintenance.

It is anticipated that majority of the construction wages paid by contractors for construction-related activities will be spent within Citrus County and the surrounding area. The wages earned in the area could create additional demands for goods and services as the workers spend some of their earnings within the community. As this money is spent, it will create a ripple effect within the area, thereby generating economic activity, including additional jobs and earnings to meet the additional demands. It is possible that the construction workers could be transient workers that could place a strain on the community, in the short run. For example, some construction workers will utilize community services (e.g., roads, schools, and health services) and will not be paying individual property tax. The estimated earnings will result in indirect or secondary benefits to the community, which will benefit other companies whose payrolls could increase from the construction project.

7.1.3 Other Economic Benefits

The major expenditures for the CR3 Uprate Project will be the delivery of the custom-made, large equipment and machinery to be installed at the facility. These costs not only include the cost of the commodity but the cost of transportation to the site. Based on the large-scale needs, deliveries to the project site could use the existing CSX Transportation rail line that abuts the PEF property. The existing rail spur is located just south of the West Powerline Street, which is the access road to the facility. Routine equipment and materials required for construction and general operation will be delivered to the site using the existing West Powerline Street access road, after general improvements planned to enhance traffic flow and safety considerations during construction and operation are completed.

The increase of electrical generation resources at the CREC will result in an economic benefit to consumers and the community by providing cleaner energy while reducing total fuel costs. The new technology will reduce fuel costs, and therefore, will provide a savings to customers that will result in more than \$2.6 billion through 2036. In addition, the increase of gross output from CR3 Uprate Project will allow PEF to service an additional 110,700 households.

7.1.4 Social Benefits

7.1.4.1 *Recreational and Environmental Benefits*

Construction and operation of the uprated facility will not cause a significant impact on the recreational and environmental value of the area. The potential disturbance during construction-related activities will be insignificant to non-existent at the closest receptor since majority of the construction activities will take place within the existing structure. Related activities that will be outside of the existing structure will consist of lay-down area for equipment and materials, construction worker parking, and deliver of construction-related equipment and materials. To prevent construction-related impacts upon the environment, the following actions will be implemented:

- Construction-related activities will be kept on property currently owned by PEF;
- Ground disturbances will be minimized;
- Stormwater management systems will be maintained for areas outside the existing facility;
- Upward light spill and glare will be minimized with outdoor lighting plans that incorporate lighting standards and fixtures; and
- Washdown of equipment and materials will be conducted to prevent the transfer of materials and dust onto roadways when leaving the property.

7.1.5 Summary of Benefits

Impacts to the economy associated with the construction and operation of the CR3 Uprate Project are expected to be positive. Labor demands associated with the construction and operation of the uprated facility are not expected to create labor shortages. Additionally, construction expenditures for

CR3 Uprate Project materials, equipment, and workers will boost the economic activity and income

in Citrus County and the surrounding communities. Population and housing impacts associated with the CR3 Uprate Project will be slight due to minimal migration into the area.

Construction activities will increase tax revenues to the county and state governments due to sales taxes, property taxes, and the purchase and rental of equipment and material to support construction activities. Upon completion of the CR3 Uprate Project, Citrus County and its taxing authorities are expected to receive millions of dollars in tax revenues.

Temporary transportation impacts are expected to be related primarily to increased traffic associated with the daily commute of construction workers and deliveries to and from the CR3 site. Construction worker traffic will vary during the two construction phases in 2009 and 2011. The level of service will temporarily decline on local roadway segments and intersections during morning and afternoon peak hours during peak construction in late 2009. Upon completion of the CR3 Uprate Project, transportation impacts on area roads will be negligible and effects from train deliveries will return to its previous activity. As presented in Subsection 5.9.1, truck traffic and automobile traffic from operations and maintenance workers should not impact other traffic using roadways nor should they impact levels of service on local roadways.

Overall land use impacts from the construction and operation of the CR3 Uprate Project are expected to be minor due to the remote location of the proposed project, the buffers to adjacent properties, and since the majority of the construction activities will be taking place within the existing building. No direct land use impacts are anticipated in association with the CR3 Uprate Project. Visual impacts from the construction and operation of the CR3 Uprate Project will be minimal and localized. No sites of historic or cultural significance are located on the CR3 site; therefore, cultural and historical resources will not be affected by the CR3 Uprate Project.

Overall, socioeconomic impacts associated with the proposed project in general will be favorable. Although the local community may experience some temporary impacts during peak construction periods, overall economic impacts will be positive.

7.2 Socioeconomic Costs

7.2.1 Temporary External Costs

The CR3 Uprate Project will require highly trained and skilled workers to meet the anticipated peak construction worker demand of 650 employees. With ample labor supply existing within the surrounding area, it is anticipated that many workers will be hired within the region. As is typical with shorter construction projects, it is not anticipated that workers will relocate to the immediate area and alter the demands on public facilities and services.

During the construction periods, peak activities are anticipated to take place during regularly scheduled refueling outages. Minimal to no impacts are anticipated to traffic, air and noise conditions within the surrounding areas, as discussed in Sections 4.5.5 and 4.5.2, respectively. In addition, the majority of the construction-related activities will be conducted within the existing buildings and therefore, not create impacts to the natural resources surrounding the project site.

7.2.2 Long-term External Costs

The proposed project's external cost impacts will be minimal and localized. The CR3 Uprate Project will consist of system modifications to accommodate nuclear fuel enrichment, resulting in increased generation capacity from the company's lowest cost fuel source. The modifications will occur within existing buildings located on the CREC property. These system modification will improve the operation of CR3 and will not cause any impairment to recreational values, result in any deterioration of aesthetic and scenic values, or restrict access to areas of scenic values. The CR3 Uprate Project also will not displace any persons or result in any significant costs to local government.

Since there will not be an increase in operational workforce, no changes are anticipated from the direct and indirect impacts upon the local services (e.g., schools, police). The uprated facility will result in modifications to the existing property value that will in turn increase the *ad valorem* revenue. This long-term costs paid to Citrus County will be significantly greater than the minimal cost for services associated with CREC. Overall, the project will have a long-term economic benefit for Citrus County and the surrounding communities.

7.3 References

Progress Energy. 2006. Applicant's Environmental Report, Operating License Renewal Stage Crystal River Unit 3.

Citrus County Tax Collector's Office. [Online] Available: <http://www.tc.citrus.fl.us/millage.htm>, (accessed April 26, 2007).

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Progress Energy. April 2007. Personal Communication, April 2007.

U.S. Department of Labor. 2007. Davis-Bacon Wage Determination. [Online] Available: www.gpo.gov/davisbacon/ (accessed April 2007).

8.0 SITE AND DESIGN ALTERNATIVES

This optional chapter is not being submitted as part of this SCA because an Environmental Impact Statement required by the National Environmental Policy Act is not required for the CR3 Uprate Project.

9.0 COORDINATION

State, regional, and local agencies were contacted to provide input to the CR3 Uprate Project. The contacts included agency meetings and discussions, as well as meetings with several public organizations. The following is a list of meetings that were held to support the CR3 Uprate Project:

9.1 Citrus County

May 11, 2007: Crystal River, Florida

Introduction of CR3 Uprate Project to Citrus County Planning and Zoning staff (Gary Maidhoff and Tina Gilson).

May 24, 2007: Crystal River, Florida

Discussion of CR3 Uprate Project traffic study methodology with Citrus County staff (Cynthia Jones and Heather Urwiller).

9.2 Florida Department Environmental Protection

March 15, 2007: Tallahassee, Florida

Introduction of CR3 Uprate Project to FDEP PPSA Siting Team (Mike Halpin, Cindy Maulkey and Scott Gorland).

May 3, 2007: Tampa, Florida

Introduction of CR3 Uprate and SGRP projects to FDEP Southwest District staff (Mike Halpin, Bill Kutash, Yanisa Angulo, Al Gagne, Susan Pelz, Dennis Pearson and Mara Nasca).

May 9, 2007: Tallahassee, Florida

Introduction of CR3 Uprate Project to FDOT staff (Ms. Sandra Whitmire and Sheauching Yu).

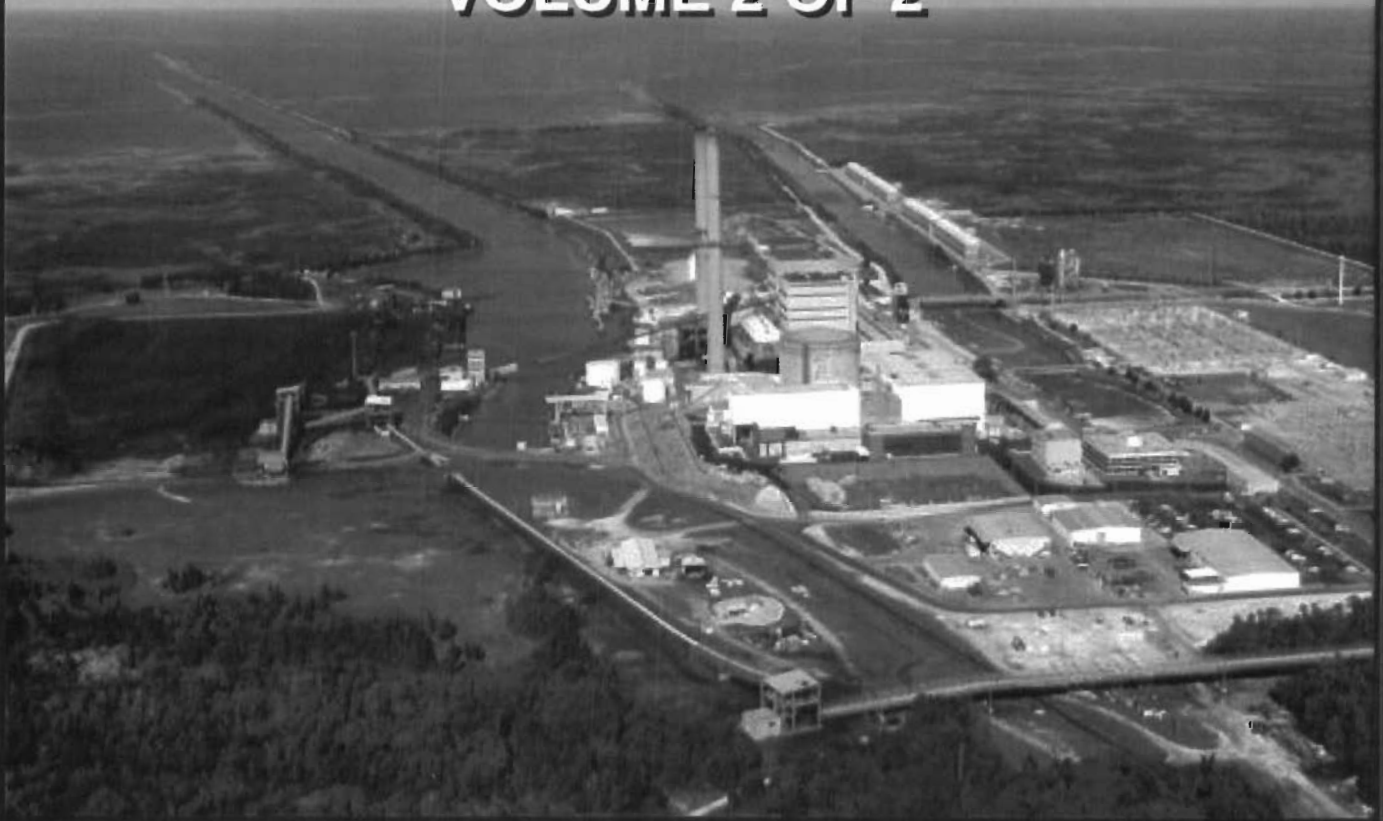
May 9, 2007: Tallahassee, Florida

Introduction of CR3 Uprate project to FDEP NPDES staff (Mike Halpin, Marc Harris, Allen Hubbard, David Whiting, Nia Wellendorf, Edward Smith, Bala Nori and Cindy Malkey).



Progress Energy

SITE CERTIFICATION APPLICATION FOR CRYSTAL RIVER UNIT 3 UPRATE PROJECT VOLUME 2 OF 2



**Golder
Associates**

June 2007

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JUN 11 2007

VOLUME 2 OF 2

LIST OF APPENDICES

SITING COORDINATION

Appendix 10.1 Federal Permits or Approvals

- Appendix 10.1.1 316 (a) and (b) Demonstrations
- Appendix 10.1.2 Crystal River Units 1, 2, and 3 NPDES Permit # FL0000159
- Appendix 10.1.5 Prevention of Significant Deterioration

Appendix 10.2 Citrus County Zoning Ordinance

Appendix 10.3 Citrus County Land Use Plan

- Appendix 10.3-1 Cultural Resources Background Research, Supporting License Renewal, Crystal River Nuclear Plant, Citrus, and Levy Counties, Florida

Appendix 10.4 Existing Permits

- Appendix 10.4.1 Water Use Individual Permit No. 204695.03
- Appendix 10.4.2 Crystal River Units 1, 2, and 3 Wastewater Treatment Plant Permit
- Appendix 10.4.3 Crystal River Units 1, 2, and 3 IWWP #FLA01690
- Appendix 10.4.4 Crystal River 3 – Section 7 Consultation – U.S. NMFS Biological Opinion
- Appendix 10.4.5 Title V Air Operation Permit Revision – Final Permit No.: 0170004-015-AV

Appendix 10.5 Monitoring Programs

- Appendix 10.5-1 Calibration Certificates for Noise Monitoring Equipment

Appendix 10.6 Traffic Study

APPENDIX 10.1

FEDERAL PERMITS AND APPROVALS

APPENDIX 10.1.1

316 (a) AND (b) DEMONSTRATIONS

SECTION 10.1.1

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10.0 APPENDICES

10.1 316 (a) and (b)

10.1.1 316 (a) and (b) Demonstrations

Thermal and cooling water intake impacts to aquatic resources are both regulated by the Clean Water Act, Sections 316(a) and (b), respectively. 316(a) and (b) demonstration studies were conducted in 1983-1984 to evaluate the impact of CR 1, 2, and 3 on regional fisheries (Crystal River Units 1, 2, and 3, 316 Demonstration Final Report, Florida Power Corporation, 1985). A sampling program was conducted from 1983 to 1984 to evaluate the 1) thermal impacts on water quality, benthos, macrophytes, salt marsh and fisheries and 2) intake effects from entrainment and impingement. Sampling began in June 1983 and ended June 1984. Sampling methods followed standard protocols.

10.1.1.1 316(a) Demonstration

The comprehensive 316(a) study conducted from 1983-1984 demonstrated that the existing thermal discharge caused substantial damage in Crystal Bay in violation of the existing Florida water quality standards [FAC Section 17-3.05(1) (a)]. FPC submitted a proposal for certain mitigation measures which included: creation of marshes, planting of seagrasses, construction, and operation of a hatchery, and implementation of a monitoring program. On January 23, 1987, FPC submitted an alternative proposal to extend the existing discharge canal. Additional information regarding that proposal was provided on April 17, 1987, which included the installation of helper cooling towers (i.e., to cool a portion of the plant's heated effluent and return it to the discharge canal to mix with the remainder of un-cooled effluent). The proposal was modified on March 1, 1988, to include a seagrass monitoring and planting program, and a limitation on plant operations to maintain a three-hour average temperature not to exceed 96.5°F.

Subsequently, the EPA (and FDEP) issued an NPDES permit in 1988 with a 316(a) variance and daily maximum three hour rolling average thermal discharge limit of 96.5°F. The 316(a) variance was reissued during the most recent permit renewal cycle, and is still in effect because "there have been no physical or operational changes and no changes are expected in the upcoming permit cycle that will materially change the plant cooling water intake and discharge characteristics". The thermal variance remains a condition of the current NPDES permit, issued May 9, 2005 (Appendix 10.4).

The helper cooling towers are currently operated as necessary to ensure that the discharge temperature does not exceed 96.5°F (as a three-hour rolling average) at the point of discharge into the Gulf of Mexico. In February 2006, PEF received approval from the state of Florida to install modular cooling towers to allow that CR 1 and 2 operate during the warmest times of the year. As discussed in Section 3.5, the new South Cooling Towers will be installed and operated as necessary to ensure that the discharge does not exceed 96.5°F. There will be no net thermal discharge increase associated with the CR3 Uprate Project.

10.1.1.2 316(b) Demonstration

Section 316(b) of the CWA requires that the location, design, construction and capacity of the facility cooling water intake structure (CWIS) reflect the best technology available for minimizing adverse environmental impacts. Environmental impacts associated with CWIS may be caused by water withdrawals which result in impingement (trapped against intake screens) or entrainment (drawn into and through the cooling system - i.e., pumps, condenser tubing, etc).

The intakes of the Crystal River Power Plant are located in an estuarine nursery area. The capacity of Units 1, 2, and 3, based on a once-through cooling mode is 1,898 MGD. There are no design features incorporated in the facility which would minimize impact of the large volume of flow and location. The EPA previously determined that the location, capacity, and design of Crystal River Units 1, 2, and 3 do not reflect the best technology available for minimizing adverse impacts as required by 316(b) of the CWA. To minimize the adverse impact of the plant intake structures, installation of fine mesh screen and a return mechanism would constitute best available technology. However, such a modification was not considered to be technically feasible, due to the use of the intake canal for coal delivery. Ambient silt from the Gulf of Mexico, which settles in the intake canal is re-suspended by coal barges, would collect on the intake screens (0.5 mm mesh would necessary to remove fish eggs and larvae). Even if the silt did not clog the screens and render them inoperable, return of the removed solids to Salt Creek (necessary for return of aquatic organisms in Crystal River site) would cause unacceptable siltation in the small creek. No other practical technological modification of the cooling water intake structures is available which would minimize the environmental impacts to an acceptable level. Therefore, it was concluded that a reduction of plant flow by 15 percent during the months of November through April, in conjunction with the construction and operation of a fish hatchery over the remaining operating life of CR 1, 2 and 3 constituted minimization of the environmental impacts of the cooling water intake.

10.1.2 Entrainment

The reduction of intake flow by 15 percent was specifically required to offset entrainment impacts associated with facility operations. Specifically, cooling water withdrawals are limited to 1,897.9 MGD from May 1 – October 31 and 1,613.2 MGD from November 1 – April 30 to minimize impact to the fall, winter and early spring spawners including pinfish, Atlantic croaker, Gulf flounder, Gulf menhaden, striped mullet and spot. Flow reductions as required in the current NPDES permit continue to offset the previously identified entrainment impacts associated with the operation of CR 1, 2 and 3.

10.1.3 Impingement

The Crystal River Mariculture Center was established to mitigate fisheries impacts (impingement) related to the once-through cooling water system at CR 1, 2, and 3. The multi-species marine fish hatchery began operation in October 1991. The Center has four spawn rooms and eight one-acre ponds. Red drum, spotted seatrout, pink shrimp and striped mullet were the species initially selected for culture. Pigfish, silver fish, blue crab and stone crab were added and cultured at the Center. To date, 945,394 red drum fingerlings, 808,164 seatrout fingerlings, and 241,898 pink shrimp have been released in areas of the Gulf of Mexico. The continued operation of the Mariculture Center successfully offsets the previously identified impingement impacts associated with the operation of CR 1, 2 and 3.

10.1.4 CR3 Uprate Project

The CR3 Uprate Project will result in increased cooling water flow rates and a larger pumping capacity than what currently exists within the water flow system which supply the steam generators. Overall, the uprate project will result in an additional 140 MW of power and include alterations that will elevate the thermal discharge.

As discussed in Section 3.5, a new SCT has been proposed both to offset the increased circulating water rejected heat and to replace the existing modular HCT. A small portion of the increased flow associated with the uprate project (up to about 1,288 gpm) will be evaporated in the recirculating portion of the new SCT, which will be used year-round to dissipate the increase in rejected heat. The new SCT has also been designed to avoid any increase in flow into the intake canal from Crystal Bay/Gulf of Mexico, and to avoid any increase in heat load or temperature rise leaving the discharge

canal to Crystal Bay/Gulf of Mexico. For the purpose of this SCA, a conservative and conceptual design plan for the South Cooling Tower has been proposed. Detailed design will be addressed as part of the NPDES renewal process in 2009.

PEF may propose to install the new permanent SCT, between the intake and the discharge canal as shown in Figure 3.5.1-1, which will include a safety factor (of at least one cell) and consist of 18 cells arranged in a 9 by 2 configuration. Depending on the final amount of the increase in condenser cooling water, between six and eight cells will be operated full time in the recirculating mode, and from 12 to 10 respectively would be operated in the helper mode as required. Figure 3.5.1-1 provides a simplified water use diagram showing the expected division of flow for the latter case. The flow from eight cells is estimated to be 152,136 gpm, which is more than the potential maximum CR3 condenser cooling water flow rate increase of 150,000 gpm. Therefore, the CR3 Uprate Project should actually cause some slight reduction in entrainment relative to the existing conditions.

Through-screen velocity is anticipated to increase from 1.45 fps (max at MLW) to as much as 2.02 fps (max at MLW) with the CR3 Uprate Project. This is because the four existing cooling water pumps will be modified to deliver as much as 207,778 gpm each. This increased velocity could result in an increase in impingement mortality. The installation and operation of the proposed recirculating six to eight cells of the SCT will slightly reduce entrainment impacts due to the slightly reduced overall intake flow from Crystal Bay, and may also reduce impingement mortality by reducing the number of organisms available to be impinged.

As necessary PEF intends to request modification of the NPDES permit to authorize the operation of the new SCT and an increase in circulating water flow at CR3 from 680,000 gpm/923 MGD to as much as 830,000 gpm/1,195 MGD. Overall, the proposed CR3 Uprate Project will not increase flow to the intake canal from Crystal Bay and there will be no net increase in the thermal discharge at the NPDES POD. The CR3 Uprate Project will not have a negative impact to fisheries or the aquatic environment.

In the interim, the NPDES permit issued May 9, 2005 acknowledges that the existing mitigation measures are adequate and constitute the most recent 316 (a) and (b) determination of BTA for the CREC.

APPENDIX 10.1.2

**CRYSTAL RIVER UNITS 1, 2, AND 3
NPDES PERMIT # FL0000159**

**STATE OF FLORIDA
INDUSTRIAL WASTEWATER FACILITY PERMIT**

PERMITTEE:

Progress Energy Florida
Crystal River Units 1, 2, and 3
P.O. Box 14042
St. Petersburg, FL 34428

PERMIT NUMBER:

FL0000159 (Major)

PA FILE NUMBER:

FL0000159-009 -IW1S/NR

ISSUANCE DATE:

May 9, 2005

EXPIRATION DATE:

May 8, 2010

RESPONSIBLE AUTHORITY:

Mr. Michael Olive
Manager

FACILITY:

Progress Energy Florida
Crystal River Plant Units 1,2 and 3
15760 West Powerline Street
Crystal River, FL 34428
Citrus County

Latitude: 28° 58' 2" N Longitude: 82° 41' 49" W

This permit is issued under the provisions of Chapter 403, Florida Statutes (F.S.) and applicable rules of the Florida Administrative Code (F.A.C.), and constitutes authorization to discharge to waters of the state under the National Pollutant Discharge Elimination System (NPDES). The Permittee is hereby authorized to operate the facilities shown on the application and other documents attached hereto or on file with the Department and made a part hereof and specifically described as follows:

Operation of an industrial wastewater treatment and disposal system to serve the referenced facility. The facility consists of two fossil fuel units (Units 1 and 2) and a nuclear fuel unit (Unit 3). These units have a combined maximum permitted daily discharge flow of 1,898 MGD and a total name plate rating of 1,854.8 MW. The facility discharge consists of once-through condenser cooling water, treated nuclear auxiliary cooling water, treated coal pile rainfall run off, intake screen washwater, and treated non-radioactive waste/radiation waste.

The radioactive component of the discharge is regulated by the U.S. Nuclear Regulatory Commission under the Atomic Energy Act and not by the U.S. Environmental Protection Agency under the Clean Water Act.

WASTEWATER TREATMENT:

Wastewater treatment at the facility consists of the following: filtration and or other biocide treatment of once-through non-contact condenser cooling water (OTCW); neutralization, settling, filtration and/or oil/water separation for low volume wastes and metal cleaning wastes..

EFFLUENT DISPOSAL:

Surface Water Discharge:

An existing discharge of OTCW to the site discharge canal and thence to the Gulf of Mexico, a Class III marine water, via **Outfall D-011**, located approximately at latitude 28° 57'30.8" N, longitude 82° 42' 00.7" W.

An existing discharge of OTCW to the site discharge canal and thence to the Gulf of Mexico, a Class III marine water, via **Outfall D-012**, located approximately at latitude 28° 57'31.2" N, longitude 82° 42' 03.0" W.

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An existing discharge of OTCW to the site discharge canal and thence to the Gulf of Mexico, a Class III marine water, via **Outfall D-013**, located approximately at latitude 28° 57'30.9" N, longitude 82° 41' 54.9" W.

An existing discharge of intake screen washwater to the site intake canal and thence to the Gulf of Mexico, a Class III marine water, via **Outfall D-091**, located approximately at latitude 28° 57'24 " N, longitude 82°42 '0.4" W.

An existing discharge of intake screen washwater to the site intake canal thence to the Gulf of Mexico, a Class III marine water, via **Outfall D-092**, located approximately at latitude 28° 57'23.2 " N, longitude 82°42 '01.9" W.

An existing discharge of intake screen washwater to the site intake canal and thence to the Gulf of Mexico, a Class III marine water, via **Outfall D-093**, located approximately at latitude 28° 57'21.6 " N, longitude 82°41 '56.2" W.

An existing discharge from the ash pond to the site discharge canal and thence to the Gulf of Mexico, a Class III marine water, via **Outfall D-0C1**, located approximately at latitude 28° 57'34.7 " N, longitude 82°42 '28.8" W.

An existing discharge from the wastewater pond system to the site discharge canal and thence to the Gulf of Mexico, a Class III marine water, via **Outfall D-0C2**, located approximately at latitude 28° 57'31.0 " N, longitude 82°42 '32.4" W.

An existing discharge of Nuclear Services and Decay Heat Seawater System effluent to the site discharge canal and thence to the Gulf of Mexico, a Class III marine water, via **Outfall D-00F**, located approximately at latitude 28° 57'31.2 " N, longitude 82°41 '55.4" W.

An existing discharge of Coal Pile runoff (Units 1 and 2) to an adjacent salt marsh, a Class III marine water, via **Outfall D-0H**, located approximately at latitude 28° 57' 08.8 " N, longitude 82°42 '12.7" W.

Existing discharges of OTCW from the Helper Cooling Tower system to the site discharge canal and thence to the Gulf of Mexico, a Class III marine water, via **Outfalls D-071 and D-072**, located approximately at latitudes 28° 57' 34.5 " N, longitude 82° 42 '32.0" W, and 28° 57'35.8 " N, longitude 82° 42 '48.5" W, respectively.

An existing discharge of intake screen washwater to the site discharge canal and thence to the Gulf of Mexico, a Class III marine water, via **Outfall D-094**, located approximately at latitude 28° 57'34.4 " N, longitude 82°42 '30.4" W.

Internal Discharges

An existing discharge from internal outfall **I-FG** Regeneration Waste Neutralization Tank to **Outfall D-00F**.

An existing discharge from internal outfall **I-FE** Laundry and Shower Sump Tank effluent to **Outfall D-00F**.

Stormwater Discharges

Existing discharges of stormwater from plant areas to the site intake and discharge canal and thence to the Gulf of Mexico via **Outfalls D-100, D-200, D-300, D-400, D-500. and D-600.**

IN ACCORDANCE WITH: The limitations, monitoring requirements and other conditions as set forth in Part I through Part VIII on pages 3 through 28 of this permit.

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I. Effluent Limitations and Monitoring Requirements

A. Surface Water Discharges

- During the period beginning on the issuance date and lasting through the expiration date of this permit, the permittee is authorized to discharge once-through non-contact condenser cooling water (OTCW) from **Outfalls D-011, D-012, D-013** to the site discharge canal thence the Gulf of Mexico. Such discharge shall be limited and monitored by the permittee as specified below:

Parameters (units)	Discharge Limitations			Monitoring Requirements		
	Daily Maximum	Daily Average	Daily Minimum	Monitoring Frequency	Sample Type	Sample Point
Flow (MGD)	See item I.A.3.	Report	--	Continuous	Pump logs ^{1,2}	EFF-2
Chlorination Duration (MINUTES)	See item I.A.5.	--	--	2/Week	Pump logs	EFF-1A EFF-1B EFF-1C
Oxidants, Total Residual (MG/L)	0.01 ³	Report	--	2/Week	Multiple Grabs	EFF-1A EFF-1B EFF-1C
Temperature (F), Water [Intake] (DEG.F)	Report	Report	--	Continuous	Recorder	INT-1
Temperature (F), Water [Discharge] (DEG.F) ⁴	96.5, See item. I.A.4.	Report	--	Continuous	Recorder	EFF-3D
Temp. Diff. between Intake and Discharge (DEG.F)	Report	Report	--	Continuous	Recorder	INT 1, EFF 3D

- Effluent samples shall be taken at the monitoring site locations listed in permit condition I.A.1 and as described below:

Sample Point	Description of Monitoring Location
EFF-2	At combined circulating water pumps.
EFF-1A	Outlet corresponding to individual condenser for Unit 1
EFF-1B	Outlet corresponding to individual condenser for Unit 2
EFF-1C	Outlet corresponding to individual condenser for Unit 3

¹ Flow is monitored by pump logs and/or valve position (during flow reduction season).

² Monitoring and reporting values for temperature, pump status and/or valve position shall be recorded at ten minute intervals.

³ Limitations and monitoring requirements for total residual oxidants (TRO) and time of TRO discharge for outfalls D-011, D-012, and/or D-013 are applicable only at times when OTCW is being chlorinated

⁴ Thermal discharge from this facility is subject to the requirements of Rule 62-302.520(1), F.A.C.

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Sample Point	Description of Monitoring Location
INT-1	Intake at Unit 1. See item 7
EFF-3D	At the bulkhead line which is near the down stream end of the site discharge canal .

- Combined OTCW discharge from Units 1, 2 and 3 shall not exceed 1,897.9 MGD during the period May 1st through October 31st of each year, or 1,613.2 MGD during the remainder of the year.
- The discharge temperature monitored at Sampling Point EFF-3D shall not exceed 96.5⁰F as a three hour rolling average.
- Discharge of TRO from the condenser of each unit shall not exceed a maximum of 60 minutes in any calendar day, except as follows. TRO may be discharged from one or more individual condensers via outfalls D-011, D-012, D-013, provided that TRO discharge concentration is monitored continuously by recorder(s). Additionally, the maximum instantaneous TRO concentration at each outfall (D-011, D-012, or D-013) shall not exceed 0.01 mg/l.
- Multiple grab samples shall consist of grab samples collected at the beginning of the period of chlorination discharge, and once every 15 minutes, thereafter. In addition, one grab sample shall be collected at the end of the period of chlorine discharge. The "period of chlorine discharge" refers to all chlorination conducted during a 24-hour period.
- In the event of an equipment failure of the temperature monitor or recorder at INT-1, temperature shall be monitored by similar instrumentation at either INT-2 or INT-3, which are the intakes for Units 2 and 3, respectively. In such a situation, the Permittee shall maintain records of the change in monitoring location for the monitoring period.
- Intake screen washwater may be discharged from **Outfalls D-091, D-092, and D-093** without limitation or monitoring requirements.
- During the period beginning on the issuance date and lasting through the expiration date of this permit, the permittee is authorized to discharge laundry and shower wastewater from **Internal Outfall I-0FE to outfall D-00F**. Such discharge shall be limited and monitored by the permittee as specified below:

Parameters (units)	Discharge Limitations			Monitoring Requirements		
	Daily Average	Daily Maximum	Daily Minimum	Monitoring Frequency	Sample Type	Sample Point
Flow (MGD)	Report	Report	--	1/Per Batch	Calculation	EFF-4
Oil and Grease (MG/L)	15.0	20.0	--	1/Per Batch	Grab	EFF-4
Solids, Total Suspended (MG/L)	30.0	100.0	--	1/Per Batch	Grab	EFF-4
pH (SU)	--	9.0	6.0	1/Per Batch	Grab	EFF-4
Number of Batches	Report	Report	--	Monthly	Log	EFF-4

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10. Effluent samples shall be taken at the monitoring site locations listed in permit condition I.A.9 and as described below:

Sample Point	Description of Monitoring Location
EFF-4	The sample port from the laundry and shower sump tank treatment system, but prior to mixing with any other waste stream.

11. The discharge of metal cleaning wastes through this outfall is not authorized.
12. During the period beginning on the issuance date and lasting through the expiration date of this permit, the permittee is authorized to discharge process wastewater from **Outfall D-0C1 Ash Pond and D-0C2-Wastewater Pond System** discharges (Unit 1 and 2 combined) to the site discharge canal thence to the Gulf of Mexico. Such discharge shall be limited and monitored by the permittee as specified below:

Parameters (units)	Discharge Limitations			Monitoring Requirements		
	Daily Average	Daily Maximum	Daily Minimum	Monitoring Frequency	Sample Type	Sample Point
Flow (MGD)	Report	Report	--	Daily, when discharging	Calculation	EFF-5 EFF-6
Oil and Grease (MG/L)	--	5.0	--	Weekly	Grab	EFF-5 EFF-6
Solids, Total Suspended (MG/L)	30.0	100.0	--	3/Week	Grab	EFF-5 EFF-6
Arsenic, Total Recoverable (UG/L)	--	50.0	--	Monthly	Grab	EFF-5 EFF-6
Cadmium, Total Recoverable (UG/L)	--	9.3	--	Monthly	Grab	EFF-5 EFF-6
Chromium, Total Recoverable (UG/L)	--	50.0	--	Monthly	Grab	EFF-5 EFF-6
Copper, Total Recoverable (UG/L)	--	3.7	--	Monthly	Grab	EFF-5 EFF-6
Lead, Total Recoverable (UG/L)	--	8.5	--	Monthly	Grab	EFF-5 EFF-6
Iron, Total Recoverable (MG/L)	--	0.3	--	Monthly	Grab	EFF-5 EFF-6
Mercury, Total Recoverable (UG/L)	--	0.025	--	Monthly	Grab	EFF-5 EFF-6
Nickel, Total Recoverable (UG/L)	--	8.3	--	Monthly	Grab	EFF-5 EFF-6
Selenium, Total Recoverable (UG/L)	--	71	--	Monthly	Grab	EFF-5 EFF-6
PH Standard Units		Report	Report	Monthly	Grab	INT-1

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Parameters (units)	Discharge Limitations			Monitoring Requirements		
	Daily Average	Daily Maximum	Daily Minimum	Monitoring Frequency	Sample Type	Sample Point
PH Standard Units		8.5	6.5	Monthly	Grab	EFF-5 EFF-6
Zinc, Total Recoverable (UG/L)	--	86.0	--	Monthly	Grab	EFF-5 EFF-6

13. Effluent samples shall be taken at the monitoring site locations listed in permit condition I.A.12 and as described below:

Sample Point	Description of Monitoring Location
INT-1	Intake at unit 1
EFF-5	Discharge from the ash pond prior to mixing with the receiving water.
EFF-6	Discharge from wastewater pond system prior to mixing with the receiving water.

14. Limitations and monitoring are required only when the ash pond is discharging via D-0C1 and/or the wastewater pond system is discharging via D-0C2.
15. During the period beginning on the issuance date and lasting through the expiration date of this permit, the permittee is authorized to discharge process wastewater from Outfall **D-00F**- Nuclear Services and Decay Heat Seawater System effluent [includes discharges from outfall I-FE – Laundry and Shower Sump Tank; (LSST) outfall I-FG –Secondary Drain Tank (SDT); effluent from the Evaporator Condensate Storage Tank (ECST); and effluent from the Condensate System (CD) to the site discharge canal and thence the Gulf of Mexico. Such discharges shall be limited and monitored by the permittee as specified below.

Parameters (units)	Discharge Limitations			Monitoring Requirements		
	Daily Maximum	Daily Average	Daily Minimum	Monitoring Frequency	Sample Type	Sample Point
Flow (MGD)	Report	Report	--	Hourly	Recorder or calculation	INT-7A
Oil and Grease (mg/l) (CD and ECST)	20	15	--	Weekly, when discharging	Grab	EFF-7B
Oil and Grease (mg/l) (CD and ECST)	5.0 ¹	--	--	Weekly, when discharging	Grab	EFF-7
Flow [ECST] (MGD)	Report	Report	--	Daily, when discharging	Recorder or Calculation	EFF-7B
Flow [CD System] (MGD)	Report	Report	--	Daily, when discharging	Recorder or Calculation	EFF-7B

¹ Monitoring requirements are only applicable if the discharge from I-FE and I-FG, the CD discharge or the ECST (following adequate mixing) exceeds the daily maximum limitation of 20.0 mg/l or a minimal dilution rate of 4 to 1 is not achieved as determined by the operator and recorded in logs maintained onsite for inspection by the Department.

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Parameters (units)	Discharge Limitations			Monitoring Requirements		
	Daily Maximum	Daily Average	Daily Minimum	Monitoring Frequency	Sample Type	Sample Point
Solids, Total Suspended (CD and ECST) (MG/L)	100.0	30.0	--	Weekly, when discharging	Grab	EFF-7B
Solids, Total Suspended (CD and ECST)(D-00F) (MG/L)	100.0 ²	30.0	--	Weekly, when discharging	Grab	EFF-7
Copper, Total Recoverable (UG/L)	3.7 ³	Report	--	Daily, when discharging	Grab	EFF-7
Iron, Total Recoverable (UG/L)	300.0 ³	Report	--	Daily, when discharging	Grab	EFF-7
Total Iron, LBS/MG of Metal Cleaning Waste generated	Report	8.345 ^{3,4}	--	Daily, when discharging	Grab	EFF-7B
Total Copper, LBS/MG of Metal Cleaning Waste generated	Report	8.345 ^{3,4}	--	Daily, when discharging	Grab	EFF-7B
Hydrazine, MG/L	-----	Report ⁵	----	Per Occurrence	Grab	EFF-7B
Hydrazine, MG/L	-----	0.341 ^{5,6}	----	Daily, when discharging	Calculation	EFF-7
Hydroquinone, MG/L	-----	Report ⁵	----	Per Occurrence	Grab	EFF-7B
Hydroquinone, MG/L	-----	0.12 ^{5,6}	----	Daily, when discharging	Calculation	EFF-7
Total Ammonia (as N), MG/L	-----	Report ⁵	----	Per Occurrence	Grab	EFF-7B
Total Ammonia (as N), MG/L	-----	0.047 ^{5,6}	----	Daily, when discharging	Calculation	EFF-7

² Monitoring requirements only applicable if the discharge from I-FE and I-FG, the CD discharge or the ECST (following adequate mixing) exceeds the daily maximum limitation of 100.0 mg/l or a minimal dilution rate of 4 to 1 is not achieved as determined by the operator and recorded in logs maintained onsite for inspection by the Department.

³ Limitations and monitoring requirements for total iron of MCW, total copper of MCW, total recoverable copper and total recoverable iron are applicable only on any calendar day in which metal cleaning waste is discharged in the effluent from I-FG the Evaporator Condensate Storage Tank and/or the Condensate System.

⁴ Limitations apply to the effluents from outfall I-FG, ECST and the Condensate System.

⁵ Limitations apply to the ESCT, CD or I-FG discharge. containing steam generator lay up chemicals. One grab sample shall be taken from any batch potentially containing ≥ 1.0 mg/l of hydrazine, based on the operator's knowledge of the process. The measured concentrations of hydrazine, hydroquinone, ammonia and morpholine shall be reported monthly on the DMR.

⁶ The limitations apply at D-0F. Calculation shall be used to determine the concentration of hydroquinone, hydrazine, ammonia and morpholine at D-0F.

$$\text{D-0F concentration (mg/l)} = \frac{(\text{measured concentration (mg/l)}) (\text{discharge flow}) *}{\text{flow to D-0F}}$$

* The calculation could apply to any batch which potentially contains > 1.0 mg/l of hydrazine.

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Parameters (units)	Discharge Limitations			Monitoring Requirements		
	Daily Maximum	Daily Average	Daily Minimum	Monitoring Frequency	Sample Type	Sample Point
Morpholine, MG/L	-----	Report ⁵	-----	Per Occurrence	Grab	EFF-7B
Morpholine, MG/L	-----	1.78 ^{5,6}	-----	Daily, when discharging	Calculation	EFF-7
PH, Standard Units	Report	--	Report	Daily, when discharging	Grab	INT-7A
PH, Standard Units	8.5	--	6.5	Daily, when discharging	Grab	EFF-7
Spectrus CT1300, MG/L	See item I.A.18					EFF-7
Spectrus CT 1300 (MG/L)	Report	Report	Report	1/Application	Grab	EFF-7
Whole Effluent Toxicity (ACUTE)	See item I.A.19					EFF-7

16. Effluent samples shall be taken at the monitoring site locations listed in permit condition I.A.15 and as described below:

Sample Point	Description of Monitoring Location
INT-7A	Intake flow at the combined water intake pumps.
EFF-3D	At the bulkhead line which is near the down stream end of the site discharge canal.
EFF-7	Prior to mixing with site discharge canal.
EFF-7B	Prior to discharge to outfall D-00F

17. Monitoring for pH in the combined discharge (D-0F) is required only during periods when I-FG and/or CD is discharging. If no discharge from I-FG or CD occurs, sampling shall be during next discharge of I-FG and/or CD into the combined discharge at D-0F.
18. Spectrus CT1300 shall be used only in accordance with the following procedures:
- There will be an interval of at least 21 days between any two successive applications, unless more frequent applications are requested in writing and approved in writing by the Department within 14 days of receipt of the request.
 - CT1300 may be applied at a rate not to exceed 4.5 mg/l through the Unit 3 service water system. No application period may exceed 18 hours, unless approved in writing by the Department.
 - Progress Energy will record and retain the following information of each CT1300 treatment
 - time of initiation and completion of treatment,
 - mass and concentration of CT1300 during the test period, and
 - results of toxicity testing, if applicable.
 - When toxicity testing is required, PEF will submit the information specified in Condition I.A.16.d. above to the Department within fourteen days of receipt.

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19. The permittee shall initiate the series of tests described below beginning within 60 days of the issuance of the permit to evaluate whole effluent toxicity of the discharge from Outfall D-00F. All test species, procedures and quality assurance criteria used shall be in accordance with Methods for Measuring Acute Toxicity of Effluents to Freshwater and Marine Organisms, 5th ed. EPA-821-R-02-012, or the most current edition.

The control water and the effluent used will be adjusted to an appropriate salinity using artificial sea salts as described in EPA-821-R-02-012, Section 7.4.2., or the most current edition. The appropriate tests salinity shall be determined as follows:

When the salinity of the effluent is between 1 and 7 parts per thousand (ppt), the following salinity adjustment shall be used in the test of 100% effluent. For the Americamysis (**Mysidopsis**) **bahia** bioassays, the effluent and the control (0% effluent) shall be adjusted to a salinity of 7±1 ppt for the 100% effluent test using artificial sea salts. No salinity adjustment shall be done for the **Menidia beryllina** bioassay test of the 100% effluent. When the salinity of the effluent is greater than 7 parts per thousand, no salinity adjustment shall be made and the test shall be run at the effluent's salinity for both species.

A standard reference toxicant quality assurance (QA) acute toxicity test shall be conducted concurrently or no greater than 30 days before the date of the "routine" test, with each species used in the toxicity tests. The results of all QA toxicity tests shall be submitted with the discharge monitoring report (DMR). Any deviation from the bioassay procedures outlined herein shall be submitted in writing to the Department for review and approval prior to use.

- a. (1) The permittee shall conduct 96-hour acute static renewal toxicity tests using the mysid shrimp, Americamysis (**Mysidopsis**) **bahia**, and the inland silverside, **Menidia beryllina**. All tests will be conducted on four separate grab samples collected at evenly-spaced (6-hr) intervals over a 24-hour period and used in four separate tests in order to catch any peaks of toxicity and to account for daily variations in effluent quality.
- (2) If control mortality exceeds 10% for either species in any test, the test for that species (including the control) shall be repeated. A test will be considered valid only if control mortality does not exceed 10% for either species. If, in any separate grab sample test, 100% mortality occurs prior to the end of the test, and control mortality is less than 10% at that time, that test (including the control) shall be terminated with the conclusion that the sample demonstrates unacceptable acute toxicity.
- b. (1) The toxicity tests specified above shall be conducted once every two months until 6 valid bimonthly tests are completed. These tests are referred to as "routine" tests. Upon the completion of six valid tests which demonstrate that no unacceptable toxicity (as defined in d.1.) has been identified, the permittee may petition the Department for a reduction in monitoring frequency.

- (2) Results from "routine" tests shall be reported according to EPA-821-R-02-012, Section 12, Report Preparation (or the most current edition), and shall be submitted to:

Florida Department of Environmental Protection
Southwest District Office
3804 Coconut Palm Drive
Tampa, Florida 33619-8378

- (3) Results from "routine" tests shall be reported on the Discharge Monitoring Report (DMR) as follows:
 - i. If greater than 50% mortality occurs in any of the four separate grab sample tests for the test species, "<100" (less than 100% effluent) should be entered on the DMR for that test species.
 - ii. If 50% or less mortality occurs in all four separate grab sample tests for the test species, ">100" (greater than 100% effluent) should be entered on the DMR for that test species.

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- iii. For each of the additional tests required, the calculated LC50 value should be entered on the DMR for that test species.
- c. (1) All "routine" tests shall be conducted using a control (0% effluent) and one test concentration of **100%** final effluent.
- (2) Mortalities of greater than 50% in any sample of 100% effluent in any "routine" test or an LC50 of less than 100% effluent in any additional definitive test will constitute a violation of these permit conditions and Rule 62-4.244(3)(a), F.A.C.
- d. (1) If unacceptable acute toxicity (greater than 20% mortality in any grab sample of 100% effluent) is determined in a "routine" test, the permittee shall conduct three additional tests on each species indicating acute toxicity. The first additional test will include four grab samples taken as described in a.1. and run as four separate definitive analyses. The second and third additional definitive tests will be run on a single grab sample collected on the day and time when the greatest toxicity was identified in the "routine" test. Results for each additional test will include the determination of LC50 values with 95% confidence limits.
- (2) Each additional test shall be conducted using a control (0% effluent) and a minimum of five dilutions: 100%, 50%, 25%, 12.5% and 6.25% effluent and a control (0% effluent). The dilution series may be modified in the second and third test to more accurately identify the toxicity, such that at least two dilutions above and two dilutions below the target toxicity and a control (0% effluent) are run.
- (3) For each additional test, the sample collection requirements and the test acceptability criteria specified in section a. above must be met for the test to be considered valid. The first test shall begin within two weeks of the end of the "routine" tests, and shall be conducted weekly thereafter until three additional, valid tests are completed. The additional tests will be used to determine if the toxicity found in the "routine" test is still present.
- (4) Results from additional tests, required due to unacceptable toxicity in the "routine" tests, shall be submitted in a single report prepared according to EPA-821-R-02-012, Section 12, or the most current edition and submitted within 45 days of completion of the third additional, valid test. If the additional tests demonstrate unacceptable toxicity, the permittee will meet with the Department within 30 days of the report submittal to identify corrective actions necessary to remedy the unacceptable toxicity.

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20. During the period beginning on the issuance date and lasting through the expiration date of this permit, the permittee is authorized to discharge process wastewater from Internal **Outfall I-0FG** to **Outfall D-00F** Regeneration Waste Neutralization Tank. Such discharge shall be limited and monitored by the permittee as specified below:

Parameters (units)	Discharge Limitations			Monitoring Requirements		
	Daily Average	Daily Maximum	Daily Minimum	Monitoring Frequency	Sample Type	Sample Point
Flow, (MGD)	Report	Report	--	1/Batch	Calculated	EFF-8
Copper, Total Recoverable, lbs/MG	--	8.345 ¹	--	1/Batch	Grab	EFF-8
Iron, Total Recoverable lbs/MG	--	8.345 ¹	--	1/Batch	Grab	EFF-8
Oil and Grease, (MG/L)	15.0	20.0	--	1/Batch	Grab	EFF-8
Total Suspended Solids, MG/L	30.0	100.0	---	1/Batch	Grab	EFF-8
PH, Standard Units	--	9.0	6.0	1/Batch	Grab	EFF-8

21. Effluent samples shall be taken at the monitoring site locations listed in permit condition I.A.20 and as described below:

Sample Point	Description of Monitoring Location
EFF-8	At outfall I-FG prior to mixing with outfall D-00F

22. During the period beginning on the effective date of this permit and lasting through the expiration, the permittee is authorized to discharge stormwater from Outfall **D-00H- Coal Pile Runoff** (Units 1 and 2) to the marshy area (wetlands) west of the coal pile storage area. Such discharge shall be limited and monitored by the permittee as specified below:

Parameters (units)	Discharge Limitations			Monitoring Requirements		
	Monthly Average	Daily Maximum	Daily Minimum	Monitoring Frequency	Sample Type	Sample Point
Flow (MGD)	--	Report	--	Daily, when discharging	Calculated	EFF-9
Solids, Total Suspended (MG/L)	--	50.0 See cond. 24	--	Daily, when discharging	Grab	EFF-9
Arsenic, Total Recoverable (UG/L)	--	50.	--	Daily, when discharging	Grab	EFF-9
Cadmium, Total Recoverable (UG/L)	--	9.30	--	Daily, when discharging	Grab	EFF-9
Chromium, Total Recoverable (UG/L)	--	50.0	--	Daily, when discharging	Grab	EFF-9

¹ The limitation is applicable only when metal cleaning waste is discharged through outfall I-0FG

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Parameters (units)	Discharge Limitations			Monitoring Requirements		
	Monthly Average	Daily Maximum	Daily Minimum	Monitoring Frequency	Sample Type	Sample Point
Copper, Total Recoverable (UG/L)	--	3.7	--	Daily, when discharging	Grab	EFF-9
Iron, Total Recoverable (MG/L)	--	0.3	--	Daily, when discharging	Grab	EFF-9
Lead, Total Recoverable (UG/L)	--	8.5	--	Daily, when discharging	Grab	EFF-9
Mercury, Total Recoverable (UG/L)	--	0.025	--	Daily, when discharging	Grab	EFF-9
Nickel, Total Recoverable (UG/L)	--	8.30	--	Daily, when discharging	Grab	EFF-9
Selenium, Total Recoverable (UG/L)	--	71.0	--	Daily, when discharging	Grab	EFF-9
Zinc, Total Recoverable (UG/L)	--	86.0	--	Daily, when discharging	Grab	EFF-9
Vanadium, Total Recoverable (PPM)	--	Report	--	Daily, when discharging	Grab	EFF-9
PH (SU)		8.5	6.5	Daily, when discharging	Grab	INT-3B
PH (SU)		8.5	6.5	Daily, when discharging	Grab	EFF-9

23. Effluent samples shall be taken at the monitoring site locations listed in permit condition I.A.22 and as described below:

Sample Point	Description of Monitoring Location
EFF-9	Point of discharge from the treatment system prior to entering wetlands area.
INT-3B	Intake at Unit 2

24. The treatment system (coal pile storage area) shall be capable of containing a 10 year, 24-hour (10Y 24H) rainfall event. The limitation for total suspended solids of 50 mg/l shall apply only to discharges resulting from rainfall less than a 10-year 24 –hour rainfall event.

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25. During the period beginning on the issuance date and lasting through the expiration date of this permit, the permittee is authorized to discharge once-through non-contact cooling water from **Outfalls D-071 and D-072** Helper Cooling Tower to the site discharge canal and thence to the Gulf of Mexico. Such discharge shall be limited and monitored by the permittee as specified below:

Parameters (units)	Discharge Limitations			Monitoring Requirements		
	Daily Maximum	Daily Average	Daily Minimum	Monitoring Frequency	Sample Type	Sample Point
Intake Flow (MGD)	Report	Report	--	Continuous	Pump logs	INT-10A
Oxidants, Total Residual (MG/L)	0.01 ¹	Report	--	Continuous	Recorder	EFF-10B
TRO-Discharge Time (MIN/DAY)	60.0, see cond. I.A.28.	--	--	Continuous	Recorder	EFF-10B
pH (SU)	Report	--	Report	Quarterly	Grab	INT-10A
PH (SU)	8.5	--	6.5	Quarterly	Grab	EFF-10B

26. Effluent samples shall be taken at the monitoring site locations listed in permit condition I.A.25 and as described below:

Sample Point	Description of Monitoring Location
INT-10A	Common Intake for all helper cooling tower intake pumps
EFF-10A	At Outfall D-071 from helper cooling towers 1 and 2 to the site discharge canal.
EFF-10B	At Outfall D-072 from helper cooling towers 3 and 4 to the site discharge canal.

27. Cooling towers shall be operated as necessary to ensure that the discharge temperature at Sampling Location EFF-3D does not exceed 96.5 F as a three-hour rolling average.
28. TRO may be discharged from either or both Outfalls D-071 and D-072 at the same time TRO is discharged from Outfalls D-011, D-012, and D-013, provided that TRO discharge from either D-071 or D-072 does not exceed a maximum instantaneous concentration of 0.01 mg/l.
29. Monitoring requirements are only applicable during periods of discharge.
30. During the period beginning on the issuance date and lasting through the expiration date of this permit, the permittee is authorized to discharge intake screen wash waste water from **Outfall D-094** to the site discharge canal thence the Gulf of Mexico without limitation or monitoring requirements.
31. During the period beginning on the issuance date and lasting through the expiration date of this permit, the permittee is authorized to discharge stormwater from **Outfalls D-100, D-200, D-300, D-400, and D-500** to the site discharge canal and thence to the Gulf of Mexico without limitation or monitoring requirements.
32. During the period beginning on the issuance date and lasting through the expiration date of this permit, the permittee is authorized to discharge storm water from **Outfall D-600** Plant Area to the site intake canal and thence to the Gulf of Mexico. Such discharge shall be limited and monitored by the permittee as specified below:

¹ Limitations and monitoring requirements for TRO and time of TRO discharge for outfall D-071 and outfall D-072 are not applicable for any calendar day in which chlorine is not added.

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Parameters (units)	Discharge Limitations			Monitoring Requirements		
	Daily Average	Daily Maximum	Daily Minimum	Monitoring Frequency	Sample Type	Sample Point
Flow (MGD)	--	Report	--	Monthly, when discharging	Calculated	EFF-600
Total recoverable iron (UG/L)	--	Report	--	Monthly, when discharging	Grab	EFF-600

33. Effluent samples shall be taken at the monitoring site locations listed in permit condition I.A.32 and as described below:

Sample Point	Description of Monitoring Location
EFF-600	Prior to discharge from Outfall D-600 to the intake canal.

34. Stormwater from No. 2 Fuel Oil Tank Diked Petroleum Storage or Handling Area

- a. Permittee is authorized to discharge stormwater from diked petroleum storage or handling areas, provided the following conditions are met:
- b. Such discharges shall be limited and monitored by the permittee as specified below:
 1. The facility shall have a valid SPCC Plan pursuant to 40 CFR 112.
 2. In draining the diked area, a portable oil skimmer or similar device or absorbent material shall be used to remove oil and grease (as indicated by the presence of a sheen) immediately prior to draining.
 3. Monitoring records shall be maintained in the form of a log and shall contain the following information, as a minimum:
 - a.) Date and time of discharge,
 - b.) Estimated volume of discharge,
 - c.) Initials of person making visual inspection and authorizing discharge, and
 - d.) Observed conditions of storm water discharged.
 4. There shall be no discharge of floating solids or visible foam in other than trace amounts and no discharge of a visible oil sheen at any time.

35. As specified above, sampling for the storm water discharge shall be conducted once per discharge event.

36. There shall be no discharge of floating solids or visible foam in other than trace amounts.

37. The discharge shall not cause a visible sheen on the receiving water.

B. Underground Injection Control Systems

This section is not applicable to this facility.

C. Land Application Systems

The land application system for this facility is regulated under separate Department Permit FLA0169690

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D. Other Methods of Disposal or Recycling

There shall be no discharge of industrial wastewater from this facility to ground or surface waters, except as authorized by this permit.

E. Other Limitations and Monitoring and Reporting Requirements

1. The sample collection, analytical test methods and method detection limits (MDLs) applicable to this permit shall be in accordance with Rule 62-4.246, Chapters 62-160 and 62-601, F.A.C., and 40 CFR 136, as appropriate. The list of Department established analytical methods, and corresponding MDLs (method detection limits) and PQLs (practical quantification limits), which is titled "Florida Department of Environmental Protection Table as Required By Rule 62-4.246(4) Testing Methods for Discharges to Surface Water" dated June 21, 1996, is available from the Department on request. The MDLs and PQLs as described in this list shall constitute the minimum acceptable MDL/PQL values and the Department shall not accept results for which the laboratory's MDLs or PQLs are greater than those described above unless alternate MDLs and/or PQLs have been specifically approved by the Department for this permit. Any method included in the list may be used for reporting as long as it meets the following requirements:

The laboratory's reported MDL and PQL values for the particular method must be equal or less than the corresponding method values specified in the Department's approved MDL and PQL list;

- b. The laboratory reported PQL for the specific parameter is less than or equal to the permit limit or the applicable water quality criteria, if any, stated in Chapter 62-302, F.A.C. Parameters that are listed as "report only" in the permit shall use methods that provide a PQL, which is equal to or less than the applicable water quality criteria stated in 62-302 FAC; and
- c. If the PQLs for all methods available in the approved list are above the stated permit limit or applicable water quality criteria for that parameter, then the method with the lowest stated PQL shall be used.

Where the analytical results are below method detection or practical quantification limits, the permittee shall report the actual laboratory MDL and/or PQL values for the analyses that were performed following the instructions on the applicable discharge monitoring report. Approval of alternate laboratory MDLs or PQLs are not necessary if the laboratory reported MDLs and PQLs are less than or equal to the permit limit or the applicable water quality criteria, if any, stated in Chapter 62-302, F.A.C. However, where necessary, the permittee may request approval for alternative methods or for alternative MDLs and PQLs for any approved analytical method, in accordance with the criteria of Rules 62-160.520 and 62-160.530, F.A.C.

2. Parameters which must be monitored as a result of a surface water discharge shall be analyzed using a sufficiently sensitive method in accordance with 40 CFR Part 136.
3. Monitoring requirements under this permit are effective on the first day of the second month following permit issuance. Until such time, the permittee shall continue to monitor and report in accordance with previously effective permit requirements, if any. During the period of operation authorized by this permit, the permittee shall complete and submit to the Southwest District Office Discharge Monitoring Reports (DMRs) in accordance with the frequencies specified by the REPORT type (i.e., monthly, toxicity, quarterly, semiannual, annual, etc.) indicated on the DMR forms attached to this permit. Monitoring results for each monitoring period shall be submitted in accordance with the associated DMR due dates below.

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REPORT Type On DMR	Monitoring Period	DMR Due Date
Monthly or Toxicity	First day of month – last day of month	28 th day of following month
Quarterly	January 1 – March 31 April 1 – June 30 July 1 – September 30 October 1 – December 31	April 28 July 28 October 28 January 28
Semi Annual	January 1-June 30 July 1- December 31	July 28 January 28
Annual	January 1-December 31	January 28

DMRs shall be submitted for each required monitoring period including months of no discharge.

The permittee shall make copies of the attached DMR form(s) and shall submit the completed DMR form(s) to the Department at the address specified below:

Florida Department of Environmental Protection
Wastewater Compliance Evaluation Section, Mail Station 3550
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

4. Unless specified otherwise in this permit, all reports and notifications required by this permit, including twenty-four hour notifications, shall be submitted to or reported to the Southwest District Office at the address specified below:

Southwest District Office
3804 Coconut Palm Drive.
Tampa, Florida 33619-8378

Phone Number – (813) 744-6100
FAX Number - (813) 744-8198 (All FAX copies shall be followed by original copies.)

5. All reports and other information shall be signed in accordance with requirements of Rule 62-620.305, F.A.C
6. The permittee shall provide safe access points for obtaining representative samples which are required by this permit.
7. If there is no discharge from the facility on a day scheduled for sampling, the sample shall be collected on the day of the next discharge
8. There shall be no discharge of polychlorinated biphenyl compounds.
9. Discharge of any product registered under the Federal Insecticide, Fungicide, and Rodenticide Act to any waste stream which ultimately may be released to waters of the State is prohibited unless specifically authorized elsewhere in this permit. This requirement is not applicable to products used for lawn and agricultural purposes or to the use of herbicides if used in accordance with labeled instructions and any applicable State permit.

A permit revision from the Department shall be required prior to the use of any biocide or chemical additive used in the cooling system or any other portion of the treatment system which may be toxic to aquatic life. The permit revision request shall include:

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- a. Name and general composition of biocide or chemical
- b. Frequencies of use
- c. Quantities to be used
- d. Proposed effluent concentrations
- e. Acute and/or chronic toxicity data (laboratory reports shall be prepared according to Section 12 of EPA document no. EPA/600/4-90/027 entitled, Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters for Freshwater and Marine Organisms, or most current addition.)
- f. Product data sheet
- g. Product label

The Department shall review the above information to determine if a substantial or minor permit revision is necessary. Discharge associated with the use of such biocide or chemical is not authorized without a permit revision by the Department. Permit revisions shall be processed in accordance with the requirements of Chapter 62-620, F.A.C.

10. Discharge of any waste resulting from the combustion of toxic, hazardous, or metal cleaning wastes to any waste stream which ultimately discharges to waters of the State is prohibited, unless specifically authorized elsewhere in this permit.
11. Any bypass of the treatment facility which is not included in the monitoring specified in I.A, I.B, I.C, or I.D, is to be monitored for flow and all other required parameters. For parameters other than flow, at least one grab sample per day shall be monitored. Daily flow shall be monitored or estimated, as appropriate, to obtain reportable data. All monitoring results shall be reported on the appropriate DMR.
12. The Permittee shall continue compliance with the facility's Manatee Protection Plan approved by the Department on May 15, 2002.
13. -Combined Waste Streams

In the event that waste streams from various sources are combined for treatment or discharge, the quantity of each pollutant or pollutant property attributable to each controlled waste source shall not exceed the specified limitation for that waste source (ref. 40 CFR Section 423.15(k);1974).
14. Condenser Maintenance Program
 - a.) The permittee is authorized to use SIDTEC, a mechanical on-line condenser maintenance service program at Units 1 and 2.
 - b.) The permittee is authorized to use the existing Amertap Condenser Cleaning System at Unit 3, or an equivalent system. However, any substantive change to the cleaning ball devices or ball retrieval system is subject to approval by the Department..
15. The permittee shall develop a Plan of Study (POS) for seagrass monitoring pursuant to the schedule in Item VI.2, including a proposed implementation schedule, for continued monitoring of seagrass recovery. The Department will review the evaluation plan and implementation schedule for revision, as needed
16. The Permittee shall develop an evaluation plan in accordance with Rule 62-302.520(1), F.A.C., pursuant to the schedule in item VI. 3, including a proposed implementation schedule, designed to determine any effects on biological communities from the heated water discharge to Crystal Bay. The plan shall address monitoring of submerged grasses, benthic macroinvertebrates, and other aquatic species as appropriate, and shall include reporting requirements. The evaluation plan shall incorporate existing data developed by the Permittee and available data other sources as well as any additional monitoring to be conducted by the Permittee, if necessary. The Department will review the evaluation plan and implementation schedule for revision, as needed.
17. The Permittee is authorized to use the following previously approved chemical additives and biocides: Spectrus CT-1300, Dianodic DN2140, Spectrus NX1103, Spectrus NX1100, and Foamtrol AF1440.

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II. Industrial Sludge Management Requirements

This section not applicable to this facility.

III. Ground Water Monitoring Requirements

This section is not applicable to this facility.

IV. Other Land Application Requirements

Land application requirements for this facility are regulated by separate Department permit FLA016960.

V. Operation and Maintenance Requirements

A. Operation of Treatment and Disposal Facilities

1. The permittee shall ensure that the operation of this facility is as described in the application and supporting documents.
2. The operation of the pollution control facilities described in this permit shall be under the supervision of a person who is qualified by formal training and/or practical experience in the field of water pollution control.

B. Record keeping Requirements:

1. The permittee shall maintain the following records on the site of the permitted facility and make them available for inspection:
 - a. Records of all compliance monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, including, if applicable, a copy of the laboratory certification showing the certification number of the laboratory, for at least three years from the date the sample or measurement was taken;
 - b. Copies of all reports, other than those required in items a. and f. of this section, required by the permit for at least three years from the date the report was prepared, unless otherwise specified by Department rule;
 - c. Records of all data, including reports and documents used to complete the application for the permit for at least three years from the date the application was filed, unless otherwise specified by Department rule;
 - d. A copy of the current permit;
 - e. A copy of any required record drawings;
 - f. Copies of the logs and schedules showing plant operations and equipment maintenance for three years from the date on the logs or schedule.

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VI. Schedules

1. A Best Management Practices Pollution Prevention (BMP3) Plan shall be prepared and implemented in accordance with Part VII of this permit and the following schedule:

Action Item		Scheduled Completion Date
1	Continue Implementing Existing BMP3 Plan	Issuance Date of Permit

2. Within three months after issuance of this permit, the Permittee shall meet with the Department to discuss the content of a Plan of Study (POS) for a seagrass study in accordance with the requirements of Item I.E.15, and shall submit the POS within six months of issuance of this permit.
3. Within six months after issuance of this permit, the Permittee shall meet with the Department to discuss the content of a Plan of Study (POS) for biological monitoring in accordance with the requirements of Item I.E.16, and shall submit the POS within twelve months of issuance of this permit.
4. The permittee shall achieve compliance with the other conditions of this permit as follows:

Operational level attained	Issuance Date of permit
----------------------------	-------------------------
5. No later than 14 calendar days following a date identified in the above schedule(s) of compliance, the permittee shall submit either a report of progress or, in the case of specific actions being required by an identified date, a written notice of compliance or noncompliance. In the latter case, the notice shall include the cause of noncompliance, any remedial actions taken, and the probability of meeting the next scheduled requirement
6. The permittee shall comply with the requirements of 40 CFR part 125.9(a)(1) and (2) no later than upon submittal of a timely application for permit renewal, submitted pursuant to the requirements of condition VII.C. of this permit.

VII. Other Specific Conditions

A. Specific Conditions Applicable to All Permits

1. Drawings, plans, documents or specifications submitted by the permittee, not attached hereto, but retained on file at the Southwest District Office, are made a part hereof.
2. Where required by Chapter 471 (P.E.) or Chapter 492 (P.G.) Florida Statutes, applicable portions of reports to be submitted under this permit, shall be signed and sealed by the professional(s) who prepared them.
3. This permit satisfies Industrial Wastewater program permitting requirements only and does not authorize operation of this facility prior to obtaining any other permits required by local, state or federal agencies.

B. Specific Conditions Related to Construction

This section is not applicable to this facility.

C. Duty to Reapply

1. The permittee shall submit an application to renew this permit at least 180 days before the expiration date of this permit.

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2. The permittee shall apply for renewal of this permit on the appropriate form listed in Rule 62-620.910, F.A.C., and in the manner established in Chapter 62-620, F.A.C., and the Department of Environmental Protection Guide to Wastewater Permitting including submittal of the appropriate processing fee set forth in Rule 62-4.050, F.A.C.
3. An application filed in accordance with subsections 1. and 2. of this part shall be considered timely and sufficient. When an application for renewal of a permit is timely and sufficient, the existing permit shall not expire until the Department has taken final action on the application for renewal or until the last day for seeking judicial review of the agency order or a later date fixed by order of the reviewing court.
4. The late submittal of a renewal application shall be considered timely and sufficient for the purpose of extending the effectiveness of the expiring permit only if it is submitted and made complete before the expiration date.

D. Specific Conditions Related to Best Management Practices/Pollution Prevention Conditions

1. General Conditions

In accordance with Section 304(e) and 402(a)(2) of the Clean Water Act (CWA) as amended, 33 U.S.C. §§ 1251 et seq., and the Pollution Prevention Act of 1990, 42 U.S.C. §§ 13101-13109, the permittee must develop and implement a plan for utilizing practices incorporating pollution prevention measures. References to be considered in developing the plan are "Criteria and Standards for Best Management Practices Authorized Under Section 304(e) of the Act," found at 40 CFR 122.44 Subpart K and the Waste Minimization Opportunity Assessment Manual, EPA/625/7-88/003.

a. Definitions

- (1) The term "pollutants" refers to conventional, non-conventional and toxic pollutants.
- (2) Conventional pollutants are: biochemical oxygen demand (BOD), suspended solids, pH, fecal coliform bacteria and oil & grease.
- (3) Non-conventional pollutants are those which are not defined as conventional or toxic.
- (4) Toxic pollutants include, but are not limited to: (a) any toxic substance listed in Section 307(a)(1) of the CWA, any hazardous substance listed in Section 311 of the CWA, or chemical listed in Section 313(c) of the Superfund Amendments and Reauthorization Act of 1986; and (b) any substance (that is not also a conventional or non-conventional pollutant except ammonia) for which EPA has published an acute or chronic toxicity criterion.
- (5) "Pollution prevention" and "waste minimization" refer to the first two categories of EPA's preferred hazardous waste management strategy: first, source reduction and then, recycling.
- (6) "Recycle/Reuse" is defined as the minimization of waste generation by recovering and reprocessing usable products that might otherwise become waste; or the reuse or reprocessing of usable waste products in place of the original stock, or for other purposes such as material recovery, material regeneration or energy production.
- (7) "Source reduction" means any practice which: (a) reduces the amount of any pollutant entering a waste stream or otherwise released into the environment (including fugitive emissions) prior to recycling, treatment or disposal; and (b) reduces the hazards to public health and the environment associated with the release of such pollutant. The term includes equipment or technology modifications, process or procedure modifications, reformulation or redesign of products, substitution of raw materials, and improvements in housekeeping, maintenance, training, or inventory control. It does not include any practice which alters the physical, chemical, or biological characteristics or the volume of a pollutant through a process or activity which itself is not integral to, or previously considered necessary for, the production of a product or the providing of a service.

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- (8) "BMP3" means a Best Management Plan incorporating the requirements of 40 CFR § 122.44, Subpart K, plus pollution prevention techniques associated with a Waste Minimization Assessment.
- (9) "Waste Minimization Assessment" means a systematic planned procedure with the objective of identifying ways to reduce or eliminate waste.

2. **Best Management Practices/Pollution Prevention Plan**

The permittee shall develop and implement a BMP3 plan for the facility which is the source of wastewater and storm water discharges covered by this permit. The plan shall be directed toward reducing those pollutants of concern which discharge to surface waters and shall be prepared in accordance with good engineering and good housekeeping practices. For the purposes of this permit, pollutants of concern shall be limited to toxic pollutants, as defined above, known to the discharger. The plan shall address all activities which could or do contribute these pollutants to the surface water discharge, including process, treatment, and ancillary activities. The BMP3 plan shall contain the following components:

a. **Signatory Authority & Management Responsibilities**

The BMP3 plan shall be signed by the permittee or their duly authorized representative in accordance with rule 62-620.305(2)(a) and (b). The BMP3 plan shall be reviewed by the plant environmental/engineering staff and plant manager. Where required by Chapter 471 (P.E.) or Chapter 492 (P.G.) Florida Statutes, applicable portions of the BMP3 plan shall be signed and sealed by the professional(s) who prepared them.

A copy of the plan shall be retained at the facility and shall be made available to the Department upon request.

The BMP3 plan shall contain a written statement from corporate or plant management indicating management's commitment to the goals of the BMP3 program. Such statements shall be publicized or made known to all facility employees. Management shall also provide training for the individuals responsible for implementing the BMP3 plan.

b. **BMP3 Plan Requirements**

- (1) Name & description of facility, a map illustrating the location of the facility & adjacent receiving waters, and other maps, plot plans or drawings, as necessary;
- (2) Overall objectives (both short-term and long-term) and scope of the plan, specific reduction goals for pollutants, anticipated dates of achievement of reduction, and a description of means for achieving each reduction goal;
- (3) A description of procedures relative to spill prevention, control & countermeasures and a description of measures employed to prevent storm water contamination;
- (4) A description of practices involving preventive maintenance, housekeeping, recordkeeping, inspections, and plant security; and

c. **Waste Minimization Assessment**

The permittee is encouraged but not required to conduct a waste minimization assessment (WMA) for this facility to determine actions that could be taken to reduce waste loadings and chemical losses to all wastewater and/or storm water streams as described in Part VII.D.3 of this permit.

If the Permittee elects to develop and implement a WMA, information on plan components can be obtained from the Department's Industrial Wastewater website, or from:

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Florida Department of Environmental Protection
Industrial Wastewater Section, Mail Station 3545
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

(850) 245-8589
(850) 245-8669 -- Fax

d. Best Management Practices & Pollution Prevention Committee Recommended:

A Best Management Practices Committee (Committee) should be established to direct or assist in the implementation of the BMP3 plan. The Committee should be comprised of individuals within the plant organization who are responsible for developing the BMP3 plan and assisting the plant manager in its implementation, monitoring of success, and revision. The activities and responsibilities of the Committee should address all aspects of the facility's BMP3 plan. The scope of responsibilities of the Committee should be described in the plan.

e. Employee Training

Employee training programs shall inform personnel at all levels of responsibility of the components & goals of the BMP3 plan and shall describe employee responsibilities for implementing the plan. Training shall address topics such as good housekeeping, materials management, record keeping & reporting, spill prevention & response, as well as specific waste reduction practices to be employed. Training shall also disclose how individual employees may contribute suggestions concerning the BMP3 plan or suggestions regarding Pollution Prevention. The plan shall identify periodic dates for such training.

f. Plan Development & Implementation

The BMP3 plan shall be implemented upon the effective date of this permit, unless any later dates are specified in this permit. If a WMA is ongoing at the time of development or implementation it may be described in the plan. Any waste reduction practice which is recommended for implementation over a period of time may also be identified in the plan, including a schedule for its implementation.

g. Submission of Plan Summary & Progress/Update Reports

- (1) Plan Summary: Not later than 2 years after the effective date of the permit, a summary of the BMP3 plan shall be developed and maintained at the facility and made available to the Department upon request. The summary shall include the following: a brief description of the plan, its implementation process, schedules for implementing identified waste reduction practices, and a list of all waste reduction practices being employed at the facility. The results of WMA studies, as well as scheduled WMA activities may be discussed.
- (2) Progress/Update Reports: Annually thereafter for the duration of the permit progress/update reports documenting implementation of the plan shall be maintained at the facility and made available to the Department upon request. The reports shall discuss whether or not implementation schedules were met and revise any schedules, as necessary. The plan shall also be updated as necessary and the attainment or progress made toward specific pollutant reduction targets documented. Results of any ongoing WMA studies as well as any additional schedules for implementation of waste reduction practices may be included.

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(3) A recommended timetable for the various plan requirements follows:

Timetable for BMP3 Plan:

<u>ELEMENT</u>	<u>TIME FROM EFFECTIVE DATE OF THIS PERMIT</u>
Complete WMA (if appropriate)	6 months
Progress/Update Reports	3 years, and then annually thereafter

The permittee shall maintain the plan and subsequent reports at the facility and shall make the plan available to the Department upon request.

h. Plan Review & Modification

If following review by the Department, the BMP3 plan is determined insufficient, the permittee will be notified that the BMP3 plan does not meet one or more of the minimum requirements of this Part. Upon such notification from the Department, the permittee shall amend the plan and shall submit to the Department a written certification that the requested changes have been made. Unless otherwise provided by the Department, the permittee shall have 30 days after such notification to make the changes necessary.

The permittee shall modify the BMP3 plan whenever there is a change in design, construction, operation, or maintenance, which has a significant effect on the potential for the discharge of pollutants to waters of the State or if the plan proves to be ineffective in achieving the general objectives of reducing pollutants in wastewater or storm water discharges. Modifications to the plan may be reviewed by the Department in the same manner as described above.

E. Specific Conditions Related to Existing Manufacturing, Commercial, Mining, and Silviculture Wastewater Facilities or Activities

1. Existing manufacturing, commercial, mining, and silvicultural wastewater facilities or activities that discharge into surface waters shall notify the Department as soon as they know or have reason to believe:
 - a. That any activity has occurred or will occur which would result in the discharge, on a routine or frequent basis, of any toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the following levels
 - (1) One hundred micrograms per liter,
 - (2) Two hundred micrograms per liter for acrolein and acrylonitrile; five hundred micrograms per liter for 2,4-dinitrophenol and for 2-methyl-4,6-dinitrophenol; and one milligram per liter for antimony, or
 - (3) Five times the maximum concentration value reported for that pollutant in the permit application.
 - b. That any activity has occurred or will occur which would result in any discharge, on a non-routine or infrequent basis, of a toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the following levels
 - (1) Five hundred micrograms per liter,
 - (2) One milligram per liter for antimony, or
 - (3) Ten times the maximum concentration value reported for that pollutant in the permit application.

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F. Reopener Clause

1. The permit shall be revised, or alternatively, revoked and reissued in accordance with the provisions contained in Rules 62-620.325 and 62-620.345 F.A.C., if applicable, or to comply with any applicable effluent standard or limitation issued or approved under Sections 301(b)(2)(C) and (D), 304(b)(2) and 307(a)(2) of the Clean Water Act (the Act), as amended, if the effluent standards, limitations, or water quality standards so issued or approved:
 - a. Contains different conditions or is otherwise more stringent than any condition in the permit/or;
 - b. Controls any pollutant not addressed in the permit.

The permit as revised or reissued under this paragraph shall contain any other requirements then applicable.

2. The permit may be reopened to adjust effluent limitations or monitoring requirements should future Water Quality Based Effluent Limitation determinations, water quality studies, DEP approved changes in water quality standards, or other information show a need for a different limitation or monitoring requirement.
3. The Department may develop a Total Maximum Daily Load (TMDL) during the life of the permit. Once a TMDL has been established and adopted by rule, the Department shall revise this permit to incorporate the final findings of the TMDL.

VIII. General Conditions

1. The terms, conditions, requirements, limitations and restrictions set forth in this permit are binding and enforceable pursuant to Chapter 403, F.S. Any permit noncompliance constitutes a violation of Chapter 403, F.S., and is grounds for enforcement action, permit termination, permit revocation and reissuance, or permit revision. [62-620.610(1), F.A.C.]
2. This permit is valid only for the specific processes and operations applied for and indicated in the approved drawings or exhibits. Any unauthorized deviation from the approved drawings, exhibits, specifications or conditions of this permit constitutes grounds for revocation and enforcement action by the Department. [62-620.610(2), F.A.C.]
3. As provided in Subsection 403.087(6), F.S., the issuance of this permit does not convey any vested rights or any exclusive privileges. Neither does it authorize any injury to public or private property or any invasion of personal rights, nor authorize any infringements of federal, state, or local laws or regulations. This permit is not a waiver of or approval of any other Department permit or authorization that may be required for other aspects of the total project which are not addressed in this permit. [62-620.610(3), F.A.C.]
4. This permit conveys no title to land or water, does not constitute state recognition or acknowledgment of title, and does not constitute authority for the use of submerged lands unless herein provided and the necessary title or leasehold interests have been obtained from the State. Only the Trustees of the Internal Improvement Trust Fund may express State opinion as to title. [62-620.610(4), F.A.C.]
5. This permit does not relieve the permittee from liability and penalties for harm or injury to human health or welfare, animal or plant life, or property caused by the construction or operation of this permitted source; nor does it allow the permittee to cause pollution in contravention of Florida Statutes and Department rules, unless specifically authorized by an order from the Department. The permittee shall take all reasonable steps to minimize or prevent any discharge, reuse of reclaimed water, or residuals use or disposal in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment. It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit. [62-620.610(5), F.A.C.]
6. If the permittee wishes to continue an activity regulated by this permit after its expiration date, the permittee shall apply for and obtain a new permit. [62-620.610(6), F.A.C.]

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7. The permittee shall at all times properly operate and maintain the facility and systems of treatment and control, and related appurtenances, that are installed and used by the permittee to achieve compliance with the conditions of this permit. This provision includes the operation of backup or auxiliary facilities or similar systems when necessary to maintain or achieve compliance with the conditions of the permit. *[62-620.610(7), F.A.C.]*
8. This permit may be modified, revoked and reissued, or terminated for cause. The filing of a request by the permittee for a permit revision, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance does not stay any permit condition. *[62-620.610(8), F.A.C.]*
9. The permittee, by accepting this permit, specifically agrees to allow authorized Department personnel, including an authorized representative of the Department and authorized EPA personnel, when applicable, upon presentation of credentials or other documents as may be required by law, and at reasonable times, depending upon the nature of the concern being investigated, to
 - a. Enter upon the permittee's premises where a regulated facility, system, or activity is located or conducted, or where records shall be kept under the conditions of this permit;
 - b. Have access to and copy any records that shall be kept under the conditions of this permit;
 - c. Inspect the facilities, equipment, practices, or operations regulated or required under this permit; and
 - d. Sample or monitor any substances or parameters at any location necessary to assure compliance with this permit or Department rules.*[62-620.610(9), F.A.C.]*
10. In accepting this permit, the permittee understands and agrees that all records, notes, monitoring data, and other information relating to the construction or operation of this permitted source which are submitted to the Department may be used by the Department as evidence in any enforcement case involving the permitted source arising under the Florida Statutes or Department rules, except as such use is proscribed by Section 403.111, Florida Statutes, or Rule 62-620.302, F.A.C. Such evidence shall only be used to the extent that it is consistent with the Florida Rules of Civil Procedure and applicable evidentiary rules. *[62-620.610(10), F.A.C.]*
11. When requested by the Department, the permittee shall within a reasonable time provide any information required by law which is needed to determine whether there is cause for revising, revoking and reissuing, or terminating this permit, or to determine compliance with the permit. The permittee shall also provide to the Department upon request copies of records required by this permit to be kept. If the permittee becomes aware of relevant facts that were not submitted or were incorrect in the permit application or in any report to the Department, such facts or information shall be promptly submitted or corrections promptly reported to the Department. *[62-620.610(11), F.A.C.]*
12. Unless specifically stated otherwise in Department rules, the permittee, in accepting this permit, agrees to comply with changes in Department rules and Florida Statutes after a reasonable time for compliance; provided however, the permittee does not waive any other rights granted by Florida Statutes or Department rules. A reasonable time for compliance with a new or amended surface water quality standard, other than those standards addressed in Rule 62-302.500, F.A.C., shall include a reasonable time to obtain or be denied a mixing zone for the new or amended standard. *[62-620.610(12), F.A.C.]*
13. The permittee, in accepting this permit, agrees to pay the applicable regulatory program and surveillance fee in accordance with Rule 62-4.052, F.A.C. *[62-620.610(13), F.A.C.]*
14. This permit is transferable only upon Department approval in accordance with Rule 62-620.340, F.A.C. The permittee shall be liable for any noncompliance of the permitted activity until the Department approves the transfer. *[62-620.610(14), F.A.C.]*
15. The permittee shall give the Department written notice at least 60 days before inactivation or abandonment of a wastewater facility and shall specify what steps will be taken to safeguard public health and safety during and following inactivation or abandonment. *[62-620.610(15), F.A.C.]*

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16. The permittee shall apply for a revision to the Department permit in accordance with Rule 62-620.300, F.A.C., and the Department of Environmental Protection Guide to Wastewater Permitting at least 90 days before construction of any planned substantial modifications to the permitted facility is to commence or with Rule 62-620.325(2), F.A.C., for minor modifications to the permitted facility. A revised permit shall be obtained before construction begins except as provided in Rule 62-620.300, F.A.C. [62-620.610(16), F.A.C.]
17. The permittee shall give advance notice to the Department of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements. The permittee shall be responsible for any and all damages which may result from the changes and may be subject to enforcement action by the Department for penalties or revocation of this permit. The notice shall include the following information:
 - a. A description of the anticipated noncompliance;
 - b. The period of the anticipated noncompliance, including dates and times; and
 - c. Steps being taken to prevent future occurrence of the noncompliance.[62-620.610(17), F.A.C.]
18. Sampling and monitoring data shall be collected and analyzed in accordance with Rule 62-4.246, Chapters 62-160 and 62-601, F.A.C., and 40 CFR 136, as appropriate.
 - a. Monitoring results shall be reported at the intervals specified elsewhere in this permit and shall be reported on a Discharge Monitoring Report (DMR), DEP Form 62-620.910(10).
 - b. If the permittee monitors any contaminate more frequently than required by the permit, using Department approved test procedures, the results of this monitoring shall be included in the calculation and reporting of the data submitted in the DMR.
 - c. Calculations for all limitations which require averaging of measurements shall use an arithmetic mean unless otherwise specified in this permit.
 - d. Any laboratory test required by this permit shall be performed by a laboratory that has been certified by the Department of Health (DOH) under Chapter 64E-1, F.A.C., where such certification is required by Rule 62-160.300(4), F.A.C. The laboratory must be certified for any specific method and analyte combination that is used to comply with this permit. For domestic wastewater facilities, the on-site test procedures specified in Rule 62-160.300(4), F.A.C., shall be performed by a laboratory certified test for those parameters or under the direction of an operator certified under Chapter 62-602, F.A.C.
 - e. Fields activities including on-site tests and sample collection, whether performed by a laboratory or a certified operator, must follow the applicable procedures described in DEP-SOP-001/01 (January 2002). Alternate field procedures and laboratory methods may be used where they have been approved according to the requirements of Rules 62-160.220, 62-160.330, and 62-160.600, F.A.C.
[62-620.610(18), F.A.C.]
19. Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule detailed elsewhere in this permit shall be submitted no later than 14 days following each schedule date. [62-620.610(19), F.A.C.]
20. The permittee shall report to the Department's Southwest District Office any noncompliance which may endanger health or the environment. Any information shall be provided orally within 24 hours from the time the permittee becomes aware of the circumstances. A written submission shall also be provided within five days of the time the permittee becomes aware of the circumstances. The written submission shall contain: a description of the noncompliance and its cause; the period of noncompliance including exact dates and time, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent recurrence of the noncompliance.
 - a. The following shall be included as information which must be reported within 24 hours under this condition:
 - (1) Any unanticipated bypass which causes any reclaimed water or effluent to exceed any permit limitation or results in an unpermitted discharge,
 - (2) Any upset which causes any reclaimed water or the effluent to exceed any limitation in the permit,

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- (3) Violation of a maximum daily discharge limitation for any of the pollutants specifically listed in the permit for such notice, and
 - (4) Any unauthorized discharge to surface or ground waters.
 - b. Oral reports as required by this subsection shall be provided as follows:
 - (1) For unauthorized releases or spills of untreated or treated wastewater reported pursuant to subparagraph a.4 that are in excess of 1,000 gallons per incident, or where information indicates that public health or the environment will be endangered, oral reports shall be provided to the Department by calling the STATE WARNING POINT TOLL FREE NUMBER (800) 320-0519, as soon as practical, but no later than 24 hours from the time the permittee becomes aware of the discharge. The permittee, to the extent known, shall provide the following information to the State Warning Point:
 - (a) Name, address, and telephone number of person reporting;
 - (b) Name, address, and telephone number of permittee or responsible person for the discharge;
 - (c) Date and time of the discharge and status of discharge (ongoing or ceased);
 - (d) Characteristics of the wastewater spilled or released (untreated or treated, industrial or domestic wastewater);
 - (e) Estimated amount of the discharge;
 - (f) Location or address of the discharge;
 - (g) Source and cause of the discharge;
 - (h) Whether the discharge was contained on-site, and cleanup actions taken to date;
 - (i) Description of area affected by the discharge, including name of water body affected, if any; and
 - (j) Other persons or agencies contacted.
 - (2) Oral reports, not otherwise required to be provided pursuant to subparagraph b(1) above, shall be provided to Department's Southwest District Office within 24 hours from the time the permittee becomes aware of the circumstances.
 - c. If the oral report has been received within 24 hours, the noncompliance has been corrected, and the noncompliance did not endanger health or the environment, the Department's Southwest District Office shall waive the written report.
[62-620.610(20), F.A.C.]
21. The permittee shall report all instances of noncompliance not reported under Conditions VIII. 18 and 19 of this permit at the time monitoring reports are submitted. This report shall contain the same information required by Condition VIII. 20. of this permit. *[62-620.610(21), F.A.C.]*
22. Bypass Provisions.
- a. Bypass is prohibited, and the Department may take enforcement action against a permittee for bypass, unless the permittee affirmatively demonstrates that:
 - (1) Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage; and
 - (2) There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass which occurred during normal periods of equipment downtime or preventative maintenance; and
 - (3) The permittee submitted notices as required under Condition VIII.22.b. of this permit.
 - b. If the permittee knows in advance of the need for a bypass, it shall submit prior notice to the Department, if possible at least 10 days before the date of the bypass. The permittee shall submit notice of an unanticipated bypass within 24 hours of learning about the bypass as required in Condition VIII.20. of this permit. A notice shall include a description of the bypass and its cause; the period of the bypass, including exact dates and times; if the bypass has not been corrected, the anticipated time it is expected to continue; and the steps taken or planned to reduce, eliminate, and prevent recurrence of the bypass.

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- c. The Department shall approve an anticipated bypass, after considering its adverse effect, if the permittee demonstrates that it will meet the three conditions listed in Condition VIII.22 a. (1) through (3) of this permit.
- d. A permittee may allow any bypass to occur which does not cause reclaimed water or effluent limitations to be exceeded if it is for essential maintenance to assure efficient operation. These bypasses are not subject to the provision of Condition VIII.22.a. through c. of this permit.
[62-620.610(22), F.A.C.]

23. Upset Provisions

- a. A permittee who wishes to establish the affirmative defense of upset shall demonstrate, through properly signed contemporaneous operating logs, or other relevant evidence that:
 - (1) An upset occurred and that the permittee can identify the cause(s) of the upset;
 - (2) The permitted facility was at the time being properly operated;
 - (3) The permittee submitted notice of the upset as required in Condition VIII.20. of this permit; and
 - (4) The permittee complied with any remedial measures required under Condition VIII.5. of this permit.
- b. In any enforcement proceeding, the permittee seeking to establish the occurrence of an upset has the burden of proof.
- c. Before an enforcement proceeding is instituted, no representation made during the Department review of a claim that noncompliance was caused by an upset is final agency action subject to judicial review.
[62-620.610(23), F.A.C.]

Executed in Tallahassee, Florida.

STATE OF FLORIDA DEPARTMENT OF
ENVIRONMENTAL PROTECTION

Mimi A. Drew
Director
Division of Water Resource Management
2600 Blair Stone Road
Tallahassee, Florida 32399-2400
(850) 245-8336

APPENDIX 10.1.5
PREVENTION OF SIGNIFICANT DETERIORATION

Golder Associates Inc.

5100 West Lemon Street, Suite 114
Tampa, FL USA 33609
Telephone (813) 287-1717
Fax (813) 287-1716
www.golder.com



**PSD PERMIT APPLICATION
COOLING TOWER INSTALLATION
CRYSTAL RIVER UNIT 3 UPRATE PROJECT
CRYSTAL RIVER, CITRUS COUNTY, FLORIDA**

Submitted to:

*Progress Energy Florida
100 Central Avenue
St. Petersburg, Florida 33701*

Submitted by:

*Golder Associates Inc.
5100 West Lemon Street
Suite 114
Tampa, Florida 33609*

Distribution:

4 Copies Department of Environmental Protection
2 Copies Progress Energy Florida
2 Copies Golder Associates Inc.

June 2007

073-89531

Golder Associates

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PART I

FDEP APPLICATION FOR AIR PERMIT



Department of Environmental Protection

Division of Air Resource Management

APPLICATION FOR AIR PERMIT - LONG FORM

I. APPLICATION INFORMATION

Air Construction Permit – Use this form to apply for an air construction permit for a proposed project:

- subject to prevention of significant deterioration (PSD) review, nonattainment area (NAA) new source review, or maximum achievable control technology (MACT) review; or
- where the applicant proposes to assume a restriction on the potential emissions of one or more pollutants to escape a federal program requirement such as PSD review, NAA new source review, Title V, or MACT; or
- at an existing federally enforceable state air operation permit (FESOP) or Title V permitted facility.

Air Operation Permit – Use this form to apply for:

- an initial federally enforceable state air operation permit (FESOP); or
- an initial/revised/renewal Title V air operation permit.

Air Construction Permit & Revised/Renewal Title V Air Operation Permit (Concurrent Processing Option)

– Use this form to apply for both an air construction permit and a revised or renewal Title V air operation permit incorporating the proposed project.

To ensure accuracy, please see form instructions.

Identification of Facility

1. Facility Owner/Company Name: PROGRESS ENERGY FLORIDA, INC.	
2. Site Name: CRYSTAL RIVER POWER PLANT	
3. Facility Identification Number:	
4. Facility Location...: Street Address or Other Locator: NORTH OF CRYSTAL RIVER, WEST OF U.S. 19 City: CRYSTAL RIVER County: CITRUS Zip Code: 34428	
5. Relocatable Facility? ☐ Yes ☒ No	6. Existing Title V Permitted Facility? ☒ Yes ☐ No

Application Contact

1. Application Contact Name: DAVE MEYER, SENIOR ENVIRONMENTAL SPECIALIST	
2. Application Contact Mailing Address... Organization/Firm: PROGRESS ENERGY FLORIDA Street Address: 299 FIRST AVENUE NORTH, PEF 903 City: ST. PETERSBURG State: FL Zip Code: 33701	
3. Application Contact Telephone Numbers... Telephone: (727) 820-5295 ext. Fax: (727) 820-5229	
4. Application Contact Email Address: DAVE.MEYER@PGNMAIL.COM	

Application Processing Information (DEP Use)

1. Date of Receipt of Application:	
2. Project Number(s):	
3. PSD Number (if applicable):	
4. Siting Number (if applicable):	

APPLICATION INFORMATION

Purpose of Application

This application for air permit is submitted to obtain: (Check one)

Air Construction Permit

☒ Air construction permit.

Air Operation Permit

- ☐ Initial Title V air operation permit.
- ☐ Title V air operation permit revision.
- ☐ Title V air operation permit renewal.
- ☐ Initial federally enforceable state air operation permit (FESOP) where professional engineer (PE) certification is required.
- ☐ Initial federally enforceable state air operation permit (FESOP) where professional engineer (PE) certification is not required.

Air Construction Permit and Revised/Renewal Title V Air Operation Permit (Concurrent Processing)

- ☐ Air construction permit and Title V permit revision, incorporating the proposed project.
- ☐ Air construction permit and Title V permit renewal, incorporating the proposed project.

Note: By checking one of the above two boxes, you, the applicant, are requesting concurrent processing pursuant to Rule 62-213.405, F.A.C. In such case, you must also check the following box:

- ☐ I hereby request that the department waive the processing time requirements of the air construction permit to accommodate the processing time frames of the Title V air operation permit.

Application Comment

Progress Energy is proposing to install additional mechanical draft cooling towers, referred to as the South Cooling Towers (SCT) at the Crystal River Power Plant, as part of the CR3 nuclear unit uprate project. See Part II for details of the proposed cooling tower project.

APPLICATION INFORMATION

Scope of Application

Emissions Unit ID Number	Description of Emissions Unit	Air Permit Type	Air Permit Proc. Fee
	Mechanical Draft Cooling Towers		NA

Application Processing Fee

Check one: ☒ Attached - Amount: \$ 7,500

☐ Not Applicable

APPLICATION INFORMATION

Owner/Authorized Representative Statement

Complete if applying for an air construction permit or an initial FESOP.

1. Owner/Authorized Representative Name :

BERNIE CUMBIE, PLANT MANAGER

2. Owner/Authorized Representative Mailing Address...

Organization/Firm: **PROGRESS ENERGY**

Street Address: **299 FIRST AVENUE NORTH, CN-77**

City: **ST PETERSBURG**

State: **FLORIDA**

Zip Code: **33701**

3. Owner/Authorized Representative Telephone Numbers...

Telephone: **(352) 563-4484**

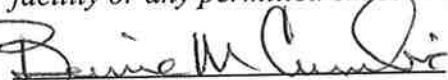
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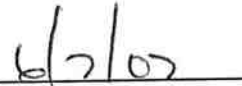
Fax: **(352) 563-4496**

4. Owner/Authorized Representative Email Address: **BERNIE.CUMBIE@PGNMAIL.COM**

5. Owner/Authorized Representative Statement:

I, the undersigned, am the owner or authorized representative of the facility addressed in this air permit application. I hereby certify, based on information and belief formed after reasonable inquiry, that the statements made in this application are true, accurate and complete and that, to the best of my knowledge, any estimates of emissions reported in this application are based upon reasonable techniques for calculating emissions. The air pollutant emissions units and air pollution control equipment described in this application will be operated and maintained so as to comply with all applicable standards for control of air pollutant emissions found in the statutes of the State of Florida and rules of the Department of Environmental Protection and revisions thereof and all other requirements identified in this application to which the facility is subject. I understand that a permit, if granted by the department, cannot be transferred without authorization from the department, and I will promptly notify the department upon sale or legal transfer of the facility or any permitted emissions unit.


Signature


Date

APPLICATION INFORMATION

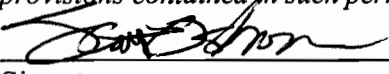
Application Responsible Official Certification

Complete if applying for an initial/revised/renewal Title V permit or concurrent processing of an air construction permit and a revised/renewal Title V permit. If there are multiple responsible officials, the "application responsible official" need not be the "primary responsible official."

1. Application Responsible Official Name:			
2. Application Responsible Official Qualification (Check one or more of the following options, as applicable): ☐ For a corporation, the president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation, or a duly authorized representative of such person if the representative is responsible for the overall operation of one or more manufacturing, production, or operating facilities applying for or subject to a permit under Chapter 62-213, F.A.C. ☐ For a partnership or sole proprietorship, a general partner or the proprietor, respectively. ☐ For a municipality, county, state, federal, or other public agency, either a principal executive officer or ranking elected official. ☐ The designated representative at an Acid Rain source.			
3. Application Responsible Official Mailing Address... Organization/Firm: Street Address: City: State: Zip Code:			
4. Application Responsible Official Telephone Numbers... Telephone: () - ext. Fax: () -			
5. Application Responsible Official Email Address:			
6. Application Responsible Official Certification: I, the undersigned, am a responsible official of the Title V source addressed in this air permit application. I hereby certify, based on information and belief formed after reasonable inquiry, that the statements made in this application are true, accurate and complete and that, to the best of my knowledge, any estimates of emissions reported in this application are based upon reasonable techniques for calculating emissions. The air pollutant emissions units and air pollution control equipment described in this application will be operated and maintained so as to comply with all applicable standards for control of air pollutant emissions found in the statutes of the State of Florida and rules of the Department of Environmental Protection and revisions thereof and all other applicable requirements identified in this application to which the Title V source is subject. I understand that a permit, if granted by the department, cannot be transferred without authorization from the department, and I will promptly notify the department upon sale or legal transfer of the facility or any permitted emissions unit. Finally, I certify that the facility and each emissions unit are in compliance with all applicable requirements to which they are subject, except as identified in compliance plan(s) submitted with this application. Signature _____ Date _____			

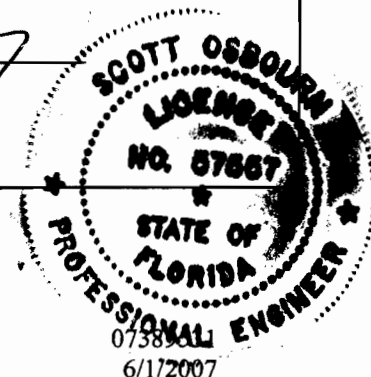
APPLICATION INFORMATION

Professional Engineer Certification

1. Professional Engineer Name: SCOTT OSBOURN Registration Number: 57557
2. Professional Engineer Mailing Address... Organization/Firm: Golder Associates Inc.** Street Address: 5100 West Lemon St., Suite 114 City: Tampa State: FL Zip Code: 33609
3. Professional Engineer Telephone Numbers... Telephone: (813) 287-1717 ext.211 Fax: (813) 287-1716
4. Professional Engineer Email Address: SOSBOURN@GOLDER.COM
5. Professional Engineer Statement: <i>I, the undersigned, hereby certify, except as particularly noted herein*, that:</i> <i>(1) To the best of my knowledge, there is reasonable assurance that the air pollutant emissions unit(s) and the air pollution control equipment described in this application for air permit, when properly operated and maintained, will comply with all applicable standards for control of air pollutant emissions found in the Florida Statutes and rules of the Department of Environmental Protection; and</i> <i>(2) To the best of my knowledge, any emission estimates reported or relied on in this application are true, accurate, and complete and are either based upon reasonable techniques available for calculating emissions or, for emission estimates of hazardous air pollutants not regulated for an emissions unit addressed in this application, based solely upon the materials, information and calculations submitted with this application.</i> <i>(3) If the purpose of this application is to obtain a Title V air operation permit (check here ☐, if so), I further certify that each emissions unit described in this application for air permit, when properly operated and maintained, will comply with the applicable requirements identified in this application to which the unit is subject, except those emissions units for which a compliance plan and schedule is submitted with this application.</i> <i>(4) If the purpose of this application is to obtain an air construction permit (check here ☒, if so) or concurrently process and obtain an air construction permit and a Title V air operation permit revision or renewal for one or more proposed new or modified emissions units (check here ☐, if so), I further certify that the engineering features of each such emissions unit described in this application have been designed or examined by me or individuals under my direct supervision and found to be in conformity with sound engineering principles applicable to the control of emissions of the air pollutants characterized in this application.</i> <i>(5) If the purpose of this application is to obtain an initial air operation permit or operation permit revision or renewal for one or more newly constructed or modified emissions units (check here ☐, if so), I further certify that, with the exception of any changes detailed as part of this application, each such emissions unit has been constructed or modified in substantial accordance with the information given in the corresponding application for air construction permit and with all provisions contained in such permit.</i>  Signature (seal) Date <u>6/8/07</u>

* Attach any exception to certification statement.

** Board of Professional Engineers Certificate of Authorization #00001670



FACILITY INFORMATION

II. FACILITY INFORMATION

A. GENERAL FACILITY INFORMATION

Facility Location and Type

1. Facility UTM Coordinates... Zone 17 East (km) 334.3 North (km) 3204.5		2. Facility Latitude/Longitude... Latitude (DD/MM/SS) 28/57/34 Longitude (DD/MM/SS) 82/42/01	
3. Governmental Facility Code: 0	4. Facility Status Code: A	5. Facility Major Group SIC Code: 49	6. Facility SIC(s):
7. Facility Comment :			

Facility Contact

1. Facility Contact Name: DAVE MEYER, SENIOR ENVIRONMENTAL SPECIALIST
2. Facility Contact Mailing Address... Organization/Firm: PROGRESS ENERGY Street Address: 299 FIRST AVENUE NORTH, PEF 903 City: ST PETERSBURG State: FLORIDA Zip Code: 33701
3. Facility Contact Telephone Numbers: Telephone: (727) 820-5295 ext. Fax: (727) 820-5229
4. Facility Contact Email Address: DAVE.MEYER@PGNMAIL.COM

Facility Primary Responsible Official

Complete if an "application responsible official" is identified in Section I. that is not the facility "primary responsible official."

1. Facility Primary Responsible Official Name:
2. Facility Primary Responsible Official Mailing Address... Organization/Firm: Street Address: City: State: Zip Code:
3. Facility Primary Responsible Official Telephone Numbers... Telephone: () - ext. Fax: () -
4. Facility Primary Responsible Official Email Address:

FACILITY INFORMATION

Facility Regulatory Classifications

Check all that would apply *following* completion of all projects and implementation of all other changes proposed in this application for air permit. Refer to instructions to distinguish between a “major source” and a “synthetic minor source.”

1. ☐ Small Business Stationary Source	☐ Unknown
2. ☐ Synthetic Non-Title V Source	
3. ☒ Title V Source	
4. ☒ Major Source of Air Pollutants, Other than Hazardous Air Pollutants (HAPs)	
5. ☐ Synthetic Minor Source of Air Pollutants, Other than HAPs	
6. ☒ Major Source of Hazardous Air Pollutants (HAPs)	
7. ☐ Synthetic Minor Source of HAPs	
8. ☒ One or More Emissions Units Subject to NSPS (40 CFR Part 60)	
9. ☒ One or More Emissions Units Subject to Emission Guidelines (40 CFR Part 60)	
10. ☐ One or More Emissions Units Subject to NESHAP (40 CFR Part 61 or Part 63)	
11. ☐ Title V Source Solely by EPA Designation (40 CFR 70.3(a)(5))	
12. Facility Regulatory Classifications Comment:	

FACILITY INFORMATION

List of Pollutants Emitted by Facility

1. Pollutant Emitted	2. Pollutant Classification	3. Emissions Cap [Y or N]?
PM	A	N
PM10	A	N

FACILITY INFORMATION

List of Pollutants Emitted by Facility

[illegible]

FACILITY INFORMATION

C. FACILITY ADDITIONAL INFORMATION

Additional Requirements for All Applications, Except as Otherwise Stated

1. Facility Plot Plan: (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought) ☐ Attached, Document ID: _____ ☒ Previously Submitted, Date: _____
2. Process Flow Diagram(s): (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought) ☐ Attached, Document ID: _____ ☒ Previously Submitted, Date: _____
3. Precautions to Prevent Emissions of Unconfined Particulate Matter: (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought) ☐ Attached, Document ID: _____ ☒ Previously Submitted, Date: _____

Additional Requirements for Air Construction Permit Applications

1. Area Map Showing Facility Location: ☐ Attached, Document ID: _____ ☒ Not Applicable (existing permitted facility)
2. Description of Proposed Construction or Modification: ☒ Attached, Document ID: PART II
3. Rule Applicability Analysis: ☒ Attached, Document ID: PART II
4. List of Exempt Emissions Units (Rule 62-210.300(3)(a) or (b)1., F.A.C.): ☐ Attached, Document ID: _____ ☒ Not Applicable (no exempt units at facility)
5. Fugitive Emissions Identification (Rule 62-212.400(2), F.A.C.): ☐ Attached, Document ID: _____ ☒ Not Applicable
6. Preconstruction Air Quality Monitoring and Analysis (Rule 62-212.400(5)(f), F.A.C.): ☐ Attached, Document ID: _____ ☒ Not Applicable
7. Ambient Impact Analysis (Rule 62-212.400(5)(d), F.A.C.): ☐ Attached, Document ID: _____ ☒ Not Applicable
8. Air Quality Impact since 1977 (Rule 62-212.400(5)(h)5., F.A.C.): ☐ Attached, Document ID: _____ ☒ Not Applicable
9. Additional Impact Analyses (Rules 62-212.400(5)(e)1. and 62-212.500(4)(e), F.A.C.): ☐ Attached, Document ID: _____ ☒ Not Applicable
10. Alternative Analysis Requirement (Rule 62-212.500(4)(g), F.A.C.): ☐ Attached, Document ID: _____ ☒ Not Applicable

Additional Requirements for FESOP Applications

- ### **Additional Requirements for Title V Air Operation Permit Applications**

- ### **Additional Requirements Comment**

[illegible]

EMISSIONS UNIT INFORMATION

Section [1]

SOUTH COOLING TOWERS

III. EMISSIONS UNIT INFORMATION

Title V Air Operation Permit Application - For Title V air operation permitting only, emissions units are classified as regulated, unregulated, or insignificant. If this is an application for Title V air operation permit, a separate Emissions Unit Information Section (including subsections A through I as required) must be completed for each regulated and unregulated emissions unit addressed in this application for air permit. Some of the subsections comprising the Emissions Unit Information Section of the form are optional for unregulated emissions units. Each such subsection is appropriately marked. Insignificant emissions units are required to be listed at Section II, Subsection C.

Air Construction Permit or FESOP Application - For air construction permitting or federally enforceable state air operation permitting, emissions units are classified as either subject to air permitting or exempt from air permitting. The concept of an "unregulated emissions unit" does not apply. If this is an application for air construction permit or FESOP, a separate Emissions Unit Information Section (including subsections A through I as required) must be completed for each emissions unit subject to air permitting addressed in this application for air permit. Emissions units exempt from air permitting are required to be listed at Section II, Subsection C.

Air Construction Permit and Revised/Renewal Title V Air Operation Permit Application - Where this application is used to apply for both an air construction permit and a revised/renewal Title V air operation permit, each emissions unit is classified as either subject to air permitting or exempt from air permitting for air construction permitting purposes and as regulated, unregulated, or insignificant for Title V air operation permitting purposes. **The air construction permitting classification must be used to complete the Emissions Unit Information Section of this application for air permit.** A separate Emissions Unit Information Section (including subsections A through I as required) must be completed for each emissions unit subject to air permitting addressed in this application for air permit. Emissions units exempt from air construction permitting and insignificant emissions units are required to be listed at Section II, Subsection C.

If submitting the application form in hard copy, the number of this Emissions Unit Information Section and the total number of Emissions Unit Information Sections submitted as part of this application must be indicated in the space provided at the top of each page.

EMISSIONS UNIT INFORMATION

Section [1]

SOUTH COOLING TOWERS

A. GENERAL EMISSIONS UNIT INFORMATION

Title V Air Operation Permit Emissions Unit Classification

1. Regulated or Unregulated Emissions Unit? (Check one, if applying for an initial, revised or renewal Title V air operation permit. Skip this item if applying for an air construction permit or FESOP only.)
- ☒ The emissions unit addressed in this Emissions Unit Information Section is a regulated emissions unit.
- ☐ The emissions unit addressed in this Emissions Unit Information Section is an unregulated emissions unit.

Emissions Unit Description and Status

1. Type of Emissions Unit Addressed in this Section: (Check one)
- ☒ This Emissions Unit Information Section addresses, as a single emissions unit, a single process or production unit, or activity, which produces one or more air pollutants and which has at least one definable emission point (stack or vent).
- ☐ This Emissions Unit Information Section addresses, as a single emissions unit, a group of process or production units and activities which has at least one definable emission point (stack or vent) but may also produce fugitive emissions.
- ☐ This Emissions Unit Information Section addresses, as a single emissions unit, one or more process or production units and activities which produce fugitive emissions only.

2. Description of Emissions Unit Addressed in this Section: **MECHANICAL DRAFT COOLING TOWERS, REFERRED TO AS THE SOUTH COOLING TOWERS (SCT)**

3. Emissions Unit Identification Number:

4. Emissions Unit Status Code: C	5. Commence Construction Date:	6. Initial Startup Date:	7. Emissions Unit Major Group SIC Code: 49	8. Acid Rain Unit? ☐ Yes ☒ No
--	--------------------------------	--------------------------	--	--

9. Package Unit:

Manufacturer: **Unknown**

Model Number: **Unknown**

10. Generator Nameplate Rating: **MW**

11. Emissions Unit Comment:

EMISSIONS UNIT INFORMATION

Section [1]

SOUTH COOLING TOWERS

Emissions Unit Control Equipment

1. Control Equipment/Method(s) Description:
DRIFT ELIMINATORS

2. Control Device or Method Code(s): **151**

EMISSIONS UNIT INFORMATION

Section [1]

SOUTH COOLING TOWERS

B. EMISSIONS UNIT CAPACITY INFORMATION

(Optional for unregulated emissions units.)

Emissions Unit Operating Capacity and Schedule

1. Maximum Process or Throughput Rate:	1.8 E11 Gallons per year	
2. Maximum Production Rate:		
3. Maximum Heat Input Rate:	million Btu/hr	
4. Maximum Incineration Rate:	pounds/hr tons/day	
5. Requested Maximum Operating Schedule:		
	24hours/day	7days/week
	52weeks/year	8760hours/year
6. Operating Capacity/Schedule Comment:		
Throughput rate = circulation water flow rate = 342,306 GPM x 60 min/hr x 8,760 hours of maximum operation per year = 1.8 E11 gallons per year.		
Since the emissions from the cooling tower are directly related to the amount of circulation water through the tower, it is proposed that the facility be restricted to an annual circulation water consumption of 1.8 E11 gallons and not hours per year operational limit. Limiting the facility in this manner gives the facility operational flexibility while maintaining assurance that the actual PM emissions are within the limits defined in this application.		

EMISSIONS UNIT INFORMATION

Section [1]

SOUTH COOLING TOWERS**C. EMISSION POINT (STACK/VENT) INFORMATION**

(Optional for unregulated emissions units.)

Emission Point Description and Type

1. Identification of Point on Plot Plan or Flow Diagram:		2. Emission Point Type Code: 3	
3. Descriptions of Emission Points Comprising this Emissions Unit for VE Tracking: Rectangular cooling tower cells.			
4. ID Numbers or Descriptions of Emission Units with this Emission Point in Common:			
5. Discharge Type Code: V	6. Stack Height: 73 feet	7. Exit Diameter: TBD feet	
8. Exit Temperature: °F	9. Actual Volumetric Flow Rate: 1.5 MM acfm	10. Water Vapor: %	
11. Maximum Dry Standard Flow Rate: dscfm		12. Nonstack Emission Point Height: feet	
13. Emission Point UTM Coordinates... Zone: East (km): North (km):		14. Emission Point Latitude/Longitude... Latitude (DD/MM/SS) Longitude (DD/MM/SS)	
15. Emission Point Comment: Number of cooling towers equal 18 cooling tower cells. See Part II, Table 2-2. Stack height assumes tower cell height of 59 ft and stack an additional 14 ft. Actual volumetric flow rate is per cell.			

EMISSIONS UNIT INFORMATION

Section [1]

SOUTH COOLING TOWERS**D. SEGMENT (PROCESS/FUEL) INFORMATION****Segment Description and Rate:** Segment **1** of **1**

1. Segment Description (Process/Fuel Type): CIRCULATION WATER		
2. Source Classification Code (SCC):		3. SCC Units: Thousand Gallons Water
4. Maximum Hourly Rate: 20,538	5. Maximum Annual Rate: 179,916,037	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur:	8. Maximum % Ash:	9. Million Btu per SCC Unit:
10. Segment Comment: Hourly rate based on 342,306 GPM Annual rate based on 8,760 per year		

Segment Description and Rate: Segment ____ of ____

1. Segment Description (Process/Fuel Type):		
2. Source Classification Code (SCC):		3. SCC Units:
4. Maximum Hourly Rate:	5. Maximum Annual Rate:	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur:	8. Maximum % Ash:	9. Million Btu per SCC Unit:
10. Segment Comment:		

Section [1] SOUTH COOLING TOWERS

List of Pollutants Emitted by Emissions Unit

DEP Form No. 62-210.900(1) – Form
Effective: 06/16/03

EMISSIONS UNIT INFORMATIONSection [1]
SOUTH COOLING TOWERS**POLLUTANT DETAIL INFORMATION**Page [1] of [2]
PM**F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION –
POTENTIAL/ESTIMATED FUGITIVE EMISSIONS**

(Optional for unregulated emissions units.)

Potential/Estimated Fugitive Emissions

Complete for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

1. Pollutant Emitted: PM		2. Total Percent Efficiency of Control:	
3. Potential Emissions: 22.3 lb/hour 97.6 tons/year		4. Synthetically Limited? ☐ Yes ☒ No	
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year			
6. Emission Factor: See Part II Reference:		7. Emissions Method Code: 0	
8. Calculation of Emissions: See Tables 2-1 and 2-2 of Part II			
9. Pollutant Potential/Estimated Fugitive Emissions Comment:			

EMISSIONS UNIT INFORMATIONSection [1]
SOUTH COOLING TOWERS**POLLUTANT DETAIL INFORMATION**Page [1] of [2]
PM**F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION -
ALLOWABLE EMISSIONS**

Complete if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

Allowable Emissions Allowable Emissions 1 of 1

1. Basis for Allowable Emissions Code: Other	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: NA	4. Equivalent Allowable Emissions: 22.3 lb/hour 97.6 tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

Allowable Emissions Allowable Emissions ____ of ____

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

Allowable Emissions Allowable Emissions ____ of ____

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

EMISSIONS UNIT INFORMATION

Section [1]

SOUTH COOLING TOWERS**POLLUTANT DETAIL INFORMATION**

Page [2] of [2]

PM10**F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION –
POTENTIAL/ESTIMATED FUGITIVE EMISSIONS****(Optional for unregulated emissions units.)****Potential/Estimated Fugitive Emissions**

Complete for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

1. Pollutant Emitted: PM10	2. Total Percent Efficiency of Control:
3. Potential Emissions: 1.35 lb/hour 5.9 tons/year	4. Synthetically Limited? ☐ Yes ☒ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: Reference:	7. Emissions Method Code: 0
8. Calculation of Emissions: See Tables 2-1 and 2-2 of Part II.	
9. Pollutant Potential/Estimated Fugitive Emissions Comment:	

EMISSIONS UNIT INFORMATIONSection [1]
SOUTH COOLING TOWERS**POLLUTANT DETAIL INFORMATION**Page [2] of [2]
PM10**F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION -
ALLOWABLE EMISSIONS**

Complete if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

Allowable Emissions Allowable Emissions 1 of 1

1. Basis for Allowable Emissions Code: Other	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: NA	4. Equivalent Allowable Emissions: 1.35 lb/hour 5.9 tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

Allowable Emissions Allowable Emissions ____ of ____

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

Allowable Emissions Allowable Emissions ____ of ____

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

EMISSIONS UNIT INFORMATION

Section [1]

SOUTH COOLING TOWERS

POLLUTANT DETAIL INFORMATION

Page [2] of [2]

PM10

G. VISIBLE EMISSIONS INFORMATION

Complete if this emissions unit is or would be subject to a unit-specific visible emissions limitation.

Visible Emissions Limitation: Visible Emissions Limitation ____ of ____

1. Visible Emissions Subtype:	2. Basis for Allowable Opacity: ☐ Rule ☐ Other
3. Allowable Opacity: Normal Conditions: % Exceptional Conditions: % Maximum Period of Excess Opacity Allowed: min/hour	
4. Method of Compliance:	
5. Visible Emissions Comment:	

Visible Emissions Limitation: Visible Emissions Limitation ____ of ____

1. Visible Emissions Subtype:	2. Basis for Allowable Opacity: ☐ Rule ☐ Other
3. Allowable Opacity: Normal Conditions: % Exceptional Conditions: % Maximum Period of Excess Opacity Allowed: min/hour	
4. Method of Compliance:	
5. Visible Emissions Comment:	

EMISSIONS UNIT INFORMATION

Section [1]

SOUTH COOLING TOWERS

I. EMISSIONS UNIT ADDITIONAL INFORMATION

Additional Requirements for All Applications, Except as Otherwise Stated

1. Process Flow Diagram (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought) ☒ Attached, Document ID: See Part II ☐ Previously Submitted, Date _____
2. Fuel Analysis or Specification (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought) ☐ Attached, Document ID: _____ ☐ Previously Submitted, Date _____
3. Detailed Description of Control Equipment (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought) ☒ Attached, Document ID: See Part II ☐ Previously Submitted, Date _____
4. Procedures for Startup and Shutdown (Required for all operation permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought) ☐ Attached, Document ID: _____ ☐ Previously Submitted, Date _____ ☒ Not Applicable (construction application)
5. Operation and Maintenance Plan (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought) ☐ Attached, Document ID: _____ ☐ Previously Submitted, Date _____ ☒ Not Applicable
6. Compliance Demonstration Reports/Records ☐ Attached, Document ID: _____ Test Date(s)/Pollutant(s) Tested: _____ ☐ Previously Submitted, Date: _____ Test Date(s)/Pollutant(s) Tested: _____ ☐ To be Submitted, Date (if known): _____ Test Date(s)/Pollutant(s) Tested: _____ ☒ Not Applicable Note: For FESOP applications, all required compliance demonstration records/reports must be submitted at the time of application. For Title V air operation permit applications, all required compliance demonstration reports/records must be submitted at the time of application, or a compliance plan must be submitted at the time of application.
7. Other Information Required by Rule or Statute ☐ Attached, Document ID: _____ ☒ Not Applicable

EMISSIONS UNIT INFORMATION

Section [1]

SOUTH COOLING TOWERS

Additional Requirements for Air Construction Permit Applications

- | |
|---|
| 1. Control Technology Review and Analysis (Rules 62-212.400(6) and 62-212.500(7), F.A.C.; 40 CFR 63.43(d) and (e))
☒ Attached, Document ID: See Part II ☐ Not Applicable |
| 2. Good Engineering Practice Stack Height Analysis (Rule 62-212.400(5)(h)6., F.A.C., and Rule 62-212.500(4)(f), F.A.C.)
☐ Attached, Document ID: _____ ☒ Not Applicable |
| 3. Description of Stack Sampling Facilities (Required for proposed new stack sampling facilities only)
☐ Attached, Document ID: _____ ☒ Not Applicable |

Additional Requirements for Title V Air Operation Permit Applications

- | |
|--|
| 1. Identification of Applicable Requirements
☐ Attached, Document ID: _____ ☐ Not Applicable |
| 2. Compliance Assurance Monitoring
☐ Attached, Document ID: _____ ☐ Not Applicable |
| 3. Alternative Methods of Operation
☐ Attached, Document ID: _____ ☐ Not Applicable |
| 4. Alternative Modes of Operation (Emissions Trading)
☐ Attached, Document ID: _____ ☐ Not Applicable |
| 5. Acid Rain Part Application
☐ Certificate of Representation (EPA Form No. 7610-1)
☐ Copy Attached, Document ID: _____
☐ Acid Rain Part (Form No. 62-210.900(1)(a))
☐ Attached, Document ID: _____
☐ Previously Submitted, Date: _____
☐ Repowering Extension Plan (Form No. 62-210.900(1)(a)1.)
☐ Attached, Document ID: _____
☐ Previously Submitted, Date: _____
☐ New Unit Exemption (Form No. 62-210.900(1)(a)2.)
☐ Attached, Document ID: _____
☐ Previously Submitted, Date: _____
☐ Retired Unit Exemption (Form No. 62-210.900(1)(a)3.)
☐ Attached, Document ID: _____
☐ Previously Submitted, Date: _____
☐ Phase II NOx Compliance Plan (Form No. 62-210.900(1)(a)4.)
☐ Attached, Document ID: _____
☐ Previously Submitted, Date: _____
☐ Phase II NOx Averaging Plan (Form No. 62-210.900(1)(a)5.)
☐ Attached, Document ID: _____
☐ Previously Submitted, Date: _____
☐ Not Applicable |

EMISSIONS UNIT INFORMATION

Section [1]

SOUTH COOLING TOWERS

Additional Requirements Comment

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PART II

PSD APPLICATION

1.0 INTRODUCTION AND EXECUTIVE SUMMARY

The scope of the proposed project includes an uprate of 40 MW to CR3 associated with equipment modifications made during the 2009 refueling outage and 140 MW to be added after upgrades to the reactor during the 2011 refueling outage. The uprate will increase the output from CR3 and the associated circulating intake water flow rate will also increase. The air emission impacts associated with increased intake water flow (i.e., increased flow through additional cooling towers – SCTs) will trigger PSD for particulate matter (PM), but not for PM less than 10 microns (PM₁₀). Other regulated air emissions (e.g., NO_x and SO₂) will not be affected, as there will be no additional fuel combustion sources (e.g., additional diesel generator capacity) that may trigger PSD for these pollutants.

This application contains the technical information developed in accordance with Prevention of Significant Deterioration (PSD) regulations as promulgated by the Florida Department of Environmental Protection (FDEP). It presents an evaluation of regulated pollutants subject to PSD review, and a demonstration of Best Available Control Technology (BACT). Through this application, Progress Energy Florida (PEF) requests that FDEP issue an air construction permit and PSD approval for this Project.

1.1 PSD Requirements

The permitting of this Project in Florida requires an air construction permit and PSD approval. The Project will be a modification to an existing major air emissions source. The U.S. Environmental Protection Agency (EPA) has implemented regulations requiring PSD review for new or modified sources that increase air emissions above certain threshold amounts.

EPA's PSD regulations are promulgated under Title 40 of the Code of Federal Regulations (CFR), Parts 51.166 and 52.21, and are implemented in Florida through the approved PSD program of the FDEP. FDEP has adopted PSD regulations codified in Rule 62-212.400, Florida Administrative Code (F.A.C.).

PSD applicability for the Project is summarized below.

Pollutant	Annual Emissions (TPY)	PSD Threshold (TPY)	PSD Review Required (Y/N)
PM	97.6	25	Y
PM ₁₀	5.9	15	N

A PSD review is required for particulate matter (PM) as total suspended particulate matter (TSP).

Citrus County has been designated as an attainment, maintenance or unclassifiable area for all criteria pollutants. The county is also classified as a PSD Class II area for PM₁₀, SO₂, and NO₂. Therefore, the new source review will follow PSD regulations pertaining to such designations.

1.2 BACT Analysis

For the proposed Project, a BACT analysis was conducted for PM, the only pollutant for which the net increase exceeds the FDEP significance emission rate and, is therefore, subject to BACT review. The proposed BACT emission levels are as follow:

Proposed BACT Emission Levels

Pollutant	South Cooling Tower BACT (% Drift Rate)	Annual Circulation Water Consumption (Gallons/yr)
PM	0.0005	1.8 E11

1.3 Air Quality Analysis

Because PM was the only pollutant that triggered PSD review, a Class II air quality impact analysis as well as additional analysis of impacts due to the proposed project on soils, vegetation, visibility, growth, and air quality related values (AQRVs) in the nearest PSD Class I areas were not conducted.

2.0 PROJECT DESCRIPTION

2.1 Site Description

The Crystal River Energy Complex consists of four coal-fired fossil fuel steam generating (FFSG) units with electrostatic precipitators; two natural draft cooling towers for FFSG Units 4 and 5; helper mechanical cooling towers for FFSG Units 1, 2 and Nuclear Unit 3; coal, fly ash, and bottom ash handling facilities, and relocatable diesel fired generator(s).

2.2 Proposed Project Modifications

The scope of the proposed project includes an uprate of CR3, the nuclear unit. The uprate will increase the output from CR3 and the associated circulating intake water flow rate will also increase. The air emission impacts associated with increased intake water flow (i.e., increased flow through additional cooling towers, referred to as the South Cooling Towers (SCT) will trigger PSD for particulate matter (PM), but not for PM less than 10 microns (PM_{10}). Other regulated air emissions (e.g., NO_x and SO_2) will not be affected, as there will be no additional fuel combustion sources (e.g., additional diesel generator capacity) that may trigger PSD for these pollutants.

2.3 Proposed Cooling Tower Emissions

Wet cooling towers provide direct contact between cooling water and air passing through the tower. Cooling tower drift is created when a small amount of the cooling water becomes entrained in the air stream and carried out of the tower. PM emissions from cooling towers are related to the total dissolved solids (TDS) and amount of drift through the cooling tower. Drift eliminators are the control technology used to reduce the amount of drift and secondarily reduce the amount of PM emissions. The estimated PM and PM_{10} emissions from the proposed cooling towers (SCT) are presented in Table 2-1. Appendix A presents a description of the methodology and data used to estimate the fraction of PM emissions that would constitute PM_{10} . Table 2-2 provides a description of the physical characteristics, performance and annual emission estimates for the proposed SCT. PM_{10} emissions are a function of the cooling water TDS concentration. It should be noted that, although Table 2-1 indicates a PM_{10} emission rate of 0.238 lb/hr for a typical TDS concentration at the facility, PEF has conservatively assumed an emission rate of 1.349 lb/hr, which would reflect a worst-case TDS for PM_{10} purposes.

The project design is still evolving; however, as stated above, the engineering and design data currently indicate that the Project will be characterized as a major source subject to PSD. Therefore, this PSD application addresses Best Available Control Technology (BACT) for PM emissions, which are the significant emission increase of concern. Federal PSD requirements are contained in 40 CFR 51.166, *Prevention of Significant Deterioration of Air Quality*. The state of Florida's PSD regulations are found in Rule 62-212.400, F.A.C.

In addition to adding a SCT to remove the incremental heat required to be dissipated by the uprate, PEF is considering replacement of the existing modular cooling towers with additional permanent SCTs. Based on the relative design heat dissipation rates, approximately 11 additional cells equivalent to the existing permanent cooling tower cells will be required. Coupled with the 6 cells required to dissipate the incremental heat rejected due to the uprate project, this means a total of 17 cells would be required. Therefore, as the status of the existing modular cooling towers is unknown, in order to present a worst-case air quality assessment, it is assumed that the new permanent SCT will include a safety factor (of one cell) and consist of 18 cells arranged in a 9 by 2 configuration. The estimated cooling water flow from the proposed 18 cell HCT is approximately 342,306 gallons per minute (gpm). Again, this estimate assumes that the existing bank of modular towers would be replaced by the permanent SCT associated with this uprate project, which may not necessarily be the case.

2.4 Site Layout and Structures

A plot plan of the Project, showing cooling tower locations, is presented in Figure 2-1. This figure provides a conceptual layout of the proposed new cooling towers which have been designed and sited to offset the increased circulating water rejected heat. The new cooling towers have also been designed to avoid any increase in flow into the intake canal from Crystal Bay/Gulf of Mexico, and to avoid any increase in temperature rise leaving the discharge canal to Crystal Bay/Gulf of Mexico.

2.5 Stack Parameters

The known stack parameters for the Project are presented in Table 2-2. Preliminary vendor data is not yet available. In some cases, the stack parameters are designated as TBD (i.e., to be determined).

3.0 AIR QUALITY REVIEW REQUIREMENTS AND APPLICABILITY

Federal and state air regulatory requirements for a new source of air pollution are discussed in Sections 3.1 to 3.4. The applicability of these regulations to the proposed modifications at the Crystal River Energy Complex are discussed in each respective section. These regulations must be satisfied before the proposed Project can be approved.

3.1 National and State AAQS

The existing applicable national and Florida AAQS are presented in Table 3-1. Primary NAAQS were promulgated to protect the public health, and secondary NAAQS were promulgated to protect the public welfare from any known or anticipated adverse effects associated with the presence of pollutants in the ambient air. Areas of the country in violation of NAAQS are designated as nonattainment areas, and new sources to be located in or near these areas may be subject to more stringent air permitting requirements.

Florida has adopted state AAQS in Rule 62-204.240. These standards are the same as the NAAQS, except in the case of SO₂. For SO₂, Florida has adopted the former 24-hour secondary standard of 260 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$), and former annual average secondary standard of 60 $\mu\text{g}/\text{m}^3$.

Because PM was the only pollutant that triggered PSD review, a Class II air quality impact analysis as well as additional analysis of impacts due to the proposed Project on soils, vegetation, visibility, growth, and air quality related values (AQRVs) in the nearest PSD Class I areas were not conducted.

3.2 Prevention of Significant Deterioration (PSD) Requirements

3.2.1 General Requirements

Under federal and State of Florida PSD review requirements, all major new or modified sources of air pollutants regulated under the Clean Air Act (CAA) must be reviewed and a pre-construction permit issued. Florida's State Implementation Plan (SIP), which contains PSD regulations, has been approved by EPA; therefore, PSD approval authority has been granted to the FDEP.

A “major facility” is defined as any one of 28 named source categories that have the potential to emit 100 tons per year (TPY) or more or any other stationary facility that has the potential to emit 250 TPY or more of any pollutant regulated under the CAA. “Potential to emit” means the capability, at maximum design capacity, to emit a pollutant after the application of control equipment. Once a new source is determined to be a “major facility” for a particular pollutant, any pollutant emitted in amounts greater than the PSD significant emission rates is subject to PSD review. For an existing source for which a modification is proposed, the modification is subject to PSD review if the net increase in emissions due to the modification is greater than the PSD significant emission rates. The PSD significant emission rates are shown in Table 3-2.

EPA has promulgated limitations to increases above an air quality baseline concentration level of SO₂, PM₁₀, and NO₂ concentrations that would constitute significant deterioration. The EPA class designations and allowable PSD increments are presented in Table 3-1. The magnitude of the allowable increment depends on the classification of the area in which a new source (or modification) will be located or have an impact. Three classifications are designated based on criteria established in the CAA. Congress promulgated areas as Class I (international parks, national wilderness areas, memorial parks larger than 5,000 acres, and national parks larger than 6,000 acres) or as Class II (all areas not designated as Class I). No Class III areas, which would be allowed greater deterioration than Class II areas, were designated. The State of Florida has adopted the EPA class designations and allowable PSD increments for SO₂, PM₁₀, and NO₂ increments.

PSD review is used to determine whether significant air quality deterioration will result from the new or modified facility. The State of Florida has adopted the PSD regulations which have been approved by EPA. (Rule 62-212.400, F.A.C.). Major new facilities and major modifications are required to undergo the following analyses, as applicable, related to PSD for each pollutant emitted in significant amounts:

1. Control technology review;
2. Source impact analysis;
3. Air quality analysis (monitoring);
4. Source information; and
5. Additional impact analyses.

In addition to these analyses, a new facility also must be reviewed with respect to Good Engineering Practice (GEP) stack height regulations. Discussions concerning each of these requirements are presented in the following sections.

3.2.2 Control Technology Review

The control technology review requirements of the federal and state PSD regulations require that all applicable federal and state emission-limiting standards be met, and that BACT be applied to control emissions from the source. The BACT requirements are applicable to all regulated pollutants for which the increase in emissions from the facility exceeds the significant emission rate (Table 3-2).

BACT is defined in 40 CFR 52.21 (b)(12), and Rule 62-210.200(38), F.A.C. as:

An emissions limitation (including a visible emission standard) based on the maximum degree of reduction of each pollutant subject to regulation under the Act which would be emitted by any proposed major stationary source or major modification which the Administrator, on a case-by-case basis, taking into account energy, environmental, and economic impacts, and other costs, determines is achievable through application of production processes and available methods, systems, and techniques (including fuel cleaning or treatment or innovative fuel combustion techniques) for control of such pollutant. In no event shall application of best available control technology result in emissions of any pollutant, which would exceed the emissions allowed by any applicable standard under 40 CFR Parts 60 and 61. If the Administrator determines that technological or economic limitations on the application of measurement methodology to a particular part of a source or facility would make the imposition of an emission standard infeasible, a design, equipment, work practice, operational standard or combination thereof, may be prescribed instead to satisfy the requirement for the application of BACT. Such standard shall, to the degree possible, set forth the emissions reductions achievable by implementation of such design, equipment, work practice, or operation and shall provide for compliance by means, which achieve equivalent results.

BACT was promulgated within the framework of the PSD requirements in the 1977 amendments of the CAA [Public Law 95-95; Part C, Section 165(a)(4)]. The primary purpose of BACT is to optimize consumption of PSD air quality increments and thereby enlarge the potential for future economic growth without significantly degrading air quality (EPA, 1978; 1980). Guidelines for the evaluation of BACT can be found in EPA's *Guidelines for Determining Best Available Control Technology (BACT)* (EPA, 1978) and in the *PSD Workshop Manual* (EPA, 1980). These guidelines were issued by EPA to provide a consistent approach to BACT and to ensure that the impacts of alternative emission control systems are measured by the same set of parameters. In addition, through

implementation of these guidelines, BACT in one area may not be identical to BACT in another area. According to EPA (1980), "BACT analyses for the same types of emissions unit and the same pollutants in different locations or situations may determine that different control strategies should be applied to the different sites, depending on site-specific factors. Therefore, BACT analyses must be conducted on a case-by-case basis."

The BACT requirements are intended to ensure that the control systems incorporated in the design of a proposed facility reflect the latest in control technologies used in a particular industry and take into consideration existing and future air quality in the vicinity of the proposed facility. BACT must, as a minimum, demonstrate compliance with new source performance standards (NSPS) for a source (if applicable). An evaluation of the air pollution control techniques and systems, including a cost-benefit analysis of alternative control technologies capable of achieving a higher degree of emission reduction than the proposed control technology, is required. The cost-benefit analysis requires the documentation of the materials, energy, and economic penalties associated with the proposed and alternative control systems, as well as the environmental benefits derived from these systems. A decision on BACT is to be based on sound judgment, balancing environmental benefits with energy, economic, and other impacts (EPA, 1978).

Historically, a "bottom-up" approach consistent with the BACT Guidelines and PSD Workshop Manual was used. With this approach, an initial control level, which is usually NSPS, is evaluated against successively more stringent controls until a BACT level is selected. However, EPA developed a concern that the bottom-up approach was not providing the level of BACT decisions originally intended. As a result, in December 1987, the EPA Assistant Administrator for Air and Radiation mandated changes in the implementation of the PSD program, including the adoption of a new "top-down" approach to BACT decision making.

The top-down BACT approach essentially starts with the most stringent (or top) technology and emissions limits that have been applied elsewhere to the same or a similar source category. The applicant must next provide a basis for rejecting this technology in favor of the next most stringent technology or propose to use it. Rejection of control alternatives may be based on technical or economic infeasibility. Such decisions are made on the basis of physical differences (e.g., fuel type), locational differences (e.g., availability of water), or significant differences that may exist in the environmental, economic, or energy impacts. The differences between the proposed facility and the facility on which the control technique was applied previously must be justified.

EPA has issued a draft guidance document on the top-down approach entitled *Top-Down Best Available Control Technology Guidance Document* (EPA, 1990). This document has not yet been issued as final guidance or as rule. EPA has also published the document entitled *OAQPS Cost Control Manual* (EPA, 1996) to assist industry and regulators in estimating capital and annual costs of pollution control equipment.

3.2.3 Additional Impact Analysis

In addition to air quality impact analyses, federal and State of Florida PSD regulations require analyses of the impairment to visibility and the impacts on soils and vegetation that would occur as a result of the proposed source [Rule 62-212.400]. These analyses are to be conducted primarily for PSD Class I areas. Impacts as a result of general commercial, residential, industrial, and other growth associated with the source also must be addressed. These analyses are required for each pollutant emitted in significant amounts (Table 3-2).

Because PM was the only pollutant that triggered PSD review, and not PM₁₀, additional analysis of impacts due to the proposed Project on soils, vegetation, visibility, growth, and air quality related values (AQRVs) in the nearest PSD Class I areas were not conducted.

3.2.4 PSD Applicability for the Project

3.2.4.1 *Area Classification*

The Project site is located in Citrus County, which has been designated by EPA and FDEP as an attainment or maintenance area for all criteria pollutants. Citrus County and surrounding counties are designated as PSD Class II areas for SO₂, PM (TSP), and NO₂.

3.2.4.2 *Pollutant Applicability*

The existing Crystal River Energy Complex is considered to be a “major existing facility” because it is one of 28 named source categories and the annual emissions of several regulated pollutants from the facility are greater than 100 TPY. Therefore, PSD review is required for any modification that results in a net increase in emissions greater than the PSD significant emission rates.

The PSD applicability for the proposed project was presented in Section 1. As shown, the potential increase in emissions due to the proposed project exceeds the PSD significant emission rate for PM. As a result, PSD review applies for PM emissions.

3.3 Nonattainment Rules

Based on the current nonattainment provisions, all major new facilities and major modifications to existing major facilities located in a nonattainment area must undergo nonattainment review. A new major facility is required to undergo this review if the proposed pieces of equipment have the potential to emit 100 TPY or more of the nonattainment pollutant.

The Project site is located in Citrus County, which is classified as an attainment or maintenance area for all criteria pollutants. Therefore, nonattainment requirements are not applicable.

3.4 Emission Standards

3.4.1 New Source Performance Standards

The NSPS are a set of national emission standards that apply to specific categories of new sources. As stated in the CAA Amendments of 1977, these standards “shall reflect the degree of emission limitation and the percentage reduction achievable through application of the best technological system of continuous emission reduction the Administrator determines has been adequately demonstrated.” The NSPS are codified in 40 CFR Part 60.

There are no applicable NSPS standards for the proposed cooling towers.

4.0 AMBIENT MONITORING ANALYSIS

4.1 Monitoring Requirements

In accordance with requirements of 40 CFR 52.21(m) and Rule 62-212.400(5)(f), F.A.C., any application for a PSD permit must contain an analysis of continuous ambient air quality data in the area affected by the proposed major stationary facility or major modification. For a new major facility, the affected pollutants are those that the facility would potentially emit in significant amounts. For a major modification, the pollutants are those for which the net emissions increase exceed the significant emission rates (Table 3-2).

Ambient air monitoring for a period of up to one year is generally appropriate to satisfy the PSD monitoring requirements. A minimum of 4 months of data is required. Existing data from the vicinity of the proposed source may be used if the data meet certain quality assurance requirements; otherwise, additional data may need to be gathered. Guidance in designing a PSD monitoring network is provided in EPA's *Ambient Monitoring Guidelines for Prevention of Significant Deterioration* (1987).

An exemption from the preconstruction ambient monitoring requirements is also available if certain criteria are met. If the predicted increase in ambient concentrations, due to the proposed modification, is less than specified *de minimis* concentrations, then the modification can be exempted from the pre-construction air monitoring requirements for that pollutant per FDEP rule. The proposed Project will result in PSD review for only PM emissions and as such, no preconstruction ambient monitoring is required.

There is no PSD *de minimis* monitoring concentration established for VOC. However, an increase in VOC emissions of 100 TPY or more requires a preconstruction ambient monitoring analysis for ozone (O₃). The proposed Project will not result in VOC emissions and therefore no preconstruction ambient monitoring analysis is required.

5.0 BEST AVAILABLE CONTROL TECHNOLOGY ANALYSIS

5.1 Requirements and BACT Summary

The 1977 CAA Amendments established requirements for the approval of pre-construction permit applications under the PSD program. As discussed in Section 3.2.2, one of these requirements is that BACT be installed for those pollutants requiring PSD review. BACT determinations must be made on a case-by-case basis considering technical, economic, energy, and environmental impacts for various BACT alternatives. To bring consistency to the BACT process, the EPA developed the “top-down” approach to BACT determination that is followed by FDEP.

The first step in a top-down BACT analysis is to determine, for each applicable pollutant, the most stringent control alternative available for a similar source or source category. If it can be shown that this level of control is not feasible on the basis of technical, economic, energy, or environmental impacts for the source in question, then the next most stringent level of control is identified and similarly evaluated. This process continues until the BACT level under consideration cannot be eliminated by any technical, economic, energy, or environmental consideration.

In the case of the proposed project, PM emissions require a BACT analysis. The following table summarizes the proposed BACT limits and the BACT analysis is presented in the following sections.

Pollutant	Proposed Cooling Tower BACT (% Drift Rate)
PM	0.0005 (w/Mist Eliminators) and 1.8 E11 gallons per year of circulation water.

5.2 Cooling Tower BACT Analysis

5.2.1 Particulate Matter (PM)

5.2.1.1 *Previous BACT Determinations*

As part of the BACT analysis, a review was performed of previous PM BACT determinations for cooling towers listed in the RACT/BACT/LAER Clearinghouse on EPA's web page. A summary of BACT determinations from this review are presented in Table 5-1. Determinations issued during the last 3 years are shown in the table.

Table 5-1. RACT/BACT/LAER Clearinghouse, Cooling Towers Permitted from 2003 to 2006.

Facility	Recirculation Water Flow % Drift Rate	Control Technology	State	Basis	Date
PEF Anclote	0.0005	Drift Eliminators	FL	BACT- PSD	10/20/06
Diamond Wanapa I, L. P.	0.0005	Drift Eliminators	OR	BACT- PSD	8/8/2005
Auburn Nugget	0.005	Drift Eliminators	IN	BACT- PSD	5/31/2005
Newmont Nevada Energy Investment, LLC	0.0005	Drift Eliminators	NV	BACT- PSD	5/5/2005
Tigen-Nassua Energy Corp.	0.0005	Drift Eliminators	NY	BACT- PSD	3/31/2005
Mirant Mid-Atlantic, LLC	0.001	Drift Eliminators	MD	BACT- PSD	11/5/2004
Midamerican Energy Company	0.001	Drift Eliminators	IA	BACT- PSD	6/17/2003
Wallula Generation, LLC	0.0005	Drift Eliminators	WA	LAER	1/3/2003

From the review of previous BACT determinations, it is evident that PM BACT determinations for cooling towers have exclusively been based on drift elimination.

5.2.1.2 *Control Technology Feasibility*

The types and sources of air emissions associated with the Project consist of a mechanical draft cooling tower, referred to as the South Cooling Tower (SCT). PM and PM₁₀ emissions are emitted from the SCT in the form of drift. Drift is water aerosols emitted from the cooling tower containing

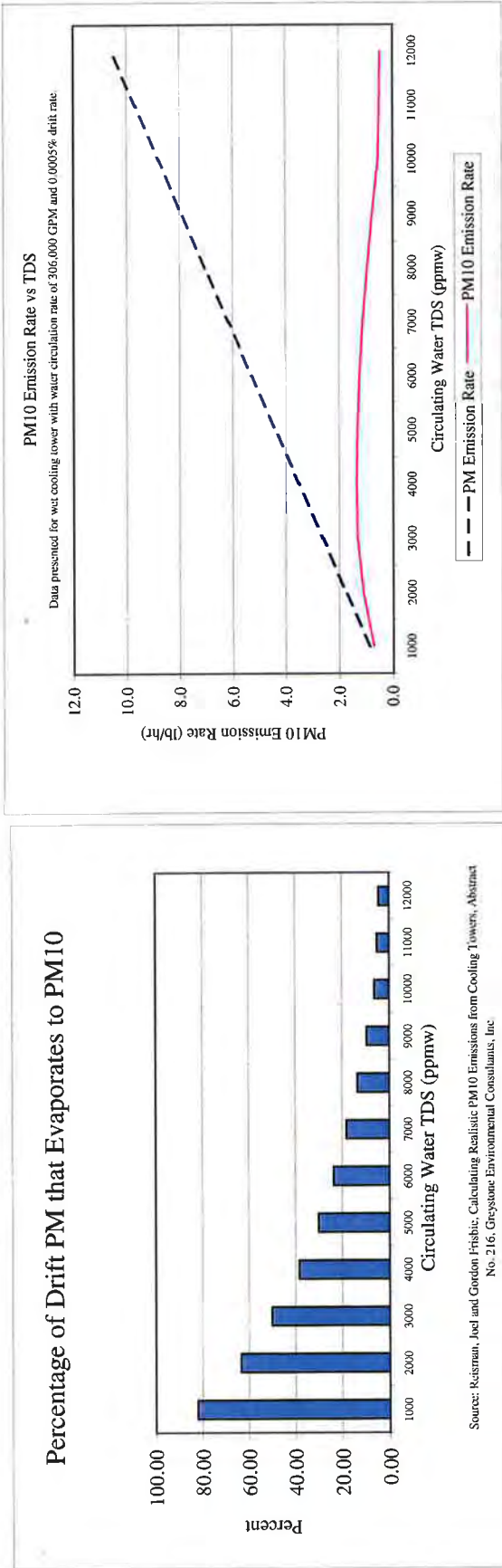
dissolved minerals from the water circulating in the cooling tower. The dissolved minerals become PM, including PM₁₀, when the water in the drift is evaporated. As stated previously, drift eliminators are the control technology utilized for cooling towers. Drift eliminators are usually incorporated into the tower design to remove as many droplets as practical from the air stream before exiting the tower. The drift eliminators used in cooling towers rely on the inertial separation caused by directional changes in the airflow while passing through the eliminators. Types of drift eliminator configurations include herringbone (blade type), wave form, and cellular (or honeycomb) designs. The cellular units generally are the most efficient. Drift eliminators may include various materials, such as ceramics, fiber reinforced cement, fiberglass, metal, plastic, and wood installed or formed closely spaced slats, sheets, honeycomb assemblies, or tiles. The materials may include other features, such as corrugations and water removal channels, to enhance the drift removal further.

5.2.1.3 PM BACT Selection

Cooling tower drift will be controlled using mist eliminators that will be designed to limit drift to 0.0005 percent of the circulating water rate of the cooling tower. This level of control represents the best that is currently available. The total circulation water use will be limited to 1.8 E11 gallons per year, based on 8,760 hours per year at a maximum circulation rate of 342,306 gpm.

Table 2-1. Potential PM and PM₁₀ Emissions

TDS (ppmw)	Percent of Emissions		PM10 Emissions (lb/hr)	Drift Rate (GPM)	Salt water density (lb/gal)	Calculated PM10 % < or = PM10 %
	PM Emission Rate (lb/hr)	< or = PM10 %				
1000	0.88	82.04	0.722	342,306	8.57	82.04
2000	1.76	63.50	1.118			63.50
3000	2.64	50.00	1.320			50.00
4000	3.52	38.33	1.349			38.33
5000	4.40	29.97	1.319			29.97
6000	5.28	23.59	1.246			23.59
7000	6.16	18.20	1.121			18.20
8000	7.04	13.57	0.955			13.57
9000	7.92	9.65	0.764			9.65
10000	8.80	6.28	0.553			6.28
11000	9.68	5.11	0.495			5.11
12000	10.56	4.46	0.471			4.46
25307	22.27	1.07	0.238			1.07
29000	25.52	0.82	0.209			0.82
89600	78.85	0.22	0.173			0.22



Reisman, Joel and Gordon Frisbie, *Calculating Realistic PM10 Emissions from Cooling Towers*, Abstract No. 216, Greystone Environmental Consultants, Inc.

Table 2-2. Physical, Performance, and Annual Emissions Data for the SCT

Parameter	Vendor (TBD)
<u>Physical Data</u>	
Number of Cells	18
Deck Dimensions, ft	
Length	50
Width	50
Height(Tower Height)	59
Stack Dimensions	
Height, ft	14
Stack Top Effective Inner Diameter, per cell, ft	TBD
Effective Diameter, all cells, ft	TBD
<u>Performance Data (per cell)</u>	
Discharge Velocity, acfm	1,500,000
Circulating Water Flow Rate (CWFR), gal/min	342,306
Design hot water temperature, °F	103
Design Air Flow Rate per cell, acfm, (estimated)	TBD
Hours of operation	8,760
<u>Emission Data</u>	
Drift Rate ^a (DR), percent	0.0005
Total Dissolved Solids (TDS) Concentration ^b , average ppm	25,307
Solution Drift ^c (SD), lb/hr	880.1
PM Drift ^d , lb/hr	22.3
tons/year	97.6
PM ₁₀ Drift ^e	
PM ₁₀ Emissions, lb/hr	1.35
tons/year	5.9

^a Drift rate is the percent of circulating water.

^b A TDS of 25,307 Average Value from Historical Data (Ron Johnson email 12/13/05)

^c Includes water and based on circulating water flow rate and drift rate
(CWFR x DR x 8.57 lb/gal x 60 min/hr).

^d PM calculated based on total dissolved solids and solution drift (TDS x SD).

^e PM₁₀ based on Cooling Tower PM₁₀ emissions study see Attachment A.

Source: Progress Energy, 2007; Golder, 2007.

Table 3-1. National and State AAQS, Allowable PSD Increments, and Significant Impact Levels

Pollutant	Averaging Time	AAQS ($\mu\text{g}/\text{m}^3$)			PSD Increments ($\mu\text{g}/\text{m}^3$)		Significant Impact Levels ($\mu\text{g}/\text{m}^3$) ^b
		Primary Standard	Secondary Standard	Florida	Class I	Class II	
Particulate Matter ^c (PM ₁₀)	Annual Arithmetic Mean	50	50	50	4	17	1
	24-Hour Maximum	150	150	150	8	30	5
Sulfur Dioxide	Annual Arithmetic Mean	80	NA	60	2	20	1
	24-Hour Maximum	365	NA	260	5	91	5
	3-Hour Maximum	NA	1,300	1,300	25	512	25
Carbon Monoxide	8-Hour Maximum	10,000	10,000	10,000	NA	NA	500
	1-Hour Maximum	40,000	40,000	40,000	NA	NA	2,000
Nitrogen Dioxide	Annual Arithmetic Mean	100	100	100	2.5	25	1
Ozone ^e	8-Hour Maximum ^d	157	157	157	NA	NA	NA
Lead	Calendar Quarter Arithmetic Mean	1.5	1.5	1.5	NA	NA	NA

Note: Particulate matter (PM₁₀) = particulate matter with aerodynamic diameter less than or equal to 10 micrometers.

NA = Not applicable, i.e., no standard exists.

^a Short-term maximum concentrations are not to be exceeded more than once per year.

^b Maximum concentrations are not to be exceeded.

^c On July 18, 1997, EPA promulgated revised AAQS for particulate matter and ozone. For particulate matter, PM_{2.5} standards were introduced with a 24-hour standard of 65 $\mu\text{g}/\text{m}^3$ (3-year average of 98th percentile) and an annual standard of 15 $\mu\text{g}/\text{m}^3$ (3-year average at community monitors).

^d 0.08 ppm; achieved when 3-year average of 99th percentile is 0.08 ppm or less. FDEP has not yet adopted these standards.

Sources: Federal Register, Vol. 43, No. 118, June 19, 1978.

40 CFR 50; 40 CFR 52.21.

Chapter 62-204, F.A.C.

Table 3-2. PSD Significant Emission Rates and *De Minimis* Monitoring Concentrations

Pollutant	Regulated Under	Significant Emission Rate (TPY)	<i>De Minimis</i> Monitoring Concentration ^a (µg/m ³)
Sulfur Dioxide	NAAQS, NSPS	40	13, 24-hour
Particulate Matter [PM(TSP)]	NSPS	25	10, 24-hour
Particulate Matter (PM ₁₀)	NAAQS	15	10, 24-hour
Nitrogen Dioxide	NAAQS, NSPS	40	14, annual
Carbon Monoxide	NAAQS, NSPS	100	575, 8-hour
Volatile Organic Compounds (Ozone)	NAAQS, NSPS	40	100 TPY ^b
Lead	NAAQS	0.6	0.1, 3-month
Sulfuric Acid Mist	NSPS	7	NM
Total Fluorides	NSPS	3	0.25, 24-hour
Total Reduced Sulfur	NSPS	10	10, 1-hour
Reduced Sulfur Compounds	NSPS	10	10, 1-hour
Hydrogen Sulfide	NSPS	10	0.2, 1-hour
Mercury	NESHAP	0.1	0.25, 24-hour

Note: Ambient monitoring requirements for any pollutant may be exempted if the impact of the increase in emissions is below *de minimis* monitoring concentrations.

NAAQS = National Ambient Air Quality Standards.

NM = No ambient measurement method established; therefore, no *de minimis* concentration has been established.

NSPS = New Source Performance Standards.

NESHAP = National Emission Standards for Hazardous Air Pollutants.

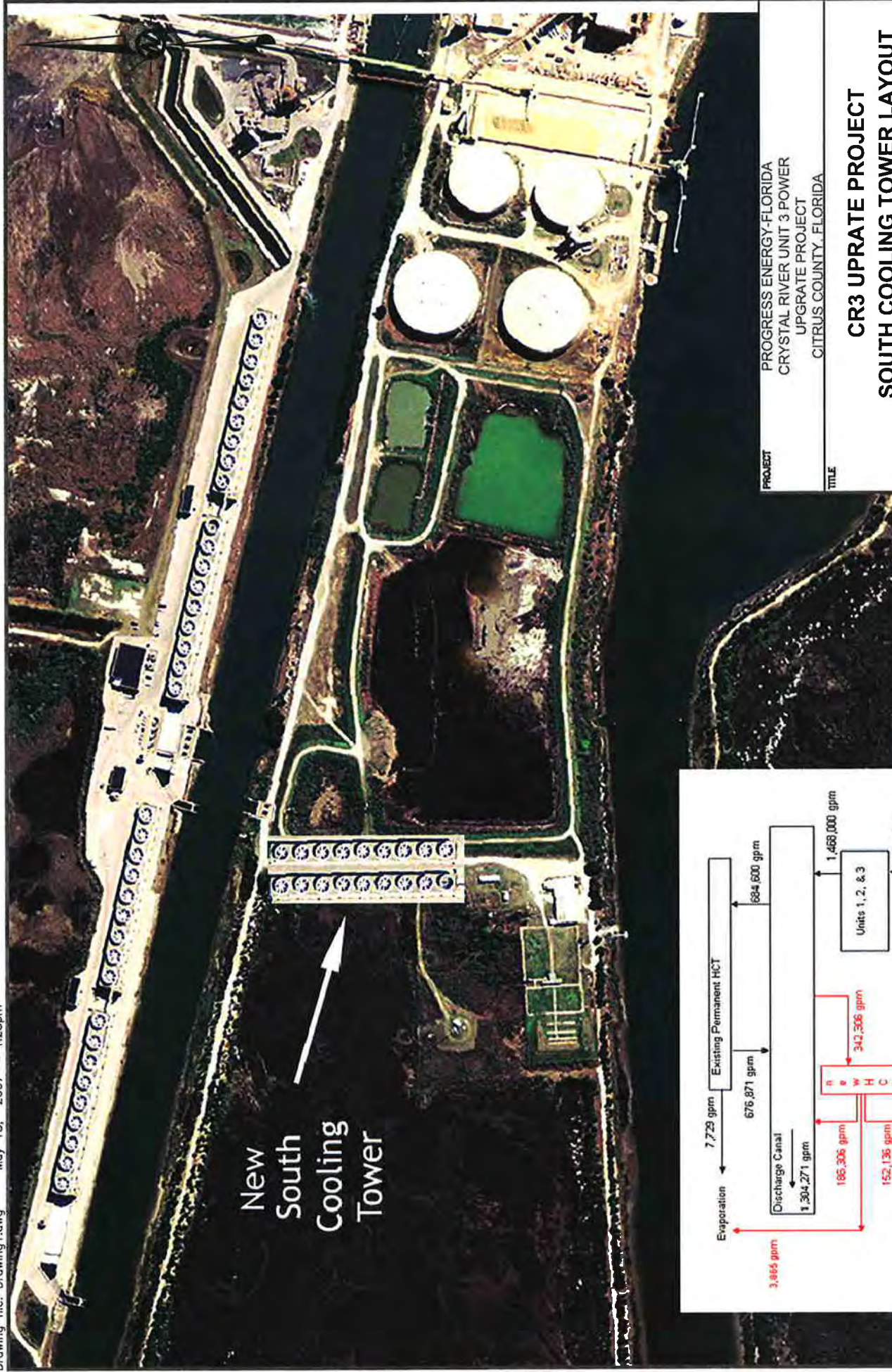
g/m³ = micrograms per cubic meter.

^a Short-term concentrations are not to be exceeded.

^b No *de minimis* concentration; an increase in VOC emissions of 100 TPY or more will require monitoring analysis for ozone.

^c Any emission rate of these pollutants.

Sources: 40 CFR 52.21.
Rule 62-212.400



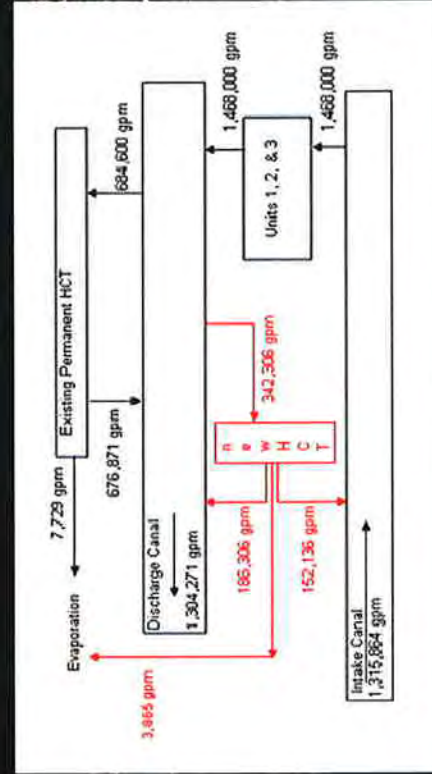
New
South
Cooling
Tower

PROJECT
PROGRESS ENERGY-FLORIDA
CRYSTAL RIVER UNIT 3 POWER
UPGRADE PROJECT
CITRUS COUNTY, FLORIDA

TITLE

CR3 UPRATE PROJECT SOUTH COOLING TOWER LAYOUT

 Golder Associates TAMPA, FLORIDA	PROJECT No. 07306531		FILE No. 07306531/0027.DWG				
	DESIGN	HF	04/30/07	SCALE	NTS	REV.	0
	CADD	SH	05/18/07				
	CHECK	MM	05/18/07				
	REVIEW	MM	05/18/07				
	FIGURE 2-1						



APPENDIX A

PM₁₀ EMISSION CALCULATION

Calculating Realistic PM₁₀ Emissions from Cooling Towers

Abstract No. 216 Session No. AM-1b

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ABSTRACT

Particulate matter less than 10 micrometers in diameter (PM₁₀) emissions from wet cooling towers may be calculated using the methodology presented in EPA's AP-42¹, which assumes that all total dissolved solids (TDS) emitted in "drift" particles (liquid water entrained in the air stream and carried out of the tower through the induced draft fan stack.) are PM₁₀. However, for wet cooling towers with medium to high TDS levels, this method is overly conservative, and predicts significantly higher PM₁₀ emissions than would actually occur, even for towers equipped with very high efficiency drift eliminators (e.g., 0.0006% drift rate). Such over-prediction may result in unrealistically high PM₁₀ modeled concentrations and/or the need to purchase expensive Emission Reduction Credits (ERCs) in PM₁₀ non-attainment areas. Since these towers have fairly low emission points (10 to 15 m above ground), over-predicting PM₁₀ emission rates can easily result in exceeding federal Prevention of Significant Deterioration (PSD) significance levels at a project's fence line. This paper presents a method for computing realistic PM₁₀ emissions from cooling towers with medium to high TDS levels.

INTRODUCTION

Cooling towers are heat exchangers that are used to dissipate large heat loads to the atmosphere. Wet, or evaporative, cooling towers rely on the latent heat of water evaporation to exchange heat between the process and the air passing through the cooling tower. The cooling water may be an integral part of the process or may provide cooling via heat exchangers, for example, steam condensers. Wet cooling towers provide direct contact between the cooling water and air passing through the tower, and as part of normal operation, a very small amount of the circulating water may be entrained in the air stream and be carried out of the tower as "drift" droplets. Because the drift droplets contain the same chemical impurities as the water circulating through the tower, the particulate matter constituent of the drift droplets may be classified as an emission. The magnitude of the drift loss is influenced by the number and size of droplets produced within the tower, which are determined by the tower fill design, tower design, the air and water patterns, and design of the drift eliminators.

AP-42 METHOD OF CALCULATING DRIFT PARTICULATE

EPA's AP-42¹ provides available particulate emission factors for wet cooling towers, however, these values only have an emission factor rating of "E" (the lowest level of confidence acceptable). They are also rather high, compared to typical present-day manufacturers' guaranteed drift rates, which are on the order of 0.0006%. (Drift emissions are typically

expressed as a percentage of the cooling tower water circulation rate). AP-42 states that "a *conservatively high* PM₁₀ emission factor can be obtained by (a) multiplying the total liquid drift factor by the TDS fraction in the circulating water, and (b) assuming that once the water evaporates, all remaining solid particles are within the PM₁₀ range." (Italics per EPA).

If TDS data for the cooling tower are not available, a source-specific TDS content can be estimated by obtaining the TDS for the make-up water and multiplying it by the cooling tower cycles of concentration. [The cycles of concentration is the ratio of a measured parameter for the cooling tower water (such as conductivity, calcium, chlorides, or phosphate) to that parameter for the make-up water.]

Using AP-42 guidance, the total particulate emissions (PM) (after the pure water has evaporated) can be expressed as:

$$\text{PM} = \text{Water Circulation Rate} \times \text{Drift Rate} \times \text{TDS} \quad [1]$$

For example, for a typical power plant wet cooling tower with a water circulation rate of 146,000 gallons per minute (gpm), drift rate of 0.0006%, and TDS of 7,700 parts per million by weight (ppmw):

$$\text{PM} = 146,000 \text{ gpm} \times 8.34 \text{ lb water/gal} \times 0.0006/100 \times 7,700 \text{ lb solids}/10^6 \text{ lb water} \times 60 \text{ min/hr} = \underline{3.38 \text{ lb/hr}}$$

On an annual basis, this is equivalent to almost 15 tons per year (tpy). Even for a state-of-the-art drift eliminator system, this is not a small number, especially if assumed to all be equal to PM₁₀, a regulated criteria pollutant. However, as the following analysis demonstrates, only a very small fraction is actually PM₁₀.

COMPUTING THE PM₁₀ FRACTION

Based on a representative drift droplet size distribution and TDS in the water, the amount of solid mass in each drop size can be calculated. That is, for a given initial droplet size, assuming that the mass of dissolved solids condenses to a spherical particle after all the water evaporates, and assuming the density of the TDS is equivalent to a representative salt (e.g., sodium chloride), the diameter of the final solid particle can be calculated. Thus, using the drift droplet size distribution, the percentage of drift mass containing particles small enough to produce PM₁₀ can be calculated. This method is conservative as the final particle is assumed to be perfectly spherical; hence as small a particle as can exist.

The droplet size distribution of the drift emitted from the tower is critical to performing the analysis. Brentwood Industries, a drift eliminator manufacturer, was contacted and agreed to provide drift eliminator test data from a test conducted by Environmental Systems Corporation (ESC) at the Electric Power Research Institute (EPRI) test facility in Houston, Texas in 1988 (Aull², 1999). The data consist of water droplet size distributions for a drift eliminator that achieved a tested drift rate of 0.0003 percent. As we are using a 0.0006 percent drift rate, it is reasonable to expect that the 0.0003 percent drift rate would produce smaller droplets, therefore,

this size distribution data can be assumed to be conservative for predicting the fraction of PM₁₀ in the total cooling tower PM emissions.

In calculating PM₁₀ emissions the following assumptions were made:

- Each water droplet was assumed to evaporate shortly after being emitted into ambient air, into a single, solid, spherical particle.
- Drift water droplets have a density (ρ_w) of water; 1.0 g/cm³ or 1.0 * 10⁻⁶ µg / µm³.
- The solid particles were assumed to have the same density (ρ_{TDS}) as sodium chloride, (i.e., 2.2 g/cm³).

Using the formula for the volume of a sphere, $V = 4\pi^3 / 3$, and the density of pure water, $\rho_w = 1.0 \text{ g/cm}^3$, the following equations can be used to derive the solid particulate diameter, D_p , as a function of the TDS, the density of the solids, and the initial drift droplet diameter, D_d :

$$\text{Volume of drift droplet} = (4/3)\pi(D_d/2)^3 \quad [2]$$

$$\text{Mass of solids in drift droplet} = (\text{TDS})(\rho_w)(\text{Volume of drift droplet}) \quad [3]$$

substituting,

$$\text{Mass of solids in drift} = (\text{TDS})(\rho_w)(4/3)\pi(D_d/2)^3 \quad [4]$$

Assuming the solids remain and coalesce after the water evaporates, the mass of solids can also be expressed as:

$$\text{Mass of solids} = (\rho_{TDS}) (\text{solid particle volume}) = (\rho_{TDS})(4/3)\pi(D_p/2)^3 \quad [5]$$

Equations [4] and [5] are equivalent:

$$(\rho_{TDS})(4/3)\pi(D_p/2)^3 = (\text{TDS})(\rho_w)(4/3)\pi(D_d/2)^3 \quad [6]$$

Solving for D_p :

$$D_p = D_d [(\text{TDS})(\rho_w / \rho_{TDS})]^{1/3} \quad [7]$$

Where,

TDS is in units of ppmw

D_p = diameter of solid particle, micrometers (µm)

D_d = diameter of drift droplet, µm

Using formulas [2] – [7] and the particle size distribution test data, Table 1 can be constructed for drift from a wet cooling tower having the same characteristics as our example; 7,700 ppmw TDS and a 0.0006% drift rate. The first and last columns of this table are the particle size distribution derived from test results provided by Brentwood Industries. Using straight-line interpolation for a solid particle size 10 µm in diameter, we conclude that approximately 14.9 percent of the mass emissions are equal to or smaller than PM₁₀. The balance of the solid

particulate are particulate greater than 10 μm . Hence, PM_{10} emissions from this tower would be equal to PM emissions x 0.149, or 3.38 lb/hr x 0.149 = 0.50 lb/hr. The process is repeated in Table 2, with all parameters equal except that the TDS is 11,000 ppmw. The result is that approximately 5.11 percent are smaller at 11,000 ppm. Thus, while total PM emissions are larger by virtue of a higher TDS, overall PM_{10} emissions are actually lower, because more of the solid particles are larger than 10 μm .

Table 1. Resultant Solid Particulate Size Distribution (TDS = 7700 ppmw)

EPRI Droplet Diameter (μm)	Droplet Volume (μm^3) [2] ¹	Droplet Mass (μg) [3]	Particle Mass (Solids) (μg) [4]	Solid Particle Volume (μm^3)	Solid Particle Diameter (μm) [7]	EPRI % Mass Smaller
10	524	5.24E-04	4.03E-06	1.83	1.518	0.000
20	4189	4.19E-03	3.23E-05	14.66	3.037	0.196
30	14137	1.41E-02	1.09E-04	49.48	4.555	0.226
40	33510	3.35E-02	2.58E-04	117.29	6.073	0.514
50	65450	6.54E-02	5.04E-04	229.07	7.591	1.816
60	113097	1.13E-01	8.71E-04	395.84	9.110	5.702
70	179594	1.80E-01	1.38E-03	628.58	10.628	21.348
80	381704	3.82E-01	2.94E-03	1335.96	13.665	49.812
110	696910	6.97E-01	5.37E-03	2439.18	16.701	70.509
130	1150347	1.15E+00	8.86E-03	4026.21	19.738	82.023
150	1767146	1.77E+00	1.36E-02	6185.01	22.774	88.012
180	3053628	3.05E+00	2.35E-02	10687.70	27.329	91.032
210	4849048	4.85E+00	3.73E-02	16971.67	31.884	92.468
240	7238229	7.24E+00	5.57E-02	25333.80	36.439	94.091
270	10305995	1.03E+01	7.94E-02	36070.98	40.994	94.689
300	14137167	1.41E+01	1.09E-01	49480.08	45.549	96.288
350	22449298	2.24E+01	1.73E-01	78572.54	53.140	97.011
400	33510322	3.35E+01	2.58E-01	117286.13	60.732	98.340
450	47712938	4.77E+01	3.67E-01	168995.28	68.323	99.071
500	65449847	6.54E+01	5.04E-01	229074.46	75.915	99.071
600	113097336	1.13E+02	8.71E-01	395840.67	91.098	100.000

¹ Bracketed numbers refer to equation number in text.

The percentage of PM_{10} /PM was calculated for cooling tower TDS values from 1000 to 12000 ppmw and the results are plotted in Figure 1. Using these data, Figure 2 presents predicted PM_{10} emission rates for the 146,000 gpm example tower. As shown in this figure, the PM emission rate increases in a straight line as TDS increases, however, the PM_{10} emission rate increases to a maximum at around a TDS of 4000 ppmw, and then begins to decline. The reason is that at higher TDS, the drift droplets contain more solids and therefore, upon evaporation, result in larger solid particles for any given initial droplet size.

CONCLUSION

The emission factors and methodology given in EPA's AP-42¹ Chapter 13.4 *Wet Cooling Towers*, do not account for the droplet size distribution of the drift exiting the tower. This is a critical factor, as more than 85% of the mass of particulate in the drift from most cooling towers will result in solid particles larger than PM_{10} once the water has evaporated. Particles larger than PM_{10} are no longer a regulated air pollutant, because their impact on human health has been shown to be insignificant. Using reasonable, conservative assumptions and a realistic drift

droplet size distribution, a method is now available for calculating realistic PM₁₀ emission rates from wet mechanical draft cooling towers equipped with modern, high-efficiency drift eliminators and operating at medium to high levels of TDS in the circulating water.

Table 2. Resultant Solid Particulate Size Distribution (TDS = 11000 ppmw)

EPRI Droplet Diameter (μm)	Droplet Volume (μm^3) [2] ¹	Droplet Mass (μg) [3]	Particle Mass (Solids) (μg) [4]	Solid Particle Volume (μm^3)	Solid Particle Diameter (μm) [7]	EPRI % Mass Smaller
10	524	5.24E-04	5.76E-06	2.62	1.710	0.000
20	4189	4.19E-03	4.61E-05	20.94	3.420	0.196
30	14137	1.41E-02	1.56E-04	70.69	5.130	0.226
40	33510	3.35E-02	3.69E-04	167.55	6.840	0.514
50	65450	6.54E-02	7.20E-04	327.25	8.550	1.816
60	113097	1.13E-01	1.24E-03	565.49	10.260	5.702
70	179594	1.80E-01	1.98E-03	897.97	11.970	21.348
90	381704	3.82E-01	4.20E-03	1908.52	15.390	49.812
110	696910	6.97E-01	7.67E-03	3484.55	18.810	70.509
130	1150347	1.15E+00	1.27E-02	5751.73	22.230	82.023
150	1767146	1.77E+00	1.94E-02	8835.73	25.650	88.012
180	3053628	3.05E+00	3.36E-02	15268.14	30.780	91.032
210	4849048	4.85E+00	5.33E-02	24245.24	35.909	92.468
240	7238229	7.24E+00	7.96E-02	36191.15	41.039	94.091
270	10305995	1.03E+01	1.13E-01	51529.97	46.169	94.689
300	14137167	1.41E+01	1.56E-01	70685.83	51.299	96.288
350	22449298	2.24E+01	2.47E-01	112246.49	59.849	97.011
400	33510322	3.35E+01	3.69E-01	167551.61	68.399	98.340
450	47712938	4.77E+01	5.25E-01	238564.69	76.949	99.071
500	65449847	6.54E+01	7.20E-01	327249.23	85.499	99.071
600	113097336	1.13E+02	1.24E+00	565486.68	102.599	100.000

Figure 1: Percentage of Drift PM that Evaporates to PM₁₀

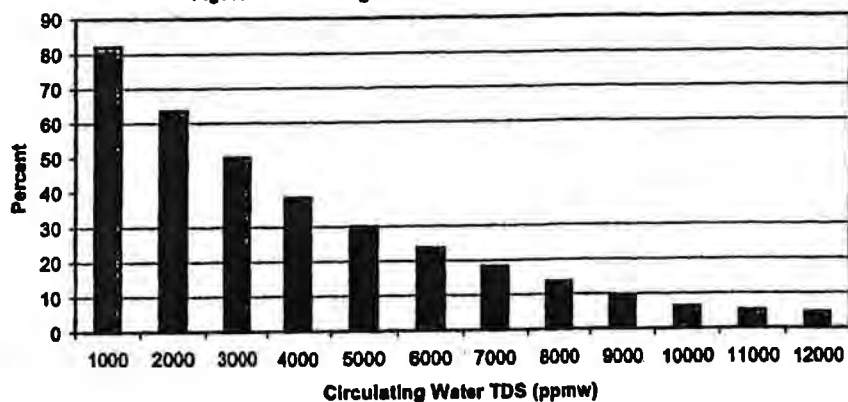
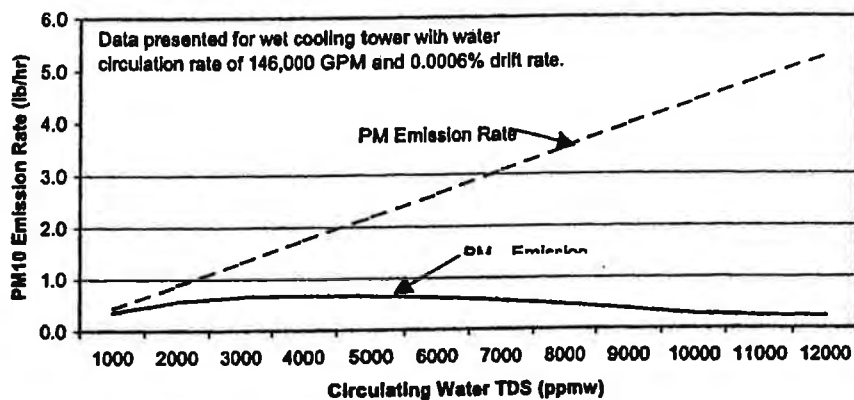


Figure 2: PM₁₀ Emission Rate vs. TDS



REFERENCES

1. EPA, 1995. Compilation of Air pollutant Emission Factors, AP-42 Fifth edition, Volume I: *Stationary Point and Area Sources*, Chapter 13.4 Wet Cooling Towers, <http://www.epa.gov/ttn/chief/ap42/>, United States Environmental Protection Agency, Office of Air Quality Planning and Standards, January.
2. Aull, 1999. Memorandum from R. Aull, Brentwood Industries to J. Reisman, Greystone, December 7, 1999.

KEY WORDS

Drift
 Drift eliminators
 Cooling tower
 PM₁₀ emissions
 TDS

APPENDIX 10.2
CITRUS COUNTY ZONING ORDINANCE

I. INTRODUCTION

The Utility Element is designed to conform to the ten-year site plan proposed by Progress Energy Florida (PEF) in accordance with the Florida Electric Power Plan Siting Act, Part II, Section 403.501-517, Florida Statutes (F.S.). The intent of the Act was to provide for safe utility operations, site selections consistent with existing land use and zoning regulations, and minimal environmental impact. This Element contains a summary of the existing and proposed facilities in Citrus County followed by a series of goals, objectives, and policies to assure coordination between PEF and the Citrus County Comprehensive Plan.

II. EXISTING UTILITY SYSTEM

A. Generating Facilities

Citrus County's electrical needs are supplied through PEF, which operates five generating units within the County. Table 9-1 lists the location of these units, their capacities, and type of fuel used for each generator. Current total capacity is 3,129 MW.

TABLE 9-1
PROGRESS ENERGY FLORIDA EXISTING GENERATING UNITS

<u>Unit</u>	<u>Location</u>	<u>Date in Operation</u>	<u>Fuel</u>	<u>Winter Net Capability - MW</u>
1	Crystal River	10-66	Coal	383
2	Crystal River	11-69	Coal	491
3	Crystal River	3-77	Nuclear	788*
4	Crystal River	12-82	Coal	735
5	Crystal River	10-84	Coal	732
TOTAL				3,129

Note: *Represents approximately 91.8% PEF ownership of unit
Source: PEF, Ten-Year Site Plan, April 1, 2005

B. Substations and Transmission Lines

PEF supplies the County with power via 14 substations; three are transmission and eleven are distribution substations. (Figure 9-1 Transmission System has been deleted at the request of PEF.) In addition, the Sumter Electric Cooperative, the Withlacoochee River Electric Cooperative, and the Central Florida Electric Cooperative provide power to several areas in Citrus County. These cooperatives purchase power from Seminole Electric Cooperative, Inc., which receives power from PEF, Florida Power and Light Company, Southeastern Power Administration, Gainesville Regional Utilities, and Tampa Electric Company. Seminole Electric Cooperative also generates power through two 600 MW coal-fired plants located near Palatka, Florida and owns an approximate 14 MW ownership share of PEF's Crystal River Unit #3. The co-op substations operated by Sumter Electric and Withlacoochee River Electric Cooperative are listed in Table 9-2.

**TABLE 9-2
ELECTRIC COOPERATIVE SUBSTATIONS**

<u>Location</u>	<u>Operator</u>
Citrus Springs	Withlacoochee River Electric
Crystal River	Withlacoochee River Electric
Homosassa	Withlacoochee River Electric
Red Level	Withlacoochee River Electric
Villa Terrace	Withlacoochee River Electric
Gospel Island	Sumter
Floral City	Sumter
Inverness	Sumter

Source: Progress Energy Florida 2005

Prepared by: Citrus County Community Development Division, 2005

Several transmission lines emanate from the Crystal River generating units and transmit power outside of Citrus County, as well as within.

C. Proposed Facilities

PEF plans to rebuild the 69 KV transmission line between Nobleton and Floral City, which will be the final project in a staged plan to rebuild the entire circuit between Inverness and Brooksville. In addition, a new Pine Ridge Substation is planned, to serve the development with the same name. These transmission construction projects will enable PEF to meet needs of its customers more efficiently.

D. Consumption

Consumption figures for Citrus County for the year 2004 totaled 792,635,316 KWH. The consumption by land use category is outlined in Table 9-3.

TABLE 9-3
CITRUS COUNTY ELECTRICAL CONSUMPTION BY MWH
As Served by PEF

Year	Residential	Commercial	Industrial	Other	TOTAL
1986	197.8	105.2	7.0	22.2	332.2
1987	215.8	119.7	10.8	23.0	369.4
1988	236.0	132.3	11.2	25.6	405.2
1989	251.5	141.8	12.8	26.0	432.1
1990	269.9	154.4	14.9	22.8	462.0
1991	278.9	160.9	14.9	20.2	474.9
1992	293.9	160.9	12.8	20.8	488.3
1993	303.6	162.4	13.8	22.0	501.7
1994	317.1	173.9	12.0	24.2	527.2
1995	352.0	180.9	18.7	26.0	577.7
1996	376.1	184.0	18.6	26.0	604.6
1997	359.0	188.6	20.4	25.4	593.4
1998	399.3	197.6	20.0	28.3	645.3
1999	400.0	206.0	19.0	28.4	653.5
2000	420.3	208.1	20.3	30.5	679.3
2001	436.0	218.8	18.7	32.9	706.3
2002	472.2	222.8	16.6	35.6	747.2
2003	493.1	226.6	17.9	38.2	775.8
2004	501.0	229.2	19.0	43.5	792.6

Source: Progress Energy Florida 2005

III. FUTURE DEMAND

PEF's current generating capacity is sufficient to meet the needs of the present and projected Citrus County customers through 2014, according to the current ten-year site plan (2005). Also, at this time, there are no new generating sites anticipated within Citrus County. However, there may be upgrading of present units and retirement of outdated facilities, as well as, extension or building of transmission lines if customer needs dictate such action. If new transmission lines are required, existing corridors will be evaluated and used whenever possible to minimize any environmental impact.

A. Environmental Concerns

As stated in the Introduction, one element of the Florida Electric Power Plan Siting Act is the effect of power plant facilities on the environment. The intent of the

Comprehensive Plan is to provide a guide for the protection of the environment and natural resources of the County. Since natural resources are directly related to the County's system of supporting present and future growth, conservation of the environment is vital to the economic well being of the community.

PEF's Citrus County generating facilities are located in the Coastal Area, which is an area designated for special protection from development due to its unique environmental features and fragile natural resources. The Conservation and the Coastal, Lake, and River Management Elements contain goals, objectives, policies, and standards to guide decision makers in reviewing development proposals in this area.

Florida Statutes, Section 403.510 state that any regulations or policies established by counties in contravention of State or Federal regulations will be superseded by the Florida Power Plant Siting Act. The State and Federal agencies and legislation that regulate power plants, nuclear waste, and environmental quality are the authority (ies) by which PEF must abide. The County has no regulatory authority in those matters. However, where no conflict exists between County, State, and/or Federal regulations, the more stringent policies and standards would apply.

Two environmental and land use issues are of concern to Citrus County in this regard. The first involves the area adjacent to PEF's nuclear power plant. The Board of County Commissioners has established policy to limit residential densities within a five-mile radius of nuclear power plants. This has been accomplished by establishing a maximum residential density of one unit per five acres in this area for new development. However, if the County's objective to refrain from allowing new residential uses is to be accomplished, no new residential development should be allowed in this area.

Further, the BCC has established policy to allow agricultural, industrial, and mining activities within the five-mile radius (Figure 9-1).

The second concern involves the deposition of the ash at the Crystal River coal sites. PEF manages ash on site, which meets all Florida Department of Environmental Protection (FDEP) regulations. The ash is purchased by Progress Materials, Inc. (PMI). PMI sells over 90 percent of the ash for use in the construction of roadbeds, driveways, parking lots, cement blocks and metal casting facilities. Citrus County should explore the use of ash for similar applications. The ash deposition site was permitted by FDEP and continues to operate under their authorization. The site is a potential source of air pollution, as well as, groundwater contamination. PEF will continue to work closely with the County, FDEP, and other environmental agencies to assure compliance with all environmental requirements and that other issues or concerns are addressed.

IV. SUMMARY OF FINDINGS

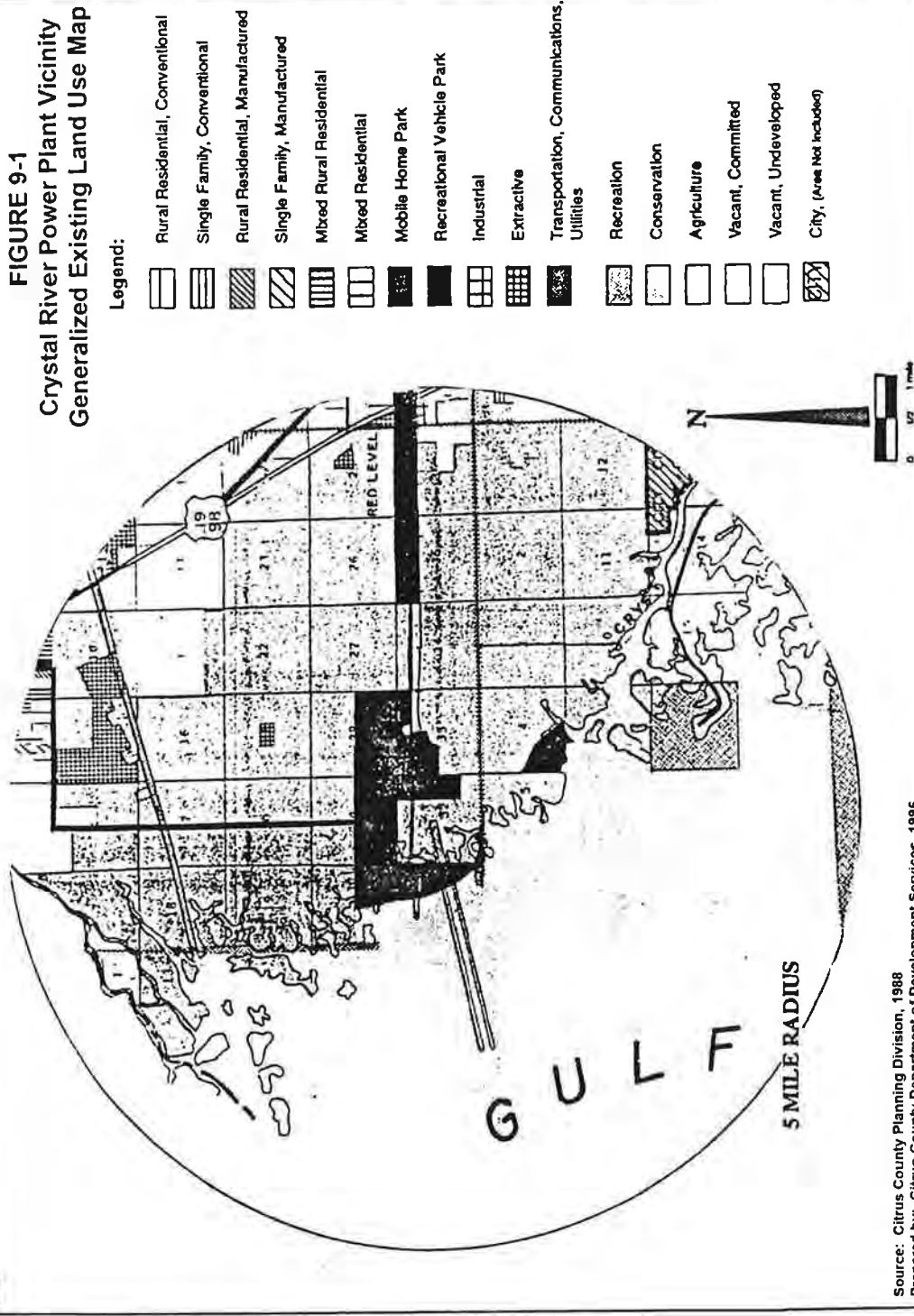
The projections of PEF's ten-year site plan conclude that no new plant facilities will be needed through 2014 in Citrus County, thereby creating no new siting concerns. One upgrade to an existing transmission line is planned within this period to serve Citrus County.

The nuclear and coal-fired plant that exists will continue to be monitored by responsible State and Federal agencies for air, land, and water pollution. Low level nuclear wastes from Crystal River Unit 3 are transported out of the County along US-19 for disposal. This highway presents no transportation problems for PEF and will continue to be used.

Ord. No.: 96-A25

Adopted: September 24, 1996

FIGURE 9-1
Crystal River Power Plant Vicinity
Generalized Existing Land Use Map



V. GOALS, OBJECTIVES, AND POLICIES

GOAL #15 – Provide reliable electric service to existing and future customers at the lowest practical cost.

Energy Conservation

Objective 15.1 The analysis has shown that present units may need to be upgraded and transmission lines may need to be extended and/or constructed to meet present and future demand. To meet these needs and to insure that costs are not excessive, the County shall implement regulations and programs by 1995 which provide for energy conservation in the operation of all electric service facilities.

Policy 15.1.1 Energy auditing services for residents and businesses within the County, as a means to ensure appropriate energy savings measures, shall be encouraged.

Policy 15.1.2 Revise and update building and housing codes, as necessary, to reflect current State Model Energy Code.

Governmental Coordination

Objective 15.2 In conformance with the requirements of Section 167.317 of the Florida Statutes (F.S.), this Utility Element shall at all times be consistent with the current Ten-Year Site Plan submitted by the Florida Power Corporation to the Department of Community Affairs pursuant to the State Comprehensive Planning Act (Section 23.0191, F.S.)

Policy 15.2.1 The Citrus County Comprehensive Plan shall be amended in accordance with Resolution 88-48, Monitoring and Evaluation Procedures, and Section 163.3184, F.S.

GOAL #16 – Promote health, safety, and welfare of County residents by providing land use restrictions on property adjacent to and within a five-mile radius of the Crystal River Power Plant.

Land Use

Objective 16.1 Land use regulations shall allow agricultural, industrial, commercial, and mining activity, but will prohibit new residential development greater than one unit per 20 acres in the general Coastal Area (see Figure 10-2, Future Land Use Element) and one unit per 40 acres in the Federal Emergency Management Agency's Velocity Zone (V-Zone).

Policy 16.1.1 Subdivision of existing residential development(s) or residential planned developments shall not exceed the densities that were originally approved for the development.

Performance Standards

Objective 16.2 Provide performance standards in the Land Development Code for landscaping and buffering around utility substations.

Policy 16.2.1 All utility substations shall be landscaped.

Policy 16.2.2 Spatial separation or buffering shall be required for all substations or other similar utility facilities.

Citrus County Comprehensive Plan Future Land Use Element

II Inventory

3. Description of Land Use

d. Transportation, Communications, and Utilities

This land use category comprises three types of uses: Transportation, Communication, and Utilities (TCU). Transportation land uses include airports, railroad lines, and major shipping channels. Communication land uses include telephone, radio, and television facilities, including transmission towers. Public utilities include major utility transmission rights-of-way (230 KV or greater), water supply plants, sewage treatment plants, and electrical power facilities.

There are 5,416 acres designated as TCU in Citrus County. This land use category comprises 1.42 percent of the County land area. The majority of this allocation consists of Florida Power's Crystal River Power Plant, the major transmission lines, the Crystal River Airport, and the Inverness Airport.

D. Land Use Needs and Projections

4. Transportation, Communications, and Utilities (TCU)

TCU are a function of residential, commercial, and industrial activities. The projection figures cited for this category exclude Progress Energy's Crystal River Power Plant and major roads and rights-of-way. The projections also exclude additional Progress Energy property that may be required in the future. By year 2020, an additional 1,747 acres of TCU land would be needed to support the population. The per capita ratio method is not appropriate for the estimation of future TCU needs as this land use includes such things as gas and power transmission lines which serve areas both within and outside the County. TCU needs also are technology dependent. Future needs will be established based on the type of facilities proposed and the populations served. The County is committed to assisting utility and other service providers meet their land use needs since these providers often serve populations and areas greater than the County alone. Changing technology affects the amount and location of lands needed. In the past, wastewater treatment plants needed large spray fields in order to dispose of treated effluent, but with advanced wastewater treatment systems and the advent of reuse, such spray fields are no longer needed to the same extent. In the future, new power generation technology such as wind or solar power may require large areas of land dedicated to their exclusive use or these facilities may be scattered throughout the County.

D. Future Land Use Categories

TABLE 10 22

LAND USE DISTRICT		Maximum Residential Density	
Permitted Density		Planned Development	
Low Intensity Coastal and Lakes Residential	CL	1 du/20, 1 du/40 in "V" zone	1 du/five acres w/ special PD conditions
		1 du/one acre w/ FQD	
		1 du/ten acres w/ special PD conditions (1)	
Rural Residential	RUR	1 du /10 ac	1 du/5 ac
Low Density Residential	LDR	2 du/ac	6 du/ac
Medium Density Residential	MDR	4 du/ac	8 du/ac
High Density Residential	HDR	6 du/ac	20 du/ac
RMU		As approved	6 du/ac
Central Ridge Residential	CRR	As approved	N/A
Mobile Home Park	MHP	6 du/ac	9 du/ac (4)
Professional Services/Offices	PSO	du/ac	10 du/ac
General Commercial	GNC	6 du/ac	10 du/ac
Coastal and Lakes Commercial	CLC	1 du/20, 1 du/40 in "V" zone (2)	N/A
Rural Activity Center	RAC	2 du/ac (3)	N/A
Recreational Vehicle Park/Campground	RVP	10 pads/ac	14 pads/ac (5)
Industrial	IND	N/A	N/A
Extractive	EXT	N/A	N/A
Public/Semi-Public, Institutional	PSI	4 du/ac	N/A
Transportation, Communications, Utilities	TCU	N/A	N/A
Recreation	REC	N/A	N/A
Agriculture	AGR	1 du/10 ac	1 du/5 ac
Conservation	CON	N/A	N/A

N/A = not applicable.

du = dwelling unit.

(1) Lakes and Rivers Area Only.

(2) Single family dwelling units are allowed on the second floor of buildings or as attached or detached dwelling units behind a business.

16. Transportation, Communications, and Utilities (TCU)

This land use category allows for those uses directly related to transportation, communications, and utilities; it also accommodates service and storage related facilities necessary to support such uses.

F. Future Corridor Patterns

8. Future Transportation, Communications, and Utilities Land Use

Transportation, Communications, and Utility Uses are identified on the Generalized Future Land Use Map. In addition, TCU uses are permitted within the Industrial land use category. Communication towers are permitted in Low Intensity Coastal and Lakes, Rural Residential, Coastal and Lakes Residential, Extractive, and Agricultural Categories. Public utilities shall be permitted in all of the future land use categories including Planned Developments and DRIs. Draft 07/12/2006 10-151 Future Land Use Element EAR-Based Amendment throughout the County, which conform to performance standards as specified in the County Land Development Code.

In order to serve the growth in residential, commercial, and industrial uses, new public water and sewer facilities will be needed throughout the County. These proposed facilities shall be identified on the Generalized Future Land Use Map. Citrus County's road network will increase to provide accessibility to new development. Future roads, including extensions and improvements, are addressed in the Traffic Circulation Element. All future development must conform and coordinate with the Traffic Circulation Plan and the Goals, Objectives, and Policies.

A substantial amount of TCU acreage has been designated in northwest Citrus County, encompassing the area around Florida Power's Crystal River Power Plant. The designated acreage will allow for future expansion or additions at the power plant.

APPENDIX 10.3
CITRUS COUNTY LAND USE PLAN

Citrus County Land Development Code

Chapter 4 Mandatory Use, Design, Standards, and Development Criteria

4634. Transportation/Communication/Utilities District (TCU)

This category allows for those uses directly related to transportation, communications, and utilities. It also accommodates service, repair, maintenance, and storage related facilities necessary to support such uses.

APPENDIX 10.3-1

**CULTURAL RESOURCES BACKGROUND RESEARCH,
SUPPORTING LICENSE RENEWAL, CRYSTAL RIVER NUCLEAR
PLANT, CITRUS, AND LEVY COUNTIES, FLORIDA**

Cultural Resources Background Research
Supporting License Renewal

Crystal River Nuclear Plant

Citrus and Levy Counties, Florida



Cultural Resources Background Research Supporting License Renewal Crystal River Nuclear Plant

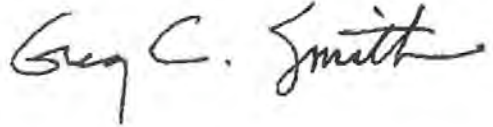
Citrus and Levy Counties, Florida

Report submitted to:

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Report prepared by:

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December 19, 2006
New South Associates Technical Report 1433

ABSTRACT

In December 2006, New South Associates conducted background search on behalf of Tetra Tech NUS prior to license renewal at Progress Energy's 4738-acre Crystal River Energy Complex (CREC), in Citrus County, Florida. No new construction is planned by Progress Energy; however, a review of relevant data was requested in order to provide a synthesis of known archaeological sites within a six-mile radius of the facility. Florida Master Site File data indicate that there are currently 195 archaeological sites, 9 structures, and 3 cemeteries within a 6-mile radius of the 4738-acre facility. Of these, Citrus County contains 174 of the known sites, eight of the known structures, and two recorded cemeteries. The Levy County portion of the 6-mile radius includes 21 known sites, one recorded structure, and one recorded cemetery. Only two sites are listed in the National Register of Historic Places and both are prehistoric: the Crystal River Indian Mound site complex (8CI00001) and Mullet Key (8CL00022). The proposed license renewal includes no plans for new construction and will therefore have no effect on cultural resources.

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I. INTRODUCTION

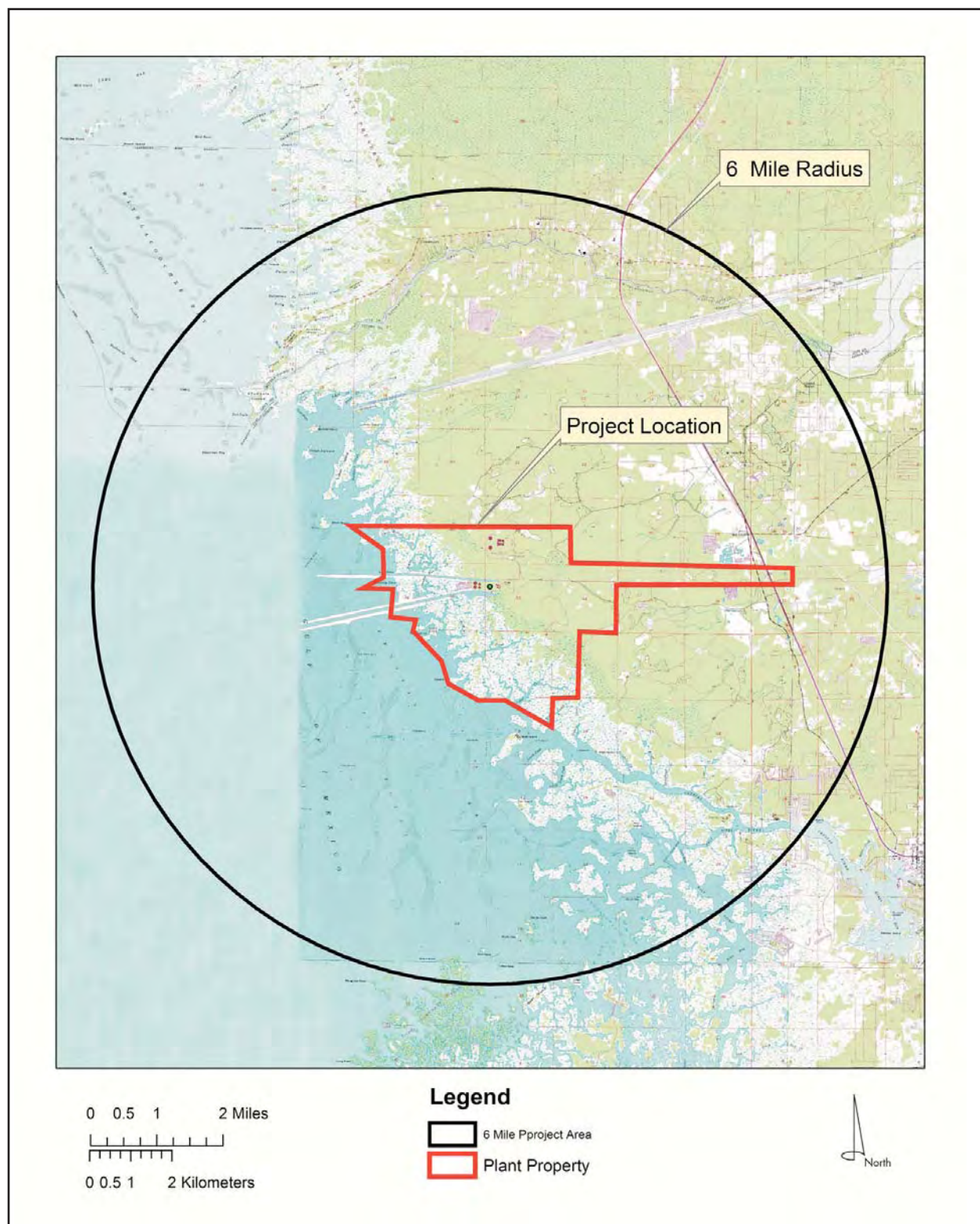
The purpose of this background study was to collect information regarding known or potential archaeological sites and historic structures and features that are located in the 4738-acre Crystal River Energy Complex (CREC), in Citrus County, Florida. No previously recorded sites are known within the energy complex. The study also included a consideration of sites within a radius of 6 miles surrounding the boundaries of the complex (Figure 1).

New South Associates conducted this background search on behalf of Tetra Tech NUS as part of an evaluation of the potential impacts of license renewal at Progress Energy's Crystal River Nuclear Plant, near Crystal River, Florida. No new construction is planned by Progress Energy; however, a systematic review of known cultural resources in the environs was requested. License renewal will have no effect on the cultural resources documented as part of this study.

Background research followed the guidelines presented in Section 2.2, Background Research, of Module 3: Guidelines for Use by Historic Preservation Professionals, in the Cultural Resource Management Standards and Operational Manual, prepared by the Florida Division of Historical Resources. Research included a consideration of maps and site data from the Florida Master Site File (FMSF); records maintained by the Survey and Registration Section of the Bureau of Historic Preservation, and historical maps and records at the Florida Department of Environmental Protection.

The study included a review of relevant environmental, archaeological, and historical literature, documents, and other pertinent data in order to provide a synthesis of known archaeological site types and cultural periods in the vicinity.

Figure 1
Project Location Map and 6-mile Radius



Source: USGS 7.5' Quadrangle: Red Level 1999

II. ENVIRONMENTAL SETTING

Crystal River Nuclear Plant (CRNP) is located in northwestern Citrus County, Florida, on Crystal Bay, an embayment of the Gulf of Mexico. The Plant lies approximately 35 miles southwest of the city of Ocala, Florida, and 60 miles north of the city of Clearwater, Florida. Figure 1 shows the boundaries of the Crystal River facility and a 6-mile radius; the latter includes a portion of Levy County.

The study area is located in the Coastal Plain province, primarily within the coastal marsh belt of the Terraced Coastal Lowlands, and includes portions of the limestone shelf and hammock region of the Pamlico Terrace (Vernon 1951:17-20). The two major freshwater drainages systems that traverse the project area include the Withlacoochee and Crystal rivers. Both of these originate in springheads and have channels that cut into the limestone bedrock. Marine and estuarine water resources consist of the Gulf of Mexico, shallow embayment, and tidal drainages. In terms of coastal dynamics, this stretch of coastline has been described as possessing low energy potential (Miller 1973:3).

The vegetation in the area is varied in relation to distinct physiographic zones, of which there are three: the estuarine zone, the coastal hammock zone, and the coastal uplands zone. The estuary includes several species of submerged grasses and algae in addition to several salt-tolerant marsh grasses, especially *Spartina* and *Juncus*. Coastal hammock vegetation occurs on small islands within the marsh and is characterized by hardwoods, coontie and palmetto palm, and pine. Such locations were relatively better drained than others and were therefore frequently occupied by humans. Coastal lowland vegetation is similar to the hammocks, with pine, hardwoods, and palmetto palm, and consists of soil that is moderately well drained to excessively drained.

Of these environmental zones, the estuarine and coastal hammock zones contain the most varied food resources that were exploited by inhabitants of the area. Tidal and riverine drainages provided an ideal environment for various types of shellfish and crustaceans, including oysters, crabs, and shrimp. These animals, as well as an assortment of bony fishes, birds, and terrestrial vertebrates, provided a rich food base for prehistoric, and historic, occupants of the Crystal River area.

The area immediately surrounding the plant is a mix of upland (pine) forest, agricultural lands, swamps, and salt marshes. The large tract of land immediately north of the plant is owned by an agri-business concern with mining interests. Parts of this property are forested, parts are used for cattle ranching and cultivation of citrus trees, and other parts of this property are devoted to limestone/dolomite mining. The area southwest of the plant is salt marsh, while the area south and southeast of the plant is mostly forested wetlands.

CRYSTAL RIVER NUCLEAR PLANT AND VICINITY

CRNP (also known as Crystal River Unit 3) is part of the larger Crystal River Energy Complex, which includes the single nuclear unit and four fossil-fueled units, Crystal River Units 1, 2, 4, and 5.

The Crystal River Energy Complex is the seventh largest power producing facility in the U.S., with a total generating capacity of 3140 megawatts-electrical (EIA 2004). CRNP is a pressurized water reactor that began operating in 1977, Crystal River Units 1 and 2 were built in the 1960s, and Crystal River Units 4 and 5 are larger units built in the late 1970s. The flowing paragraphs are based on information given in an unpublished environmental paper describing the facility.

CRNP/Crystal River 3 and the four fossil units lie in the developed core area of the 4738-acre property. Aside from the generating and support facilities, this developed area also contains office buildings, warehouses, oil tanks, coal storage areas, and ash storage basins. Units 1, 2, and 3 are sometimes referred to as "Crystal River South," while units 4 and 5 are sometimes referred to as "Crystal River North."

The Big Bend area of the western Florida coast, which includes eight coastal counties, has been dubbed "the Nature Coast" by promoters of tourism who highlight its spring-fed rivers, abundant wildlife, and fishing, scuba-diving, bird-watching, and manatee-watching opportunities. The Crystal River Energy Complex (CREC) lies roughly in the center of the Big Bend area, and is ringed by state parks, state forests, greenways, and state and federal wildlife refuges.

Homosassa Springs Wildlife State Park lies directly south of the CREC, with Chassahowitzka National Wildlife Refuge slightly further south, approximately 12 miles from the property boundary. Crystal River Archaeological Park lies four miles southeast. To the northwest, approximately 20 miles from the CREC, lies Cedar Keys National Wildlife Refuge. The Marjorie Harris Carr Cross-Florida Greenway lies three miles north of the site, occupying much of the land formerly known as the Cross Florida Barge Canal.

The Cross Florida Barge Canal was a massive public works project conceived during the Great Depression to connect the Atlantic and Gulf coasts of Florida and create desperately needed jobs. The project stalled and then proceeded in fits and starts through the 1960s before being halted in 1971 by a lawsuit filed by environmentalists. President Nixon signed an Executive Order suspending work on the barge canal in early 1971. When halted, the project was 30 percent complete and had cost taxpayers 74 million dollars. In 1990, Congress passed a law de-authorizing the Cross Florida Barge Canal. In 1991, the Cross Florida Barge Canal was renamed the Cross Florida Greenway State Recreation and Conservation Area. In 1998, it was renamed the Marjorie Harris Carr Cross Florida Greenway, honoring the individual who led the fight against the Cross Florida Barge Canal project.

III. CULTURAL BACKGROUND

The following summary of regional culture history provides contexts for interpreting and evaluating archaeological resources in the project area. The predominant prehistoric cultural periods represented in this part of Florida include the Paleoindian, Archaic, Deptford, and Weeden Island periods, as discussed briefly below. Historical information on the area is also given.

PALEOINDIAN PERIOD

Paleoindians were the first humans known to occupy North America. They inhabited a late Pleistocene environment, typified in Florida by cool and dry conditions. Now extinct Pleistocene megafauna were also present. The material culture of this period is known principally from stone tools (i.e., Clovis, Suwannee, Simpson, Tallahassee, Beaver Lake, and Santa Fe projectile point types) in addition to less formal expedient stone tools and tools manufactured from the bones of Pleistocene fauna (Dunbar and Webb 1996). Paleoindians probably relied on diverse food resources including small game, fish, shellfish, and plants (Borremans 1990). Settlement models suggest Paleoindians favored locations near chert-bearing limestone outcrops and surface water, the latter resource being the stronger draw during this arid time (Neill 1964; Webb et al. 1984; Dunbar 1991).

ARCHAIC

The Archaic period is traditionally divided into Early (7500-5000 B.C.), Middle (5000-3000 B.C.), and Late (3700-2300 B.C.) subperiods based on changing artifact styles and perceived sociocultural developments. Over the entire period, human populations in Florida remained organized into egalitarian band-level societies focused on the collection of wild food sources. The Archaic is marked by increased residential permanence and the first intensive use of shellfish (Milanich 1994). The end of the period saw the emergence of ceramic technology and is referred to as the Orange Period (2300-1000 B.C.).

Subsistence relied on wild plants, animals, and fish. Among Archaic period sites, middens are important sources of information regarding Archaic period diet and settlement practices. These sites have yielded evidence of possible structures and some are thought to represent villages. Coastal middens consisting mostly of shellfish remains occur on estuaries, beaches, and at river mouths. Diagnostic artifacts of the Early Archaic period are Kirk, Wacissa, Hamilton, and Arredondo projectile point types (Milanich 1994). Types of the Middle Archaic include Levy, Marion, Newnan, and Putnam points. Late Archaic types include varieties such as Culbreath, Clay, and Lafayette (Russo 1990). Other artifacts are stone scrapers, perforators, drills, choppers, knives, gouges, and hammerstones, as well as bone, shell, and wood implements. Textiles have also been recovered from wet sites in the state, and fiber-tempered Orange pottery appeared more than 4000 years ago.

REGIONAL CULTURES

Following the Archaic, archaeological assemblages throughout Florida begin to show considerable variation that allows archaeologists to recognize and study specific regional cultures. There is evidence that contact between Florida natives and numerous other cultural groups to the north and west was ongoing (Milanich 1994:107-109). The Deptford culture of the Gulf Coast was one of the first post-Archaic regional cultures to be recognized, and sites from this period are more numerous and are likely a result of larger populations. Mollusk gathering and fishing were a major part of the economy, with oyster the overwhelming species of choice. White tailed deer and other vertebrate fauna were also important dietary resources. Excavations in the Crystal River area at the Wash Island site indicate there was a rise in sea level that gives evidence for many Deptford sites being drowned or eroded. Coastal settlements and economies that centered on estuarine resources were probably more numerous than we realize, but the archaeological record for Deptford, as with other cultures, is incomplete.

Cultures that developed out of the Late Archaic/Orange periods are further distinguished by the creation of burial mounds, increased sedentism, and use of cultivated plants to supplement wild foods. Ceremonial culture shows some influence from Hopewellian and Mississippian cultures, but most influence appears to come from Weeden Island cultures of north-central Florida. The ceramics of the area are representative of the Swift Creek through Weeden Island II periods, ca A.D. 300 to 1200. Lithic artifacts are rare, although some chert projectile points do occur. More common than lithic artifacts are a range of utilitarian items, containers, and ornaments fashioned from bone and shell. Wooden artifacts recovered from wet contexts include canoes, carved objects, and handles.

Reflecting regional ceremonialism, the Crystal River Mounds (8CI001) are located approximately six miles southeast of the present study area. This important site contains burial mounds, temple/platform mounds, a plaza, and a substantial occupational midden within an area comprising approximately 14 acres. The six-mound complex is one of the longest continuously occupied sites in Florida, and originated during the Deptford occupation of the Gulf Coast. For approximately 1600 years the site served as an imposing ceremonial center for Native Americans, as people traveled to the complex from great distances to bury their dead and conduct trade. William Sears (1962) first attributed the name Yent Complex to describe the ceremonial complex represented at the mound site, which is related to the Hopewellian ceremonial complex found across much of eastern North America.

The impetus for Yent development came from local stimuli, even though some of the objects associated with the ceremonial complex came from outside the region (Milanich 1994:135-141). Such artifacts include copper panpipes, plates, and earspools; plummets made from copper, stone, or shell; cut carnivore teeth from puma, bear, and wolf; and elaborately decorated ceramic vessels created in many unusual shapes and sizes. Excavations at Crystal River mounds by CB Moore also yielded Weeden Island period pottery as well as St. Johns and Swift Creek wares that indicate site use over a considerable period of time and well into the late prehistoric period.

HISTORICAL BACKGROUND

In terms of historic developments, Spanish exploration and colonization began in 1513. Wanting to bolster its meager land holdings during the 1600s, Spain established a network of missions

across north Florida and the coasts. By 1633, almost all of the remaining Florida natives lived in mission villages (Milanich 1998). Spanish efforts ultimately broke down native social and political organizations and by 1700, the native populations had been decimated by disease and most of their long-established lifeways had been replaced by a mix of traditional, Spanish, and other Native American cultural traits (Milanich and Fairbanks 1980). Archaeological evidence of this period includes European-made artifacts at native sites and native-made artifacts, particularly pottery, that mimics European forms. Through time, the land called La Florida would pass from the Spanish to the British, and then back to the Spanish. The Spanish colony of Florida became a United States territory in 1821.

The Spanish explorer Hernando de Soto traveled through the Citrus County area around 1539 during his travels throughout the southeast, and Indian burial mounds in the area contain artifacts from that expedition. The County of Hernando, named in honor of de Soto, was established on February 27, 1843. In the 1885 census, the town of Mannfield, which was to become the county seat of Citrus County a few years later, had a population of 250 and Crystal River had a population of 200. The town of Tompkinsville, which would later become Inverness, had a recorded population of 30 (www.sandersonbay.com/citruscounty.html).

During the Civil War, the Yulee Sugar Mill was operated on the Homosassa River and supplied sugar to the Confederacy. Around the same time, citrus production became the big industry in the eastern part of the county. The Florida Orange Canal and Transit Company built a canal from the groves to the Lake Panasoffkee railhead in Sumter County, which allowed fruit to be barged through the canal and along the Withlacoochee River.

On June 2, 1887, Florida Governor E. A. Perry signed into law a bill dividing Hernando County into three counties, with Citrus to the north and Pasco to the south. Citrus County was named for the county's citrus trees. Legislation stipulated that the town of Mannfield would be the temporary county seat of Citrus County as it was in the geographical center of the newly created county. A majority vote in 1891 finally approved Inverness as the new county seat (www.sandersonbay.com/citruscounty.html).

The big freeze of 1894-95 brought an end to the citrus industry in the county just at the time that phosphate was discovered in the area and the worker population swelled. In reflection of the important role that mining played, the first newspaper of Citrus County was called the Phosphate Times. World War I terminated the flow of phosphate to European markets, at which point the mines closed and the local population plummeted (www.sandersonbay.com/citruscounty.html).

In 1968, St. Martins Marsh, one of the original aquatic preserves, was created by the Florida legislature. The state of Florida realized the unique ecological qualities and economic importance of its submerged lands, making efforts to protect them. A later land acquisition was Big Bend Seagrasses Aquatic Preserve, the largest in the state. As knowledge of ecological processes increased, it was realized that the aquatic preserves could not be protected if the water quality was not protected, and that water quality could not be protected without protecting the surrounding watersheds. In the middle to late 1970s, the state began to purchase land surrounding St. Martins Marsh. These tracts of land were originally named Crystal River State Buffer Preserve. Today the land total is approximately 30,000 acres, with parcels from Yankeetown to Homosassa Springs.

The Buffer Preserve became Crystal River Preserve State Park on January 1, 2004 (www.floridastateparks.org/crystalriverpreserve/History.cfm).

In the 1980s, Citrus County began to see an increase in residential development, and housing communities such as Beverly Hills started to dominate the county. The nearest incorporated community to CRNP is the town of Crystal River, located approximately six miles southeast of the energy complex, with a population estimated at 3485 in 2000 and currently estimated at 3656 (USCB 2000; City of Crystal River 2006). The area within a 6-mile radius includes the unincorporated communities of Yankeetown and Inglis. Aside from these and other small towns that have grown up around crossroads, the area is rural in character. Today, large privately owned tracts of forest and agricultural land, as well as state and federally-owned forested land and wetlands dominate the landscape.

IV. SUMMARY OF CULTURAL RESOURCE DATA

Background research included a consideration of maps and site data from the Florida Master Site File (FMSF); records maintained by the Survey and Registration Section of the Bureau of Historic Preservation, and historical maps and records at the Florida Department of Environmental Protection. Figure 2 shows the six-mile study area and the locations of known sites and surveys. Previous surveys and recorded sites are summarized below, with complete listings of surveys and sites provided in appendices A and B, respectively. Results are based on the most recent data provided by FMSF at this writing.

PREVIOUS SURVEYS

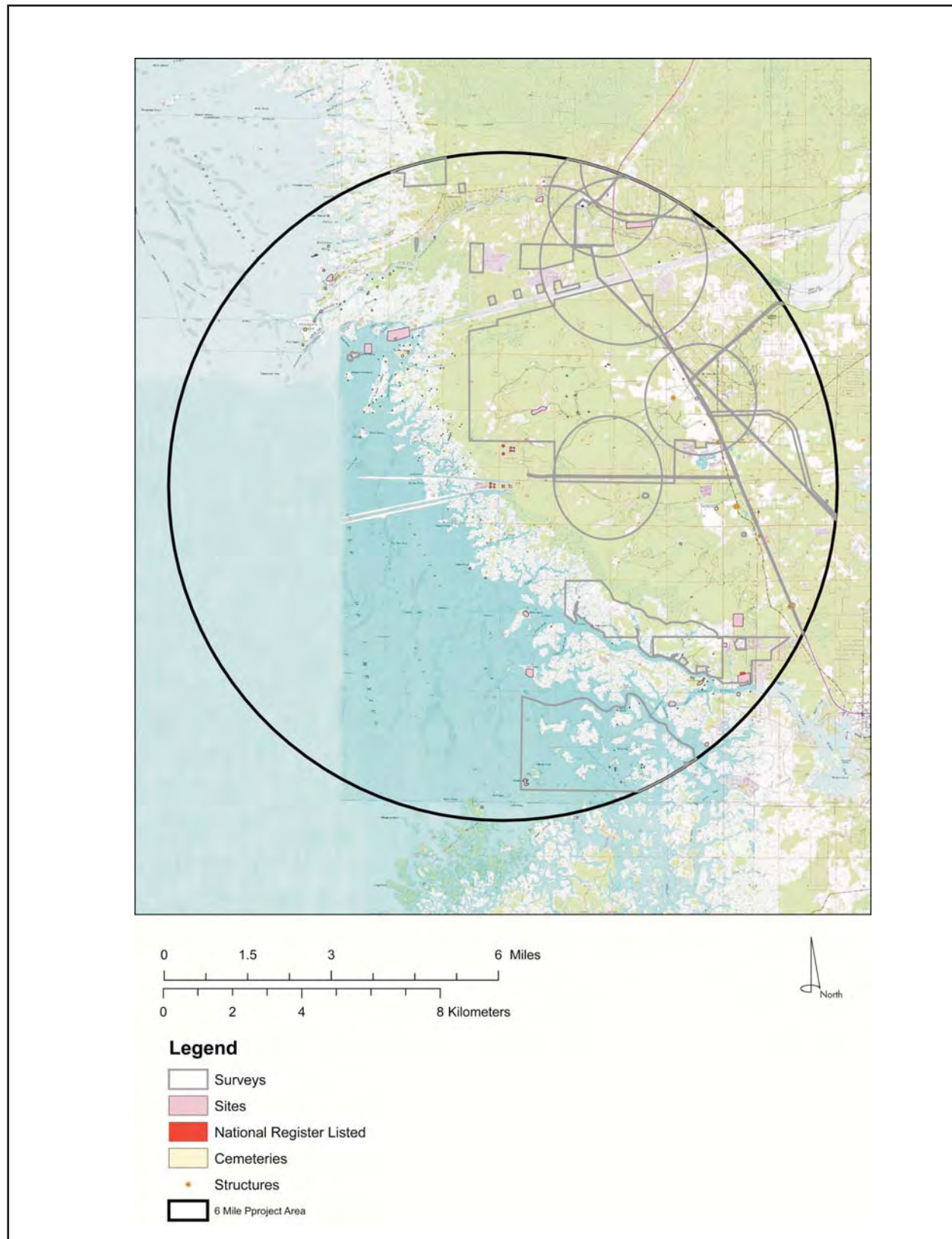
Site file records list 37 archaeological reports on studies conducted in the project vicinity; these are listed by survey number, author, and title in Appendix A. Of these investigations, two pertain directly to the Crystal River Nuclear Plant facility. Ray Willis conducted a survey of a transmission corridor access road from the power plant to Lake Rousseau (survey #104). The second is directly related to CRNP, as discussed below.

In 1972, an archaeological survey was conducted of the CRNP facility, with additional investigation within a 5-mile radius, as time permitted. Two and a half months were spent by archaeologists Karl Steinen and Joe Hutto, who made survey trips up the Crystal River, Withlacoochee River, and several of the larger tidal drainages. As a result of this survey 43 archaeological sites were inventoried, with 20 of those located within the energy complex property (Miller 1973, survey #313). According to his report, Miller investigated 20 sites on the CRNP property; two were previously recorded sites (CI13 and 44) and 18 were newly recorded sites (CI 91, 92, 103, 105, 106-117, 119, 120). Figure 3 shows the 20 sites within the property, the only difference from Miller's 1973 report is that site CI01182 replaces site CI00107. Cultural components encountered at these 20 sites included 18 prehistoric, one prehistoric and historic, and one unspecified. None of the sites has been evaluated by the SHPO for National Register eligibility, but the proposed CRNP licensing renewal will have no effect.

Almost half of the other previous surveys conducted within the 6-mile radius from CRNP have occurred at the Crystal River Archaeological Site (8CL1) and/or on other state-owned properties within the Crystal River State Reserve, the State Buffer Preserve, Waccasassa Bay State Preserve, and St. Martin's Marsh Preserve (#s 2079, 2293, 3111, 3181, 3537, 4054, 4438, 5916, 6222, 6618, 10233, 10234). As seen in Appendix A, many of these were conducted by Brent Weisman and/or Christine Newman with the C.A.R.L. program.

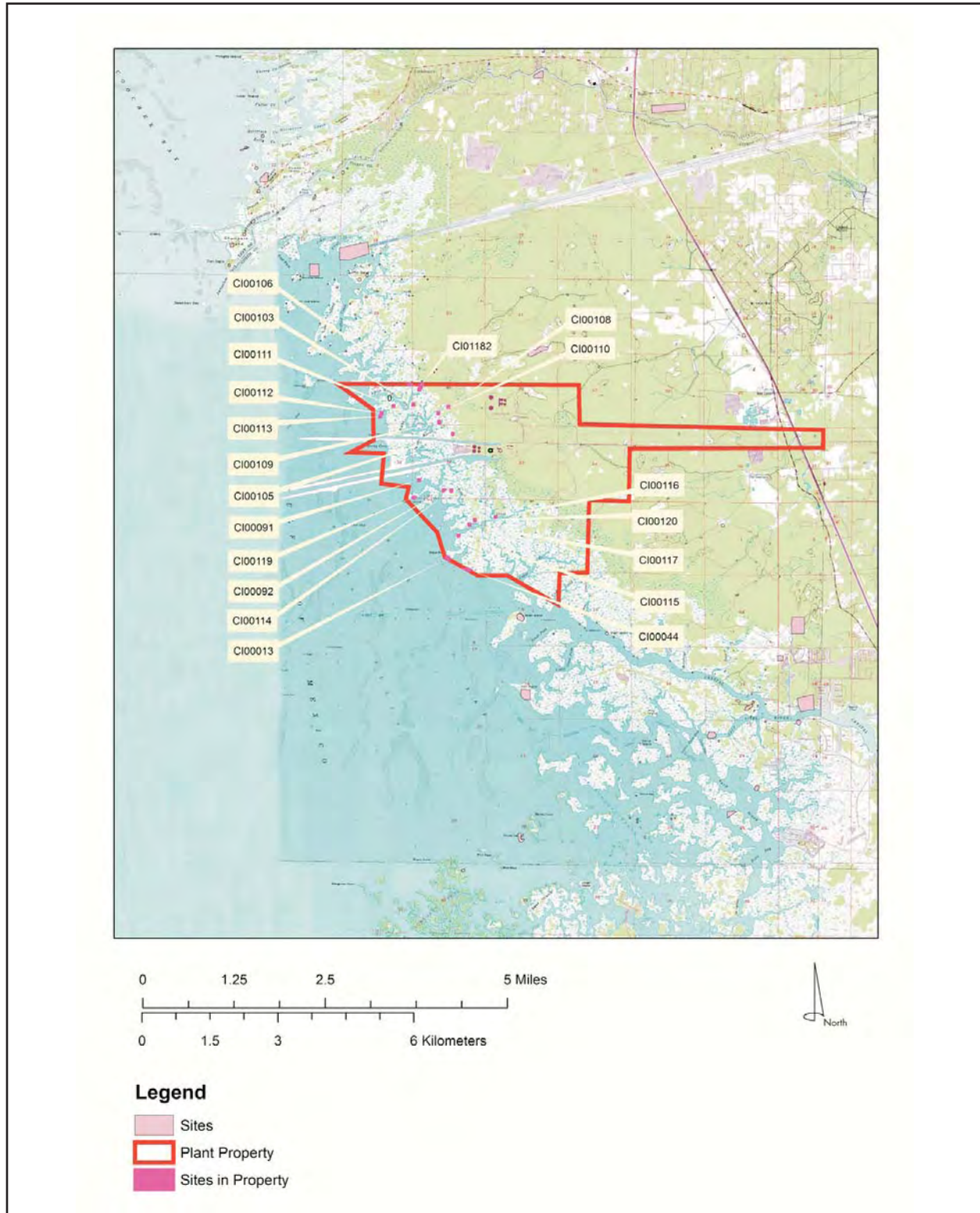
An architectural and historical survey of the town of Crystal River was conducted by Murray Laurie (#3171). Additional surveys have occurred for wastewater treatment (#3339), a transmission line (344386), mining expansion (#4732, 13093), Florida Department of Transportation projects (#s 1766, 4590, 7108, and 8897), and cellular communication towers (#s 9063, 9067, and

Figure 2
Known Sites and Surveys in the Vicinity



Source: USGS 7.5' Quadrangle: Red Level 1999

Figure 3
Sites in the 4738- Acre CRNP Property



Source: USGS 7.5' Quadrangle: Red Level 1999

10856). The majority of the remaining studies were focused on proposed residential parcels that have become common in the project vicinity during recent decades.

PREVIOUSLY RECORDED CULTURAL RESOURCES

Known cultural resources within the 6-mile study area are overwhelmingly of an archaeological nature, including both historic and prehistoric sites. In addition to archaeological sites, there are 3 cemeteries recorded with the Florida Master Site File. Two of these are in Citrus County and one is in Levy. These cemeteries include:

Site #	Name	Established
CI00408	Red Level Cemetery	1860+
CI01008	Johns Family Cemetery	ca. 1883
LV00623	Jubb Island Cemetery	1925

Nine structures in the study area are listed in the Florida Master Site File. Eight are in Citrus County and one is in Levy. These include the following:

SITE #	NAME	BUILT
LV00490	Mashburn House	1930
CI00340	Red Level Baptist Church	—
CI00410	Winn House	—
CI00410	Sassard House	—
CI01009	12664 W. Limestone Trl.	1910
CI01105	4690 US 19 (SR 55)	ca. 1952
CI01106	4575 N Champion Pt	ca. 1947
CI01107	4609 N Champion Pt.	ca. 1946
CI01108	5832 US 19	ca. 1949

Of these structures, two were identified as masonry vernacular (CI1105 and 1106) and three were not identified by year or with reference to architectural style (CI00340, 00409, and 00410). The remaining four buildings (CI00490, 01009, 01107, and 00108) were all recorded as frame vernacular structures.

Site file records list 195 sites within the study area; of these, 174 are in Citrus County and 21 are in Levy County. To summarize with reference to the primary cultural contexts represented, 173 of the sites were recorded as Prehistoric, four as Historic, and 18 were Unspecified. The historic sites included two homesteads (CI01150, and 01001), one shipwreck (CI00122), and one fort (00097). A listing by site number, site name, and site type is provided in Appendix B. Only two prehistoric sites are listed in the National Register of Historic Places: the Crystal River Indian Mound site (8CI00001) and Mullet Key (8CL00022).

Figure 4 provides a breakdown of sites with reference to the primary cultural association given on site forms. Unspecified Prehistoric is the dominant category, comprising Prehistoric with pottery (2%), Prehistoric lacking pottery (33%), and Prehistoric (33%). Archaic components represent 7% of the time periods reported, followed by Weeden Island (6%), Deptford (5%), and Safety Harbor (3%). Remaining prehistoric components are all at two percent or less. As seen in the breakdown of percentages in Figure 4, historic components represent 5% of the total.

Figure 5 summarizes the site types interpreted by recording archaeologists for sites in the 6-mile radius. Prehistoric shell middens are most common (33%), followed by Prehistoric habitations (31%), and Prehistoric campsites (17%). The remaining categories include Land-terrestrial (4%), Prehistoric midden (3%), and prehistoric lithic scatter (2%). Other prehistoric functions include mound, burial mound, and platform mound, all representing one-percent of the total. Specified historic site types include homestead, shipwreck, and fort, each representing one-percent of the total by site type/function. The remaining categories are not specific as to prehistoric or historic affiliation.

Figure 4
Cultural Contexts Represented

Occupation

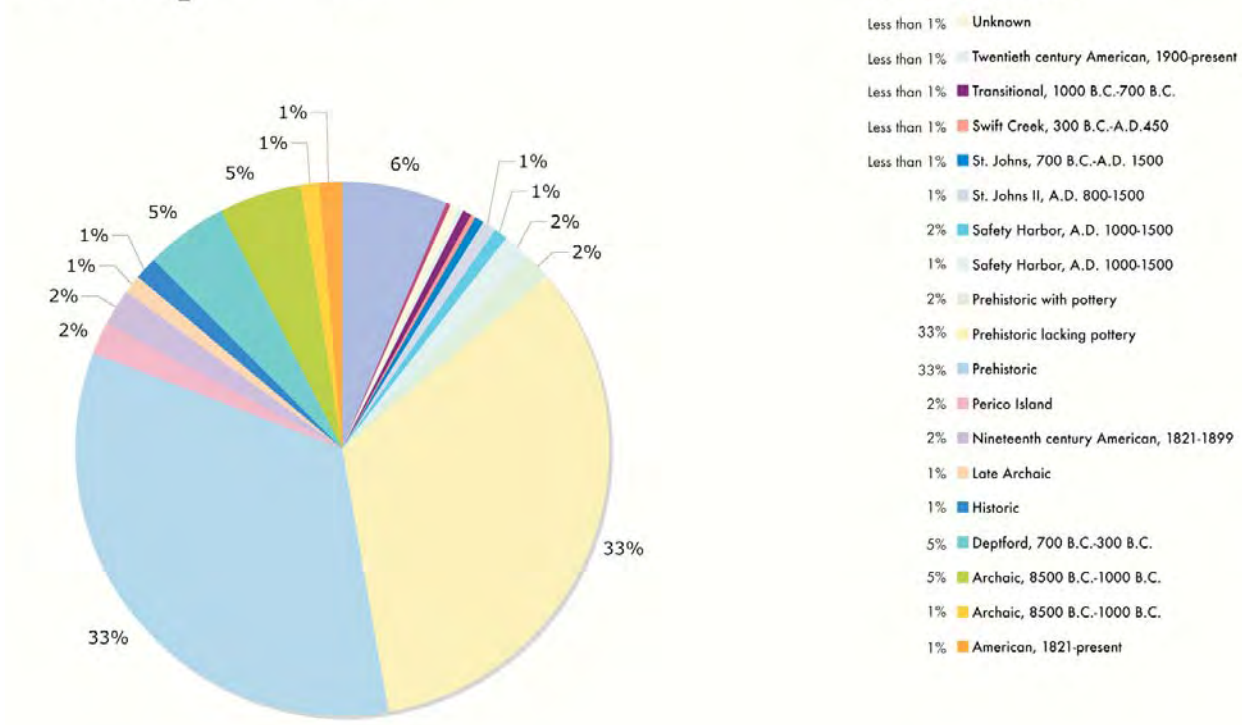
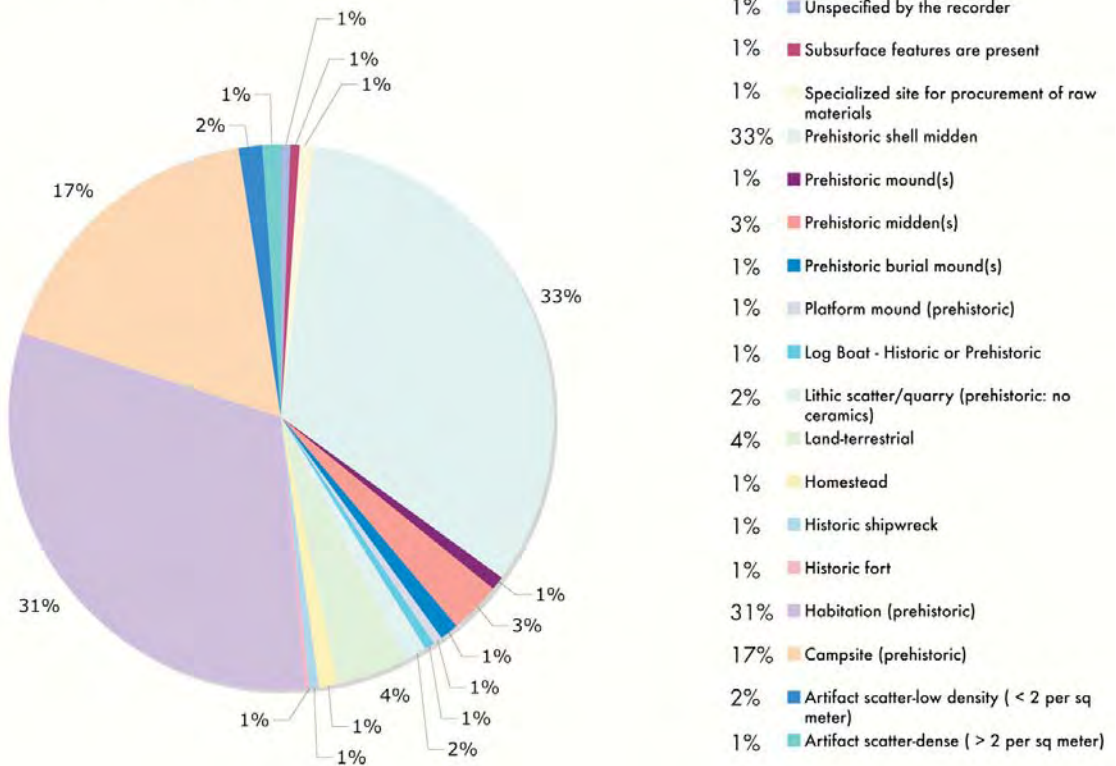


Figure 5
Site Types Represented

Type of Site



V. CONCLUSIONS

Background research conducted prior to license renewal for the Crystal River Nuclear Plant indicates that there are currently 195 archaeological sites, 9 structures, and 3 cemeteries within a 6-mile radius of the 4738-acre facility. Of these, Citrus County contains 174 of the known sites, eight of the known structures, and two recorded cemeteries. The Levy County portion of the 6-mile radius includes 21 known sites, one recorded structure, and one recorded cemetery. Only two sites are listed in the National Register of Historic Places and both are prehistoric: the Crystal River Indian Mound site complex (8CI00001) and Mullet Key (8CL00022).

Because there is no new construction associated with license renewal, there will be no effect to cultural resources.

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APPENDIX A: PREVIOUS SURVEYS

SURVNUM	AUTHOR1	TITLE
104	Willis, Raymond F.	Archaeological-Historical Survey Of Lake Rousseau To Crystal River Power Plant Water Supply Pipeline And Transmission Corridor Access Road, Citrus Co. FL
313	Miller, James J.	An Archaeological Survey Of The Florida Power Corporation Crystal River Tract, Citrus County, Florida.
339	Chance, Marsha A.	An Archaeological And Historical Survey Of The Proposed City Of Crystal River 201 Wastewater Management Facilities, Citrus Co. FL
1022	Kennedy, William J.	Archaeological And Historical Resources Of The Crystal Cove Property, Crystal River, Florida.
1142	Williams, J. Raymond	An Archaeological Survey Of The 5 Acre Ridge View Apartments Tract In Crystal River, Citrus County, Florida.
1766	Ballo, George R.	Proposed Bridge Replacement For King's Bay Bridge In Crystal River, Citrus County.
2079	Weisman, Brent R.	A Cultural Resource Inventory Of The Crystal River Archaeological Site (8c1), Citrus County, Florida.
2293	Weisman, Brent R.	Carl Inventory Project, Report Of Activities, Crystal River State Reserve [Citrus County, Florida].
3111	Weisman, Brent R.	Impacts To Archaeological Remains Of Proposed Planting Activities, Crystal River Site.
3171	Laurie, Murray D.	Architectural And Historical Survey Of Crystal River, Florida.
3181	Weisman, Brent R.	An Inventory And Evaluation Of Archaeological And Historical Resources On Crystal River State Reserve [Citrus County, Florida].
3537	Newman, Christine L.	Archaeological Management Areas In The Crystal River State Reserve And St. Martins Marsh Aquatic Preserve.
4054	Weisman, Brent R.	Crystal River; A Ceremonial Mound Center On The Florida Gulf Coast. Florida Bureau Of Archaeological Research, No. 8, 1995
4365	Weisman, Brent R.	The Roberts Island Shell Mound Complex And Its Archaeological Significance
4386	ATHENS, WILLIAM P.	Phase I Cultural Resources Investigation of the West Leg Mainline of the Proposed Florida Gas Transmission Company Phase III Expansion
4438	Newman, Christine L.	Cultural Resource Testing Of Proposed Office And Shop Areas, Crystal River State Buffer Preserve
4590	JANUS RESEARCH	Cultural Resource Assessment Survey for the Suncoast Parkway - Project 2, Project Development and Environment (PD&E) Study, Citrus Co. FL
4732	Almy, Marion	A Cultural Resources Assessment Survey Of Holnam/Hcr Limestone Crystal River Quarry Expansion Project, Citrus County, Florida
5916	DENSON, ROBIN L.	CULTURAL RESOURCES NOTEBOOK FOR THE ST. MARTINS AQUATIC PRESERVE/CRYSTAL RIVER BUFFER PRESERVE, CITRUS Co. FL
6004	DORSEY, RUSSELL A.	ARCHAEOLOGICAL STUDY OF THE NATURE COAST LANDINGS, CITRUS COUNTY, FLORIDA
6222	LAMMERS, JONATHAN	ARCHAEOLOGICAL INVESTIGATIONS WITHIN THE WACCASASSA BAY STATE PRESERVE, LEVY COUNTY, FLORIDA
6618	Wheeler, Ryan J.	Shovel Testing For Fence Relocation Project, Crystal River State Archaeological Site (8c1)
7108	Hutchinson, Lee	Cultural Resource Assessment Survey, Project Development And Environment Study Us 19 (Sr 55) From South Of Us 98 To Cr 488, Citrus Co., FL
7481	Dickinson, Martin	Cultural Resources Survey And Assessment, The Preserve At Crystal River, Citrus County, Florida
7573	ESTABROOK, RICHARD W.	ARCHAEOLOGICAL SITE ASSESSMENT SURVEY FOR THE RED LEVEL CELL TOWER PROJECT IN CITRUS COUTNY
8584	Pracht, Jodi B.	Cultural Resources Survey "Inglis" 10619 N. Suncoast Blvd. Inglis, Florida 34449 PIES Project # 015745 Clearshot Project # 01-0008
8897	STOKES, ANNE V	PHASE I ARCHAEOLOGICAL SURVEY OF PROPOSED CR 40 SIDEWALK FROM SCHOOLCRAFT DRIVE TO SPILLWAY ROAD, LEVY Co. FL
9063	Florida Arch. Consulting, Inc.	Identification and Evaluation of Historic Properties Within the One Mile Area of Potential Effects of the Inglis Telecomm. Tower, Levy Co. FL
9067	ACI	Cultural Resource Reconnaissance Survey/ Section 106 Review Proposed Inglis Cellular Tower No. 03-180, 156 Diana Street, Inglis, Levy Co. FL
10147	Kinsey, Buddy	Search for the Location of the Shell Midden, Reported as the Richardson Creek Site, Number 8CI00065
10233	Dean, Jonathan A.	Archaeological Reconnaissance Of The Inter-Island Group, St. Martins Marsh Aquatic Preserve/ Crystal River State Buffer Preserve, Citrus Co. FL
10234	Dean, Jonathan A.	Archaeological Reconnaissance Of The South Buffer Preserve, Crystal Riverbank Tract, Crystal River State Buffer Preserve, Citrus Co. Florida
10856	Florida Arch. Consulting, Inc.	Assessment of Potential Effects Upon Historic Properties: Proposed 180-Foot Barge Canal Wireless Tower, Citrus Co. Florida
11654	Stokes, Anne V.	An Inventory And Evaluation Of The Crystal River National Guard Armory, Citrus County, Florida
12570	Sears, William H.	Deptford In Florida
13093	White, Matthew P.	Reconnaissance Level Cultural Resource Survey for the Inglis Quarry Expansion Project, Citrus County, Florida
13245	Dickinson, Martin F.	Cultural Resources Survey and Assessment, Yankeetown Project, Addition, Levy County, Florida

APPENDIX B: PREVIOUSLY RECORDED SITES

SITE ID	SITE NAME	SITE TYPE1
CI00427	STONEY/LANE TRACT I	Campsite (prehistoric)
CI01200	Hidden Midden	Prehistoric midden(s)
CI00022	MULLET KEY	Campsite (prehistoric)
CI01202	Chiento Illifoki	Campsite (prehistoric)
CI01201	Illifoki	Campsite (prehistoric)
CI01198	Ofunlv Midden	Prehistoric shell midden
CI01199	Etoh Midden	Campsite (prehistoric)
CI00225	FOUR PALMS	Campsite (prehistoric)
CI01197	Sickle Midden	Prehistoric shell midden
CI00579	SOUTH SALT RIVER II	Campsite (prehistoric)
CI00224	SPICE KEY	Campsite (prehistoric)
CI00578	SOUTH SALT RIVER I	Prehistoric shell midden
CI01196	Washed Up	Prehistoric shell midden
CI01193	Camp Island	Prehistoric shell midden
CI00204	MARINE SCIENCE STATION	Prehistoric shell midden
CI01194	Keith's 2	Campsite (prehistoric)
CI01195	Wasted	Prehistoric shell midden
CI00577	NORTH COON GAP	Prehistoric shell midden
CI00035	RANDALL CROFT LODGE	Artifact scatter-low density (< 2 per sq meter)
CI01070	CRYSTAL RIVER SOUTH	Unspecified by the recorder
CI00093	"B" MIDDEN	Prehistoric midden(s)
CI00037	CRYSTAL RIVER 3	Prehistoric shell midden
CI00036	CRYSTAL RIVER 2	Prehistoric shell midden
CI00039	CRYSTAL RIVER 5	Prehistoric shell midden
CI00041	CRYSTAL RIVER 7 CHRISTAIN'S SHELL MOUNDS	Prehistoric shell midden
CI00038	CRYSTAL RIVER 4 - JAKE'S DROP	Prehistoric shell midden
CI00040	CRYSTAL RIVER 6 - TEMPLE MOUND	Platform mound (prehistoric)
CI00576	OPPOSITE THE ROCKS	Campsite (prehistoric)
CI00001	CRYSTAL RIVER INDIAN MOUNDS	Habitation (prehistoric)
CI01211	Rocks East	Campsite (prehistoric)
CI00118	FORT ISLAND	Prehistoric shell midden
CI01215	Pig's Last Stand	Prehistoric shell midden
CI01212	Deer Mouth	Artifact scatter-low density (< 2 per sq meter)
CI01207	Lost Cedar	Campsite (prehistoric)
CI01213	Deer Creek 1	Campsite (prehistoric)

CI01214	Deer Creek 2	Campsite (prehistoric)
CI01216	Eagle Scout Hill	Campsite (prehistoric)
CI01209	Kings Creek Midden	Prehistoric shell midden
CI00017	ROCK LANDING	Prehistoric mound(s)
CI01203	East Peninsula Point	Campsite (prehistoric)
CI01218	Deer Stand 3	Specialized site for procurement of raw materials
CI01219	Deer Creek 4	Campsite (prehistoric)
CI01210	Dying Palms Midden	Campsite (prehistoric)
CI01204	Wash Island Shadow	Campsite (prehistoric)
CI00121	FPC 43 (FLORIDA POWER CORP.)	Prehistoric shell midden
CI00042	CRYSTAL RIVER 8 - WASH ISLAND	Campsite (prehistoric)
CI01206	Land's End	Campsite (prehistoric)
CI01205	Lakache	Campsite (prehistoric)
CI01208	Gomez Midden	Campsite (prehistoric)
CI00448	WILLIAMS A D MOUND	Prehistoric mound(s)
CI00043	CRYSTAL RIVER 9 - SHELL ISLAND	Prehistoric shell midden
CI01217	Mother Osprey	Campsite (prehistoric)
CI00044	CRYSTAL RIVER 10 - COW ISLAND	Prehistoric midden(s)
CI00013	BLACK POINT	Prehistoric shell midden
CI00115	FPC 9 (FLORIDA POWER CORP.)	Prehistoric shell midden
CI01110	RED NAVEL	Land-terrestrial
CI00117	FPC 7 (FLORIDA POWER CORP.)	Prehistoric shell midden
CI01059	HOLLINS TRACT 1	Campsite (prehistoric)
CI00120	FPC 6 (FLORIDA POWER CORP.)	Prehistoric shell midden
CI00116	FPC 8 (FLORIDA POWER CORP.)	Prehistoric shell midden
CI00119	NEGRO ISLAND	Prehistoric shell midden
CI00114	FPC 10 (FLORIDA POWER CORP.)	Prehistoric shell midden
CI00092	FPC 3 (FLORIDA POWER CORP.)	Prehistoric shell midden
CI00091	FPC 4 (FLORIDA POWER CORP.)	Prehistoric shell midden
CI00789	NN	Land-terrestrial
CI01038	LONE FLAKE	Land-terrestrial
CI00105	FPC 19 (FLORIDA POWER CORP.)	Prehistoric shell midden
CI00109	FPC 15 (FLORIDA POWER CORP.)	Prehistoric shell midden
CI00113	FPC 11 (FLORIDA POWER CORP.)	Prehistoric shell midden
CI00110	FPC 14 (FLORIDA POWER CORP.)	Prehistoric shell midden
CI00112	FPC 12 (FLORIDA POWER CORP.)	Prehistoric shell midden

CI00108	FPC 16 (FLORIDA POWER CORP.)	Prehistoric shell midden
CI00111	FPC 13 (FLORIDA POWER CORP.)	Prehistoric shell midden
CI00103	FPC 21 (FLORIDA POWER CORP.)	Prehistoric shell midden
CI00106	FPC 18 (FLORIDA POWER CORP.)	Prehistoric shell midden
CI00107	FPC 17 (FLORIDA POWER CORP.)	Prehistoric shell midden
CI01182	Telling Secrets	Habitation (prehistoric)
CI00104	DRUM ISLAND	Prehistoric shell midden
CI01183	Feet Getting Wet	Habitation (prehistoric)
ci01147	Crunchy Ground	Habitation (prehistoric)
CI01165	Rocky Place	Habitation (prehistoric)
CI01143	Stuck Nowhere	Habitation (prehistoric)
CI01146	Many Places	Habitation (prehistoric)
CI01144	Blowing Willows	Habitation (prehistoric)
CI01145	Falling off the Rock	Habitation (prehistoric)
CI01148	Old Snakes path	Habitation (prehistoric)
CI01177	Oyster Bridge	Habitation (prehistoric)
CI01149	Berry Cakes	Habitation (prehistoric)
CI01005	DIXON	Homestead
CI01150	Grandfather Egret's Pool	Habitation (prehistoric)
CI01154	Crab warrriors	Habitation (prehistoric)
CI00993	TURKEY TROT	Campsite (prehistoric)
CI01153	Two Rock Houses	Habitation (prehistoric)
CI01152	Moving Dirt	Habitation (prehistoric)
CI00996	OAK KNOLL	Campsite (prehistoric)
CI01175	Chris	Habitation (prehistoric)
CI00994	GOBBLERS KNOB	Campsite (prehistoric)
CI01174	Jerry's	Habitation (prehistoric)
CI00997	LONESOME FLAKE	Campsite (prehistoric)
CI01134	Buckford 1	Habitation (prehistoric)
CI01155	Gossiping Palms	Habitation (prehistoric)
CI01156	Limus	Habitation (prehistoric)
CI00999	HUNTING LODGE RIDGE	Campsite (prehistoric)
CI01157	Terrapin Wipes his nose	Habitation (prehistoric)
CI01176	Chads	Habitation (prehistoric)
CI01173	Keith's	Habitation (prehistoric)
CI01180	Davey's Site	Habitation (prehistoric)

CI01140	Thla Rakke 1	Habitation (prehistoric)
CI01181	Jeanne's	Habitation (prehistoric)
CI01001	PRIEST	Homestead
CI01006	PRIEST'S FLAKE	Campsite (prehistoric)
CI01179	Seths	Habitation (prehistoric)
CI00998	LONE PINE	Land-terrestrial
CI01158	Weeping Rock	Habitation (prehistoric)
CI00995	FLYING MULLET	Campsite (prehistoric)
CI01163	Fish Splashers	Habitation (prehistoric)
CI01161	Dying Cedars	Habitation (prehistoric)
CI01172	Tom's	Habitation (prehistoric)
CI01162	Grandma sits alone	Habitation (prehistoric)
CI01141	Little Peak	Habitation (prehistoric)
CI01142	Thla Rakke 2	Habitation (prehistoric)
CI00062	CAPTAIN JOE ISLAND 1	Prehistoric shell midden
CI01004	NATURAL WELL	Land-terrestrial
CI01171	Vicky's	Habitation (prehistoric)
CI01000	GREEN GRASS KNOLL	Campsite (prehistoric)
CI01138	Sinet 2	Habitation (prehistoric)
CI00063	CAPTAIN JOE ISLAND 2	Prehistoric shell midden
CI01164	Fiery Palms	Habitation (prehistoric)
CI01007	OLD ROCK ROAD	Land-terrestrial
CI01137	Sinte 1	Habitation (prehistoric)
CI01159	Noisy Woods	Habitation (prehistoric)
CI01160	Cool Place to Sit	Habitation (prehistoric)
CI01002	SPLIT OAK	Campsite (prehistoric)
CI01135	Buckford 2	Habitation (prehistoric)
CI01003	JOHNS	Land-terrestrial
CI01136	Wekiwa	Habitation (prehistoric)
CI01178	Melissa's Site	Habitation (prehistoric)
CI01170	Kathy's	Habitation (prehistoric)
CI01151	Mother's Dimple	Habitation (prehistoric)
CI00060	BURTINE ISLAND C	Prehistoric shell midden
CI01169	JD's Site	Habitation (prehistoric)
CI00061	BURTINE ISLAND D	Prehistoric shell midden
CI01167	Bird Town	Habitation (prehistoric)

CI01166	Broken Cups	Habitation (prehistoric)
CI01185	Everett Island 6	Habitation (prehistoric)
CI01168	Pond in the Rock	Habitation (prehistoric)
CI00059	BURTINE ISLAND B	Prehistoric shell midden
CI00058	BURTINE ISLAND	Prehistoric shell midden
CI01192	Everett 5	Habitation (prehistoric)
CI01189	Everett Island 2	Habitation (prehistoric)
CI01184	Everett Island 1	Habitation (prehistoric)
CI01190	Everett 3	Habitation (prehistoric)
CI01191	Everett 4	Habitation (prehistoric)
CI00064	EVERETT ISLAND	Prehistoric shell midden
CI00122	STEAMSHIP LT IZARD WRECK	Historic shipwreck
CI00188	RIVER SHACK	Prehistoric shell midden
LV00109	CHAMBERS ISLAND	Prehistoric shell midden
CI01186	Turtle Left his shell	Habitation (prehistoric)
CI01187	Scorpion Palace	Habitation (prehistoric)
CI01139	Beaten Face	Habitation (prehistoric)
LV00108	OLD PORT INGLIS 2	Prehistoric shell midden
CI00065	RICHARDSON CREEK	Prehistoric burial mound(s)
LV00107	OLD PORT INGLIS 1	Prehistoric shell midden
LV00106	NN	Prehistoric shell midden
CI01089	BENNETTS CREEK	Habitation (prehistoric)
CI00102	WITHLACOOCHEE 5 MIDDEN	Prehistoric shell midden
LV00105	NN	Prehistoric shell midden
LV00104	NN	Prehistoric shell midden
CI01090	BENNETTS CREEK 2	Habitation (prehistoric)
CI00101	PAT'S ELBOW - JOHNNY GIBSON HOMESTEAD	Log Boat - Historic or Prehistoric
LV00102	BIRD CREEK	Prehistoric shell midden
CI00099	GIBSON BURIAL MOUND	Prehistoric burial mound(s)
CI00100	WITHLACOOCHEE 10 MIDDEN	Prehistoric shell midden
CI00098	WITHLACOOCHEE 11 MIDDEN	Prehistoric shell midden
LV00088	PUMPKIN ISLAND	Prehistoric shell midden
LV00501	BIRD CREEK FISH STATION	Specialized site for procurement of raw materials
CI01076	WITHALACOOCHEE BEND	Subsurface features are present
CI00096	WITHLACOOCHEE 13 MIDDEN	Prehistoric shell midden
LV00101	NN	Prehistoric shell midden

CI00066	FLORIDA BARGE CANAL 1	Lithic scatter/quarry (prehistoric: no ceramics)
LV00100	NN	Prehistoric shell midden
LV00098	HARPER	Prehistoric midden(s)
CI00067	FLORIDA BARGE CANAL 2	Lithic scatter/quarry (prehistoric: no ceramics)
LV00100	NN	Prehistoric shell midden
LV00098	HARPER	Prehistoric midden(s)
LV00098	HARPER	Prehistoric midden(s)
LV00100	NN	Prehistoric shell midden
CI00068	FLORIDA BARGE CANAL 3	Lithic scatter/quarry (prehistoric: no ceramics)
LV00103	NN	Prehistoric shell midden
CI00336	KAH'S BEACH	Prehistoric shell midden
LV00601	Melissa Band	Artifact scatter-dense (> 2 per sq meter)
LV00600	Gulf Hammock Southeast Drainage	Artifact scatter-dense (> 2 per sq meter)
LV00503	INGLIS EAST	Artifact scatter-low density (< 2 per sq meter)
LV00487	NN	Land-terrestrial
CI00097	HOLLIMAN'S BLOCKHOUSE	Historic fort

APPENDIX 10.4
EXISTING PERMITS

APPENDIX 10.4.1

WATER USE INDIVIDUAL PERMIT NO. 204695.03



An Equal
Opportunity
Employer

Southwest Florida Water Management District

Tampa Service Office
7601 Highway 301 North
Tampa, Florida 33637-6759
(813) 985-7481 or
1-800-836-0797 (FL only)
SUNCOM 578-2070

Bartow Service Office
170 Century Boulevard
Bartow, Florida 33830-7700
(863) 534-1448 or
1-800-492-7862 (FL only)
SUNCOM 572-6200

2379 Broad Street, Brooksville, Florida 34609-6899
(352) 796-7211 or 1-800-423-1476 (FL only)
SUNCOM 628-4150 TDD only 1-800-231-6103 (FL only)
World Wide Web: <http://www.swfwmd.state.fl.us>

Venice Service Office
115 Corporation Way
Venice, Florida 34292-3524
(941) 486-1212 or
1-800-320-3503 (FL only)
SUNCOM 526-6900

Lecanto Service Office
3600 West Sovereign Path
Suite 226
Lecanto, Florida 34461-8070
(352) 527-8131
SUNCOM 667-3271

July 19, 2000

Steve Ryan
Florida Power Corporation
PO Box 14042 (MAC-BBIA)
St. Petersburg, FL 33733-4042

Subject: Water Use Permit Information
Project Name: Florida Power Corporation - Crystal River Plant
Water Use Permit Appl. No. 2004695.003/ CN: 75221
County: Citrus

Reference: Chapter 40D-2 Florida Administrative Code (F.A.C.)

Dear Mr. Ryan:

Special Condition No. 6, of Florida Power Corporation's Water Use Permit (WUP) requires maximum and minimum Floridan aquifer water levels (District ID No. 7) to be recorded on a daily frequency. Per your request, the necessity of maximum and minimum daily readings was investigated. It was determined that one value recorded at the same time each day would be sufficient. The Floridan aquifer water level in District ID No. 7, shall be recorded at 12:00 p.m., daily and reported along with the date the measurement was taken to the District within the appropriate time period. If the District forms requesting this water level information has spaces for both maximum and minimum values, the Permittee shall place the value recorded at 12:00 p.m. in both spaces.

Additionally, I have included a new well tag for District ID No. 4, Permittee ID No. SPW4. If you have any questions regarding the required information, please contact me at extension 4326.

Sincerely,

Jerry L. Mallams
Hydrologist
Brooksville Regulation Department

JLM:tjm:00.052

Enclosures: Well Tag

cc: File of Record: 2004695.003
John Parker, P.G., Water Use Regulation Manager



An Equal Opportunity Employer

Southwest Florida Water Management District

2379 Broad Street • Brooksville, Florida 34609-6899 • 1-800-423-1476 (Florida Only) or
(352) 796-7211 • SUNCOM 628-4150 • T.D.D. Number Only (Florida Only): 1-800-231-6103

7601 Highway 301 North
Tampa, Florida 33637-6759
1-800-836-0797 or (813) 985-7481
SUNCOM 578-2070

170 Century Boulevard
Bartow, Florida 33830-7700
1-800-492-7862 or (941) 534-1448
SUNCOM 572-6200

115 Corporation Way
Venice, Florida 34292-3524
1-800-320-3503 or (941) 486-1212
SUNCOM 526-6900

2303 Highway 44 West
Inverness, Florida 34453-3809
(352) 637-1360

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Vice Chairman, Wauchula
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Secretary, Land O' Lakes
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Treasurer, Tampa
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Lake Wales
James E. Martin
St. Petersburg
Virginia S. Roo
Tampa

E. D. "Sonny" Vergara
Executive Director
Edward B. Helvenston
General Counsel

October 28, 1997

Florida Power Corporation
Attn: Jacqueline A. Foss
Post Office Box 14042, MAC H2G
St. Petersburg, FL 33733

Subject: Final Agency Action Transmittal Letter
Individual Water Use Permit No(s). 204695.03

Dear Ms. Foss:

Your Water Use Permit(s) was/were approved by the District Governing Board subject to all terms and conditions set forth in the approved Permit(s).

Please be advised that the Governing Board has formulated a water shortage plan as referenced in Condition 4 of the Standard Water Use Permit Conditions (Exhibit A), and will implement such a plan during periods of water shortage. You will be notified during a declared water shortage of any change in the conditions of your Permit(s) or any suspension of your Permit(s), or of any restriction on your use of water for the duration of any declared water shortage.

The ID tag(s) for your withdrawal(s) shall be installed by a District representative. This representative will attempt to contact you within 30 days, upon receipt of this letter, to discuss placement of your tags. If you have any questions or concerns regarding your tags, please contact Sandy Semegen at extension 4349 in the Brooksville Regulation Department. If you have any questions or concerns regarding your permit or any other information, please contact this office at extension 4343.

Sincerely,

James P. Marshall, Supervisor
Records and Data Department

JPM:mlm

Enclosures: 1. Approved Permit
2. Rule 40D-1.521, F.A.C.

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**SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT
WATER USE
INDIVIDUAL
PERMIT NO. 204695.03**

EXPIRATION DATE: October 28, 2007

PERMIT ISSUE DATE: October 28, 1997

THE PERMITTEE IS RESPONSIBLE FOR APPLYING FOR A RENEWAL OF THIS PERMIT PRIOR TO THE EXPIRATION DATE WHETHER OR NOT THE PERMITTEE RECEIVES PRIOR NOTIFICATION BY MAIL. FAILURE TO DO SO AND CONTINUED USE OF WATER AFTER EXPIRATION DATE IS A VIOLATION OF DISTRICT RULES AND MAY RESULT IN A MONETARY PENALTY AND/OR LOSS OF WATER. APPLICATION FOR RENEWAL PRIOR TO THE EXPIRATION DATE IS SUBJECT TO DISTRICT EVALUATION AND APPROVAL.

This permit, issued under the provision of Chapter 373, Florida Statutes and Florida Administrative Code 40D-2, authorizes the Permittee to withdraw the quantities outlined herein, and may require various activities to be performed by the Permittee as outlined by the Special Conditions. This permit, subject to all terms and conditions, meets all District permitting criteria.

PROJECT NAME: Crystal River South Power Plant

GRANTED TO: Florida Power Corporation
3201 34th Street South
St. Petersburg, FL 33711

ABSTRACT: This is a renewal with modifications to decrease permitted quantities for an existing industrial (boiler makeup) water use permit located in Citrus County. The Annual Average quantity decreased from 1,040,000 gallons per day (gpd) to 1,000,000 gpd (decrease of 40,000 gpd) and the Peak Month quantity decreased from 1,820,000 gpd to 1,500,000 gpd (decrease of 320,000 gpd). The decrease in quantity is due to the improved water conservation practices used by this plant. The quantities are based on the demand projections identified in the water budgets for the projected ten-year permit term. Special Conditions require: reporting of metered pumpage monthly; reporting of water quality from District ID 4, monthly; reporting of water levels from District ID 7, daily; capping unused wells; submittal of a water conservation report by October 1, 2002; and allow flexibility in pumpage distribution.

TOTAL QUANTITIES AUTHORIZED UNDER THIS PERMIT (in gpd)

AVERAGE: 1,000,000 PEAK MONTHLY: 1,500,000

<u>Use</u>	<u>Average</u>	<u>Peak Monthly</u>
Industrial or Commercial:	1,000,000 gpd	1,500,000 gpd

See Withdrawal Table for quantities permitted for each withdrawal point.

PROPERTY LOCATION: Citrus County, approximately 3 miles west of Red Level.

Permit No.: 204695.03
Permittee: Florida Power Corporation
Page: 2

TYPE OF APPLICATION: Renewal

WATER USE CAUTION AREA:
N/A

APPLICATION FILED: April 25, 1997

ACRES: 5,125.17 Owned

APPLICATION AMENDED: April 28, 1997

WATER USE: INDUSTRIAL OR COMMERCIAL

FACILITY NAME

USE TYPE

Crystal River South Power Plant

Boiler Makeup-Water

Boiler Makeup-Water & Pollution Control

<u>I.D. NO.</u>	<u>PERMITTEE/ LOCATION</u>	<u>DIAM.</u>	<u>DEPTH</u>		<u>GALLONS PER DAY</u>	
<u>DISTRICT</u>	<u>LAT/LONG</u>	<u>(INCHES)</u>	<u>TOTAL/CASED</u>	<u>USE</u>	<u>AVERAGE</u>	<u>PEAK MONTHLY</u>
PW1A/1	285745/824156	8	42 / 42	I/C	25,000	37,500
PW1B/2	285743/824156	8	42 / 42	I/C	25,000	37,500
SPW3/3	285736/823805	10	90 / 36	I/C	380,000	570,000
SPW4/4	285736/823809	10	125 / 37	I/C	285,000	427,500
SPW5/5	285736/823819	10	72 / UNK	I/C	285,000	427,500

I/C = Industrial or Commercial

DISTRICT

I.D. NO.

SECTION/TOWNSHIP/RANGE

1 and 2	33/17/16
3	31/17/17
4 and 5	36/17/16

SPECIAL CONDITIONS:

All conditions referring to approval by the Regulation Department Director, Resource Regulation, shall refer to the Director, Brooksville Regulation Department, Resource Regulation.

1. All reports required by the permit shall be submitted to the District on or before the tenth day of the month following data collection and shall be addressed to:

Permit Data Section, Records and Data Department
Southwest Florida Water Management District
2379 Broad Street
Brooksville, Florida 34609-6899

Unless otherwise indicated, three copies of each plan or report, with the exception of pumpage, rainfall, evapotranspiration, water level or water quality data which require one copy, are required by the permit.

2. The Permittee shall continue to maintain and operate the existing non-resettable, totalizing flow meter(s), or other flow measuring device(s) as approved by the Regulation Department Director, Resource Regulation, for District ID No(s). **1, 2, 3, 4, and 5**, Permittee ID No(s). **PW1A, PW1B, SPW3, SPW4, and SPW5**. Such device(s) shall maintain an accuracy within five percent of the actual flow as installed. Total withdrawal and meter readings from each metered withdrawal shall be recorded on a **monthly** basis and reported to the Permit Data Section, Records and Data Department, (using District forms) on or before the tenth day of the following month. If a metered withdrawal is not utilized during a given month, a report shall be submitted to the Permit Data Section, Records and Data Department, indicating zero gallons.
3. Water quality samples shall be collected and analyzed, for parameter(s), and frequency(ies) specified below. Water quality samples from production wells shall be collected whether or not the well is being used, unless infeasible. If sampling is infeasible the Permittee shall indicate the reason for not sampling on the water quality data form. Water quality samples shall be analyzed by a Department of Health and Rehabilitative Services (DHRS) certified laboratory under Environmental Laboratory Certification General Category "1". At a minimum, water quality samples shall be collected after pumping the well at its normal rate for a pumping time specified in the table below, or to a constant temperature, pH, and conductivity. In addition, the Permittee's sampling procedure shall follow the handling and chain of custody procedures designated by the certified laboratory which will undertake the analysis. Any variance in sampling and/or analytical methods shall have prior approval of the Regulation Department Director, Resource Regulation. Reports of the analyses shall be submitted to the Permit Data Section, Records and Data Department, (using District forms) on or before the tenth day of the following month, and shall include the signature of an authorized representative and certification number of the certified laboratory which undertook the analysis. The parameters and frequency of sampling and analysis may be modified by the Regulation Department Director, Resource Regulation, as necessary to ensure the protection of the resource.

<u>District ID No.</u>	<u>Permittee ID No.</u>	<u>Minimum Pumping Time (minutes)</u>	<u>Parameter</u>	<u>Sampling Frequency</u>
4	SPW4	15 minutes	Chlorides, Sulfates & T.D.S.	Monthly

Water quality samples shall be collected based on the following timetable:

Weekly	Same day of each week
Monthly	Same week of each month
Quarterly	Same week of months specified
Semi-annually	Same week of months specified

Permit No.: 204695.03

Permittee: Florida Power Corporation

Page 4

Analyses shall be performed according to procedures outlined in the current edition of Standard Methods for the Examination of Water and Wastewater by the American Public Health Association-American Water Works Association-Water Pollution Control Federation (APHA-AWWA-WPCF) or Methods for Chemical Analyses of Water and Wastes by the U.S. Environmental Protection Agency (EPA).

4. Any wells not in use, and in which pumping equipment is not installed shall be capped or valved in a water tight manner in accordance with Chapter 62-532.500(3)(a)(4), F.A.C.
5. The average day, peak monthly, and maximum daily, if applicable, quantities for District ID No(s). **3, 4, and 5**, Permittee ID No(s). **SPW3, SPW4, and SPW5**, shown above in the production withdrawal table are estimates based on historic and/or projected distribution of pumpage, and are for water use inventory and impact analysis purposes. The quantities listed in the table for these individual sources are not intended to dictate the distribution of pumpage from permitted sources. The Permittee may make adjustments in pumpage distribution as necessary up to **440,000** gallons per day on an average basis and up to **570,000** gallons per day on a peak monthly basis for the individual wells, so long as adverse environmental impacts do not result and other conditions of this Permit are complied with. In all cases, the total average annual daily withdrawal, the total peak monthly daily withdrawal, and the total crop protection daily withdrawal are limited to the quantities set forth above.
6. The Permittee shall monitor water levels in the monitor well(s) as specified in the table below. Reports of the data shall be submitted to the Permit Data Section, Records and Data Department, in a form acceptable to the District. All data shall be referenced to National Geodetic Vertical Datum (NGVD). The frequency of water-level recording may be modified by the Regulation Department Director, Resource Regulation, as necessary to ensure the protection of the resource.

<u>District ID No.</u>	<u>Permittee ID No.</u>	<u>Latitude/ Longitude</u>	<u>Aquifer</u>	<u>Recording Frequency</u>
7	MONW	285744/823824	Floridan	Daily

Water levels shall be recorded based on the following timetable of recording frequency:

<u>Recording Frequency</u>	<u>Recording Time</u>
Continuous Recording	Continuous hourly basis
Daily	Same time of each day
Weekly	Same day of each week
Monthly	Same week of each month

The maximum and minimum of the 24-hour values (continuous recording) for each day shall be calculated, and only the maximum and minimum values for each day shall be reported to the Permit Data Section, Records and Data Department. The time and date that the water level is measured shall be reported with the data.

7. The Permittee shall continue to carry out the provisions of its water conservation plan submitted with the application for the duration of this permit. The Permittee shall submit a progress report by October 1, 2002.

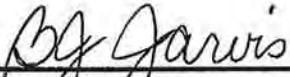
Permit No.: 204695.03

Permittee: Florida Power Corporation

Page 5

STANDARD CONDITIONS:

1. The Permittee shall comply with the Standard Conditions attached hereto, incorporated herein by reference as Exhibit "A" and made a part hereof.



Authorized Signature

SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT

40D-2
Exhibit "A"

WATER USE PERMIT CONDITIONS

STANDARD CONDITIONS

1. If any of the statements in the application and in the supporting data are found to be untrue and inaccurate, or if the Permittee fails to comply with all of the provisions of Chapter 373, F.S., Chapter 40D, or the conditions set forth herein, the Governing Board shall revoke this permit in accordance with Rule 40D-2.341, following notice and hearing.
2. This permit is issued based on information provided by the Permittee demonstrating that the use of water is reasonable and beneficial, consistent with the public interest, and will not interfere with any existing legal use of water. If, during the term of the permit, it is determined by the District that the use is not reasonable and beneficial, in the public interest, or does impact an existing legal use of water, the Governing Board shall modify this permit or shall revoke this permit following notice and hearing.
3. The Permittee shall not deviate from any of the terms or conditions of this permit without written approval by the District.
4. In the event the District declares that a Water Shortage exists pursuant to Chapter 40D-21, the District shall alter, modify, or declare inactive all or parts of this permit as necessary to address the water shortage.
5. The District shall collect water samples from any withdrawal point listed in the permit or shall require the Permittee to submit water samples when the District determines there is a potential for adverse impacts to water quality.
6. The Permittee shall provide access to an authorized District representative to enter the property at any reasonable time to inspect the facility and make environmental or hydrologic assessments. The Permittee shall either accompany District staff onto the property or make provision for access onto the property.
7. Issuance of this permit does not exempt the Permittee from any other District permitting requirements.
8. The Permittee shall cease or reduce surface water withdrawal as directed by the District if water levels in lakes fall below applicable minimum water level established in Chapter 40D-8 or rates of flow in streams fall below the minimum levels established in Chapter 40D-8.
9. The Permittee shall cease or reduce withdrawal as directed by the District if water levels in aquifers fall below the minimum levels established by the Governing Board.
10. The Permittee shall practice water conservation to increase the efficiency of transport, application, and use, as well as to decrease waste and to minimize runoff from the property. At such time as the Governing Board adopts specific conservation requirements for the Permittee's water use classification, this permit shall be subject to those requirements upon notice and after a reasonable period for compliance.

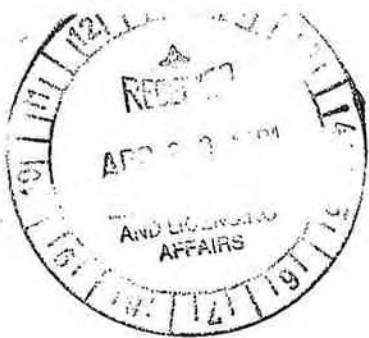
11. The District may establish special regulations for Water Use Caution Areas. At such time as the Governing Board adopts such provisions, this permit shall be subject to them upon notice and after a reasonable period for compliance.
12. The Permittee shall mitigate, to the satisfaction of the District, any adverse impact to existing legal uses caused by withdrawals. When adverse impacts occur or are imminent, the District shall require the Permittee to mitigate the impacts. Adverse impacts include:
 - a. A reduction in water levels which impairs the ability of a well to produce water;
 - b. Significant reduction in levels or flows in water bodies such as lakes, impoundments, wetlands, springs, streams or other watercourses; or
 - c. Significant inducement of natural or manmade contaminants into a water supply or into a usable portion of any aquifer or water body.
13. The Permittee shall mitigate to the satisfaction of the District any adverse impact to environmental features or offsite land uses as a result of withdrawals. When adverse impacts occur or are imminent, the District shall require the Permittee to mitigate the impacts. Adverse impacts include the following:
 - a. Significant reduction in levels or flows in water bodies such as lakes, impoundments, wetlands, springs, streams, or other watercourses;
 - b. Sinkholes or subsidence caused by reduction in water levels;
 - c. Damage to crops and other vegetation causing financial harm to the owner; and
 - d. Damage to the habitat of endangered or threatened species.
14. When necessary to analyze impacts to the water resource or existing users, the District shall require the Permittee to install flow metering or other measuring devices to record withdrawal quantities and submit the data to the District.
15. A District identification tag shall be prominently displayed at each withdrawal point by permanently affixing the tag to the withdrawal facility.
16. The Permittee shall notify the District within 30 days of the sale or conveyance of permitted water withdrawal facilities or the land on which the facilities are located.
17. All permits issued pursuant to these Rules are contingent upon continued ownership or legal control of all property on which pumps, wells, diversions or other water withdrawal facilities are located.

SUBPART B - FORMAL PROCEEDINGS

40D-1.521 Initiation of Formal Proceedings

- (1) Formal proceedings shall be initiated by petition to the District. The term petition as used herein includes any application or other document which expresses a request for formal proceedings. Each petition should be printed, typewritten or otherwise duplicated in legible form on white paper of standard letter size and signed by the petitioner or his representative. Unless printed, the impression shall be on one side of the paper only and lines shall be double spaced and indented.
- (2) All petitions filed under these rules shall contain:
 - A) The name and address of the District and the District's file or identification number, if known;
 - B) The name and address of the petitioner or petitioners;
 - C) An explanation of how each petitioner's substantial interests will be affected by the District's determination;
 - D) A statement of when and how petitioner received Notice of the District's Proposed or Final Agency Action;
 - E) A statement of all disputed issues of material fact. If there are none, the petition must so indicate;
 - F) A concise statement of the ultimate facts which petitioner believes entitle him to relief sought as well as the rules and statutes which support petitioner's claim for relief;
 - G) A statement of preference of presiding officer;
 - H) A demand for the relief to which the petitioner deems himself entitled; and
 - I) Other information which the petitioner contends is material.
- (3) Upon receipt of a petition for formal proceedings the District shall review the petition and shall provide a statement of compliance of the petition which the requirements of this rule to the Board and the petitioner. The Board shall accept those petitions in substantial compliance with this rule which have been timely filed and which state a dispute which is within the jurisdiction of the District to resolve. If the petition is accepted the Board shall designate the presiding officer. The District shall promptly give written notice to all parties of the action taken on the petition, and shall state with particularity its reasons therefore.
- (4) If the Board designates a Hearing Officer assigned by the Division of Administrative Hearings as the presiding officer, the Agency Clerk shall forward the petition and all materials filed with the District to the Division of Administrative Hearings, and shall notify all parties of such action.
- (5) Petitioners entitled to a hearing pursuant to Subsection 120.57(1), Florida Statutes, may waive their right to a formal hearing and request an informal hearing before the Board pursuant to Subsection 120.57(2), Florida Statutes, which may be granted at the option of the District.

The District does not discriminate based on disability. Anyone requiring reasonable accommodation under the ADA should contact the Records and Data Department at (352) 796 - 7211 or 1-800-423-1476; TDD only 1-800-231-6103.



SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT
(SWFWMD)
INDIVIDUAL WATER USE PERMIT

PERMIT GRANTED TO:

Florida Power Corporation
3201 34th Street S.
St. Petersburg, FL 33733

(Legal Name and Address)

PERMIT NO.: 204695.02
DATE PERMIT GRANTED: April 25, 1991
DATE PERMIT APPLICATION FILED: November 19, 1990
PERMIT EXPIRES ON: April 25, 1997
SOURCE CLASSIFICATION: Groundwater
USE CLASSIFICATION: Industrial or Commercial
COUNTY: Citrus

TERMS AND CONDITIONS OF THIS PERMIT ARE AS FOLLOWS:

1. If any of the statements in the application and in the supporting data are found to be untrue and inaccurate, or if the Permittee fails to comply with all of the provisions of Chapter 373, F.S., Chapter 40D, or the conditions set forth herein, the Governing Board shall revoke this permit in accordance with Rule 40D-2.341, following notice and hearing.
2. This permit is issued based on information provided by the Permittee demonstrating that the use of water is reasonable and beneficial, consistent with the public interest, and will not interfere with any existing legal use of water. If, during the term of the permit, it is determined by the District that the use is not reasonable and beneficial, in the public interest, or does impact an existing legal use of water, the Governing Board shall modify this permit or shall revoke this permit following notice and hearing.
3. The Permittee shall not deviate from any of the terms or conditions of this permit without written approval by the District.

This Permit authorizes the applicant named above to make a combined average annual withdrawal of 1,040,000 gallons of water per day, a combined peak monthly withdrawal of 1,820,000 gallons of water per day, and a maximum combined withdrawal rate not to exceed (not applicable) gallons per day. Withdrawals are authorized as shown in the table below.

USER	DIST.	WITHDRAWAL POINT						GALLONS PER DAY		
<u>I.D.</u>	<u>I.D.</u>	<u>LATITUDE</u>	<u>LONGITUDE</u>	<u>SEC-TWN-RGE</u>	<u>AVERAGE</u>	<u>PEAK MONTHLY</u>	<u>MAXIMUM</u>			
PW1A	1	28 57 44	82 41 57	33 17S 16E	25,000	50,000	N/A			
PW1B	2	28 57 43	82 41 57	33 17S 16E	25,000	50,000	N/A			
SPW3	3	28 57 36	82 38 05	31 17S 17E	440,000	720,000	N/A			
SPW4	4	28 57 35	82 38 09	36 17S 16E	275,000	504,000	N/A			
SPW5	5	28 57 35	82 38 20	36 17S 16E	275,000	504,000	N/A			

Permittee: Florida Power Corporation
Permit No.: 204695.02

4. In the event the District declares that a Water Shortage exists pursuant to Chapter 40D-21, the District shall alter, modify, or declare inactive all or parts of this permit as necessary to address the water shortage.
5. The District shall collect water samples from any withdrawal point listed in the permit or shall require the permittee to submit water samples when the District determines there is a potential for adverse impacts to water quality.
6. The Permittee shall provide access to an authorized District representative to enter the property at any reasonable time to inspect the facility and make environmental or hydrologic assessments. The Permittee shall either accompany District staff onto the property or make provision for access onto the property.
7. Issuance of this permit does not exempt the Permittee from any other District permitting requirements.
8. The Permittee shall cease or reduce surface water withdrawal as directed by the District if water levels in lakes fall below applicable minimum water level established in Chapter 40D-8 or rates of flow in streams fall below the minimum levels established in Chapter 40D-8.
9. The Permittee shall cease or reduce withdrawal as directed by the District if water levels in aquifers fall below the minimum levels established by the Governing Board.
10. The Permittee shall practice water conservation to increase the efficiency of transport, application, and use, as well as to decrease waste and to minimize runoff from the property. At such time as the Governing Board adopts specific conservation requirements for the Permittee's water use classification, this permit shall be subject to those requirements upon notice and after a reasonable period for compliance.
11. The District may establish special regulations for Water-Use Caution Areas. At such time as the Governing Board adopts such provisions, this permit shall be subject to them upon notice and after a reasonable period for compliance.
12. The Permittee shall mitigate, to the satisfaction of the District, any adverse impact to existing legal uses caused by withdrawals. When adverse impacts occur or are imminent, the District shall require the Permittee to mitigate the impacts. Adverse impacts include:
 - a. A reduction in water levels which impairs the ability of a well to produce water;
 - b. Significant reduction in levels or flows in water bodies such as lakes, impoundments, wetlands, springs, streams or other watercourses; or
 - c. Significant inducement of natural or manmade contaminants into a water supply or into a usable portion of any aquifer or water body.

Permittee: Florida Power Corporation
Permit No.: 204695.02

13. The Permittee shall mitigate to the satisfaction of the District any adverse impact to environmental features or offsite land uses as a result of withdrawals. When adverse impacts occur or are imminent, the District shall require the Permittee to mitigate the impacts. Adverse impacts include the following:
 - a. Significant reduction in levels or flows in water bodies such as lakes, impoundments, wetlands, springs, streams, or other watercourses;
 - b. Sinkholes or subsidence caused by reduction in water levels;
 - c. Damage to crops and other vegetation causing financial harm to the owner; and
 - d. Damage to the habitat of endangered or threatened species.
14. When necessary to analyze impacts to the water resource or existing users, the District shall require the Permittee to install flow metering or other measuring devices to record withdrawal quantities and submit the data to the District.
15. A District identification tag shall be prominently displayed at each withdrawal point by permanently affixing the tag to the withdrawal facility.
16. The permittee shall notify the District within 30 days of the sale or conveyance of the permitted water use system or the land on which the system is located.

SPECIAL CONDITIONS:

17. The average day quantities, in Condition 3, for the individual withdrawal points shown in the table above are estimates of annual average use based on historic and/or projected distribution of pumpage, and are for water use inventory and impact analysis purposes. Where more than one withdrawal point is permitted, the average day quantities for individual sources are not intended to dictate the distribution of pumpage from permitted sources. The Permittee may make adjustments in pumpage distribution as necessary, up to 440,000 gpd average annual pumpage, from District Identification Nos. 3, 4, and 5, so long as adverse environmental impacts do not result and other conditions of this permit are complied with. In all cases, the combined average annual daily withdrawal and combined peak month day withdrawal are limited to the quantities set forth above.
18. The Permittee shall continue to maintain and operate the existing flow meters or other flow measuring devices as approved by the Director, Brooksville Permitting Department, Resource Regulation, for District Identification Nos. 1, 2, 3, 4, and 5 (User ID Nos. PW1A, PW1B, SPW3, SPW4, and SPW5, respectively).

Permittee: Florida Power Corporation
Permit No.: 204695.02

19. Total withdrawal from each metered source shall be recorded on a monthly basis and reported to the District (using District forms) on or before the twenty-eight (28th) day of the following month. Reports shall be addressed to:

Permits Data Group
Southwest Florida Water Management District
2379 Broad Street
Brooksville, Florida 34609-6899

20. Water quality samples shall be collected and analyzed as indicated in the table below. Reports of the analyses shall be submitted to the District (using District forms) on or before the twenty-eighth (28th) day of the following month. The parameters and frequency of sampling and analysis may be modified by District staff as necessary to ensure the protection of the resource.

<u>District</u> <u>ID No.</u>	<u>Parameter</u>	<u>Sampling Frequency</u>
4	Chlorides, Sulfate, Total dissolved solids	Monthly

Analyses shall be performed according to procedures outlined in the current edition of Standard Methods for the Examination of Water and Wastewater by the American Public Health Association-American Water Works Association-Water Pollution Control Federation (APHA-AWWA-WPCF) or Methods for Chemical Analyses of Water and Wastes by the U.S. Environmental Protection Agency (EPA). Reports shall be addressed as indicated above.

21. The Permittee shall submit a report describing the sampling and analytical methodologies employed. The report shall address sampling procedures, chain of custody of the samples, and methods of analysis for all parameters for which analyses are performed. The report shall be included with the first data submitted after the date this permit is granted, and upon any change in sampling and/or analytical methodology.
22. The Permittee shall continue monitoring water levels in the Floridan Aquifer. Reports of the data shall be submitted on a monthly basis to the District, in a form acceptable to the District, on or before the twenty-eighth (28th) day of the following month. All data shall be referenced to National Geodetic Vertical Datum (NGVD). The frequency of water-level recording is specified below, and may be modified by the Director, Brooksville Permitting Department, Resource Regulation, as necessary to ensure the protection of the resource. Water levels in the wells shall be recorded for the specified District ID No., aquifer, and recording frequency.

<u>District</u> <u>ID No.</u>	<u>User</u> <u>ID No.</u>	<u>Aquifer</u>	<u>Recording Frequency</u>
7	MONW	Floridan	Daily

Water levels shall be recorded on a daily basis. If water levels are recorded on a continuous hourly (or more frequent) basis, the maximum value for the day shall be reported to the District. The time and date of the water level measurement shall be reported with the data.

Permittee: Florida Power Corporation
Permit No.: 204695.02

23. Any wells not in use and in which pumping equipment is not installed shall be capped or valved in a water-tight manner in accordance with Rule 17-532.500(3), F.A.C.



Authorized Signature
SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT



Southwest Florida Water Management District

2379 Broad Street (U.S. 41 South) Brooksville, Florida 34609-6899
Phone (904) 796-7211 or 1-800-423-1476 SUNCOM 628-4150

BARTOW 813-534-7080
BROOKSVILLE (Listed)
TAMPA 813-985-7481
VENICE 813-488-4666

Charles A. Black
Chairman, Crystal River
Roy G. Harrell, Jr.
Vice Chairman, St. Petersburg
Anne Bishopric Sager
Secretary, Venice
Joseph S. Casper
Treasurer, Tampa
Mary Ann Hogan
Brooksville
Samuel D. Updike
Lake Wales
Gordon D. Hartman
Bradenton
David H. Knowlton
St. Petersburg
Andrew J. Lubrano
Tampa
Abby Misemer
New Port Richey
Sally Thompson
Tampa

Peter G. Hubbell
Executive Director
Mark D. Farrell
Assistant Executive Director
Kent A. Zaiser
General Counsel

April 25, 1991

Florida Power Corporation
3201 34th Street South
St. Petersburg, FL 33733

Subject: Final Agency Action Transmittal Letter
Individual Water Use Permit No. 204695.02

Your Water Use Permit(s) was/were approved by the District Governing Board subject to all terms and conditions set forth in the approved Permit(s).

Please be advised that the Governing Board has formulated a water shortage plan as referenced in Condition 4 of the Permit, and will implement such a plan during periods of water shortage. You will be notified during a declared water shortage of any change in the conditions of your Permit(s) or any suspension of your Permit(s), or of any restriction on your use of water for the duration of any declared water shortage.

One of the enclosed ID tags must be affixed in a prominent location on each permitted withdrawal facility. The necessary tags(s) and instructions are enclosed. If you have any questions or concerns about your Permit, please contact the Permitting Department or contact this office at Extension 4338.

Sincerely,

Annie L. Taylor

ANNIE L. TAYLOR
Manager
Processing & Records Section

Enclosures: 1. Approved Permit
2. Surface Water and/or Well Tags
3. Instructions for Applying Water Use Tag

APPENDIX 10.4.2

**CRYSTAL RIVER UNITS 1, 2, AND 3
WASTEWATER TREATMENT PLANT PERMIT**



Jeb Bush
Governor

Department of Environmental Protection

Southwest District
3804 Coconut Palm Drive
Tampa, Florida 33619

Colleen M. Castille
Secretary

STATE OF FLORIDA DOMESTIC WASTEWATER FACILITY PERMIT

PERMITTEE:

Progress Energy Florida, Inc.

PERMIT NUMBER: FLA118753
PA FILE NUMBER: FLA118753-003-DW3P
ISSUANCE DATE: April 29, 2004
EXPIRATION DATE: April 28, 2009

RESPONSIBLE AUTHORITY:

Mr. Michael Olive
Plant Manager
15760 Powerline Street, MAC CN77
Crystal River, FL 34428-6708

(352) 464-7747

FACILITY:

Progress Energy Florida, Inc., Crystal River Units 1, 2 & 3 Sewage Treatment Plant
15760 Powerline Rd.
Crystal River, FL 34428
Citrus County

Latitude: 28° 57' 27" N Longitude: 82° 42' 36" W

This permit is issued under the provisions of Chapter 403, Florida Statutes, and applicable rules of the Florida Administrative Code. The above named permittee is hereby authorized to operate the facilities shown on the application and other documents attached hereto or on file with the Department and made a part hereof and specifically described as follows:

TREATMENT FACILITIES:

Operation of an existing 0.030 MGD 3-Month Average Daily Flow (3MADF), Type III, extended aeration domestic wastewater treatment plant consisting of: three (3) flow equalization basins of 15,000 gallons total volume, seven (7) aeration basins each of 5,000 gallons volume, two (2) clarifiers of 10,400 gallons total volume and 156 square feet of total surface area, one (1) chlorine contact chamber of 1,250 gallons volume, two (2) digesters of 7,240 gallons total volume, and one (1) 17 sludge dewatering filter of 17 feet squared total surface area. Disinfection is achieved by using sodium hypochlorite solution. This plant is operated to provide secondary treatment with basic disinfection.

REUSE:

Land Application: An existing 0.030 MGD Annual Average Daily Flow (AADF) permitted capacity rapid infiltration basin system (R-001). R-001 consists of a two-cell percolation/evaporation pond of 87,120 square feet

"More Protection, Less Process"

Printed on recycled paper.

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of bottom surface area. R-001 also receives an industrial wastewater discharge permitted separately under FDEP Permit No. FLA016960. R-001 is located approximately at latitude 28° 11' 58" N, longitude 82° 47' 13" W.

IN ACCORDANCE WITH: The limitations, monitoring requirements and other conditions set forth in Pages 1 through 17 of this permit.

CITY:

Progress Energy Florida, Inc., Crystal River
Units 1, 2 & 3 Sewage Treatment Plant

MIT NUMBER: FLA118753

PERMITTEE:

Progress Energy Florida, Inc.

I. RECLAIMED WATER AND EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

A. Reuse and Land Application Systems

1. During the period beginning on the issuance date and lasting through the expiration date of this permit, the permittee is authorized to direct reclaimed water to Reuse System R-001. Such reclaimed water shall be limited and monitored by the permittee as specified below:

Monitoring Requirements										
Reclaimed Water Limitations										
Parameter	Units	Max/Min	Annual Average	Monthly Average	Weekly Average	Single Sample	Monitoring Frequency	Sample Type	Monitoring Location Site Number	Notes
Flow	MGD	Maximum	0.030	Report	-	-	5 Days/Week	Meter	FLW-01	See Cond.I.A.3
BOD, Carbonaceous 5 day, 20C	MG/L	Maximum	20.0	30.0	-	60.0	Monthly	Grab	EFA-01	
Solids, Total Suspended	MG/L	Maximum	20.0	30.0	-	60.0	Monthly	Grab	EFA-01	
pH	SU	Range	-	-	-	6.0 to 8.5	5 Days/Week	Grab	EFA-01	
Coliform, Fecal	#/100ML	Maximum	See Permit Condition I.A.4.				Monthly	Grab	EFA-01	
Total Residual Chlorine (For Disinfection)	MG/L	Minimum	-	-	-	0.5	5 Days/Week	Grab	EFA-01	See Cond.I.A.5
Nitrogen, Nitrate, Total (as N)	MG/L	Maximum	-	-	-	12.0	Monthly	Grab	EFA-01	

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2. Reclaimed water samples shall be taken at the monitoring site locations listed in Permit Condition I. A. 1. and as described below:

Monitoring Location	Description of Monitoring Location
EFA-01	Effluent sampling point after treatment and prior to discharge to the rapid infiltration basin.
FLW-01	Flow as measured by the in-line Rosemount Magmeter on the effluent pipe.

3. A flow meter shall be utilized to measure flow and calibrated at least annually. [62-601.200(17) and 600(6)]
4. The arithmetic mean of the monthly fecal coliform values collected during an annual period shall not exceed 200 per 100 mL of reclaimed water sample. The geometric mean of the fecal coliform values for a minimum of 10 samples of reclaimed water, each collected on a separate day during a period of 30 consecutive days (monthly), shall not exceed 200 per 100 mL of sample. No more than 10 percent of the samples collected (the 90th percentile value) during a period of 30 consecutive days shall exceed 400 fecal coliform values per 100 mL of sample. Any one sample shall not exceed 800 fecal coliform values per 100 mL of sample. Note: To report the 90th percentile value, list the fecal coliform values obtained during the month in ascending order. Report the value of the sample that corresponds to the 90th percentile (multiply the number of samples by 0.9). For example, for 30 samples, report the corresponding fecal coliform number for the 27th value of ascending order. [62-610.510 and 62-600.440(4)(c)]
5. A minimum of 0.5 mg/L total residual chlorine must be maintained for a minimum contact time of 15 minutes based on peak hourly flow. [62-610.510 and 62-600.440(4)(b)]

JILITY:

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B. Other Limitations and Monitoring and Reporting Requirements

1. During the period beginning on the issuance date and lasting through the expiration date of this permit, the treatment facility shall be limited and monitored by the permittee as specified below:

Limitations					Monitoring Requirements		
Parameter	Units	Max/Min	Annual Average	Monthly Average Report	Weekly Average	Single Sample	Monitoring Location Site Number
Flow	MGD	Maximum	.030 3MADF	Report	-	-	FLW-01
Percent Capacity, (TMADF/Permitted Capacity) x 100	PERCENT	Maximum	-	Report (Mo. Total)	-	-	FLW-01
BOD, Carbonaceous 5 day, 20C	MG/L	Maximum	-	Report	-	-	INF-01
Solids, Total Suspended	MG/L	Maximum	-	Report	-	-	INF-01
							Notes
							See Cond.I.B.3, 5
							See Cond.I.B.4
							See Cond.I.B.4

FACILITY: Progress Energy Florida, Inc., Crystal River
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2. Samples shall be taken at the monitoring site locations listed in Permit Condition I. B. 1 and as described below:

Monitoring Location	Description of Monitoring Location
FLW-01	Flow as measured by the in-line Rosemount Magmeter on the effluent pipe.
INF-01	Influent sampling point prior to treatment and ahead of the return activated sludge line.

3. The three-month average daily flow to the treatment plant shall not exceed 0.030 MGD.
4. Influent samples shall be collected so that they do not contain digester supernatant or return activated sludge, or any other plant process recycled waters. [62-601.500(4)]
5. A flow meter shall be utilized to measure flow and calibrated at least annually. [62-601.200(17) and .500(6)]
6. Parameters which must be monitored as a result of a surface water discharge shall be analyzed using a sufficiently sensitive method in accordance with 40 CFR Part 136. Parameters which must be monitored as a result of a ground water discharge (i.e., underground injection or land application system) shall be analyzed in accordance with Chapter 62-601, F.A.C. [62-620.610(18)]
7. The permittee shall provide safe access points for obtaining representative influent, reclaimed water, and effluent samples which are required by this permit. [62-601.500(5)]
8. Monitoring requirements under this permit are effective on the first day of the second month following permit issuance. Until such time, the permittee shall continue to monitor and report in accordance with previously effective permit requirements, if any. During the period of operation authorized by this permit, the permittee shall complete and submit to the Department Discharge Monitoring Reports (DMRs) in accordance with the frequencies specified by the REPORT type (i.e., monthly, toxicity, quarterly, semiannual, annual, etc.) indicated on the DMR forms attached to this permit. Monitoring results for each monitoring period shall be submitted in accordance with the associated DMR due dates below.

REPORT Type	Monitoring Period	Due Date
Monthly or Toxicity	first day of month -- last day of month	28 th day of following month
Quarterly	January 1 - March 31 April 1 - June 30 July 1 - September 30 October 1 - December 31	April 28 July 28 October 28 January 28
Semiannual	January 1 - June 30 July 1 - December 31	July 28 January 28
Annual	January 1 - December 31	January 28

DMRs shall be submitted for each required monitoring period including months of no discharge. The permittee shall make copies of the attached DMR form(s) and shall submit the completed DMR form(s) to the Department postmarked by the twenty-eighth (28th) of the month following the month of operation at the address specified below:

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Florida Department of Environmental Protection
Wastewater Compliance Evaluation Section, Mail Station 3551
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

9. Unless specified otherwise in this permit, all reports and other information required by this permit, including 24-hour notifications, shall be submitted to or reported to, as appropriate, the Department's Southwest District Office at the address specified below:

Southwest District Office
3804 Coconut Palm Drive
Tampa, Florida 33619-1352

Phone Number - 813-744-6100
FAX Number - 813-744-8198

All FAX copies shall be followed by original copies. All reports and other information shall be signed in accordance with the requirements of Rule 62-620.305, F.A.C. [62-620.305]

II. RESIDUALS MANAGEMENT REQUIREMENTS

1. The method of residuals use or disposal by this facility is transport to Central Process RMF or disposal in a Class I or II solid waste landfill. Reject radioactive contaminated sludge is to be dewatered and transported to the BFI-Carter's Valley Landfill, located at 2825 Carter Valley Landfill, Church Hill, TN 37642.
2. The permittee shall be responsible for proper treatment, management, use, and land application or disposal of its residuals. [62-640.300(5)]
3. The permittee shall not be held responsible for treatment, management, use, or land application violations that occur after its residuals have been accepted by a permitted residuals management facility with which the source facility has an agreement in accordance with Rule 62-640.880(1)(c), F.A.C., for further treatment, management, use or land application. [62-640.300(5)]
4. Disposal of residuals, septage, and other solids in a solid waste landfill, or disposal by placement on land for purposes other than soil conditioning or fertilization, such as at a monofill, surface impoundment, waste pile, or dedicated site, shall be in accordance with Chapter 62-701, F.A.C. [62-640.100(6)(k)3 & 4]
5. If the permittee intends to accept residuals from other facilities, a permit revision is required pursuant to Rule 62-640.880(2)(d), F.A.C. [62-640.880(2)(d)]
6. The permittee shall keep hauling records to track the transport of residuals between facilities. The hauling records shall contain the following information:

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Source Facility

1. Date and Time Shipped
2. Amount of Residuals Shipped
3. Degree of Treatment (if applicable)
4. Name and ID Number of Residuals Management Facility or Treatment Facility
5. Signature of Responsible Party at Source Facility
6. Signature of Hauler and Name of Hauling Firm

Residuals Management Facility or Treatment Facility

1. Date and Time Received
2. Amount of Residuals Received
3. Name and ID Number of Source Facility
4. Signature of Hauler
5. Signature of Responsible Party at Residuals Management Facility or Treatment Facility

These records shall be kept for five years and shall be made available for inspection upon request by the Department. A copy of the hauling records information maintained by the source facility shall be provided upon delivery of the residuals to the residuals management facility or treatment facility. The permittee shall report to the Department within 24 hours of discovery any discrepancy in the quantity of residuals leaving the source facility and arriving at the residuals management facility or treatment facility. [62-640.880(4)]

7. Storage of residuals or other solids at the permitted facility shall require prior written notification to the Department if the storage lasts longer than 30 days. [62-640.300(4)]

III. GROUND WATER REQUIREMENTS

Section III is not applicable to this facility.

IV. ADDITIONAL REUSE AND LAND APPLICATION REQUIREMENTS

Part IV Rapid Infiltration Basins (R-001)

1. All ground water quality criteria specified in Chapter 62-520, F.A.C., shall be met at the edge of the zone of discharge. The zone of discharge for this project shall extend horizontally 100 feet from the application site or to the facility's property line, whichever is less, and vertically to the base of the surficial aquifer. [62-520.200(23)] [62-522.400 and 62-522.410]
2. Advisory signs shall be posted around the site boundaries to designate the nature of the project area. [62-610.518]
3. The annual average hydraulic loading rate to the percolation/evaporation shall be limited to a maximum of 0.55 inches per day (as applied to the entire bottom area). [62-610.523(3)]
4. Rapid infiltration basins normally shall be loaded for 7 days and shall be rested for 7 days. Infiltration ponds, basins, or trenches shall be allowed to dry during the resting portion of the cycle. [62-610.523(4)]
5. Rapid infiltration basins shall be routinely maintained to control vegetation growth and to maintain percolation capability by scarification or removal of deposited solids. Basin bottoms shall be maintained to be level. [62-610.523(6) and (7)]
6. Routine aquatic weed control and regular maintenance of storage pond embankments and access areas are required. [62-610.514 and 62-610.414]

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7. Overflows from emergency discharge facilities on storage ponds or on infiltration ponds, basins, or trenches shall be reported as an abnormal event to the Department's Southwest District Office within 24 hours of an occurrence. The provisions of Rule 62-610.800(9), F.A.C., shall be met. [62-610.800(9)]

V. OPERATION AND MAINTENANCE REQUIREMENTS

1. During the period of operation authorized by this permit, the wastewater facilities shall be operated under the supervision of a(n) operator(s) certified in accordance with Chapter 62-602, F.A.C. In accordance with Chapter 62-699, F.A.C., this facility is a Category III, Class D facility and, at a minimum, operators with appropriate certification must be on the site as follows:

A Class C or higher operator for ½ hour/day for 5 days/week and a weekend visit. The lead operator must be a Class C operator, or higher.

[62-620.630(3)] [62-699.310] [62-610.462]

2. An operator meeting the lead operator classification level of the plant shall be available during all periods of plant operation. "Available" means able to be contacted as needed to initiate the appropriate action in a timely manner. Daily checks of the plant shall be performed by the permittee or his representative or agent 5 days per week. On those days when the facility is not staffed by a certified operator, the permittee shall ensure that Flow, pH, Total Residual Chlorine (For Disinfection) are monitored in accordance with Part I of this permit. [62-699.311(1)]
3. The application to renew this permit shall include an updated capacity analysis report prepared in accordance with Rule 62-600.405, F.A.C. [62-600.405(5)]
4. The application to renew this permit shall include a detailed operation and maintenance performance report prepared in accordance with Rule 62-600.735, F.A.C. [62-600.735(1)]
5. The permittee shall maintain the following records and make them available for inspection on the site of the permitted facility:
 - a. Records of all compliance monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation and a copy of the laboratory certification showing the certification number of the laboratory, for at least three years from the date the sample or measurement was taken;
 - b. Copies of all reports required by the permit for at least three years from the date the report was prepared;
 - c. Records of all data, including reports and documents, used to complete the application for the permit for at least three years from the date the application was filed;
 - d. Monitoring information, including a copy of the laboratory certification showing the laboratory certification number, related to the residuals use and disposal activities for the time period set forth in Chapter 62-640, F.A.C., for at least three years from the date of sampling or measurement;
 - e. A copy of the current permit;
 - f. A copy of the current operation and maintenance manual as required by Chapter 62-600, F.A.C.;
 - g. A copy of the facility record drawings;

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- h. Copies of the licenses of the current certified operators; and
- i. Copies of the logs and schedules showing plant operations and equipment maintenance for three years from the date of the logs or schedules. The logs shall, at a minimum, include identification of the plant; the signature and certification number of the operator(s) and the signature of the person(s) making any entries; date and time in and out; specific operation and maintenance activities; tests performed and samples taken; and major repairs made. The logs shall be maintained on-site in a location accessible to 24-hour inspection, protected from weather damage, and current to the last operation and maintenance performed.

[62-620.350]

VI. SCHEDULES

Section VI is not applicable to this facility.

VII. INDUSTRIAL PRETREATMENT PROGRAM REQUIREMENTS

This facility is not required to have a pretreatment program at this time. [62-625.500]

VIII. OTHER SPECIFIC CONDITIONS

1. If the permittee wishes to continue operation of this wastewater facility after the expiration date of this permit, the permittee shall submit an application for renewal, using Department Forms 62-620.910(1) and (2), no later than one-hundred and eighty days (180) prior to the expiration date of this permit. [62-620.410(5)]
2. Florida water quality criteria and standards shall not be violated as a result of any discharge or land application of reclaimed water or residuals from this facility. [62-610.850(1)(a) and (2)(a)]
3. In the event that the treatment facilities or equipment no longer function as intended, are no longer safe in terms of public health and safety, or odor, noise, aerosol drift, or lighting adversely affects neighboring developed areas at the levels prohibited by Rule 62-600.400(2)(a), F.A.C., corrective action (which may include additional maintenance or modifications of the permitted facilities) shall be taken by the permittee. Other corrective action may be required to ensure compliance with rules of the Department. Additionally, the treatment, management, use or land application of residuals shall not cause a violation of the odor prohibition in Rule 62-296.320(2), F.A.C. [62-600.410(8) and 62-640.400(6)]
4. The deliberate introduction of stormwater in any amount into collection/transmission systems designed solely for the introduction (and conveyance) of domestic/industrial wastewater; or the deliberate introduction of stormwater into collection/transmission systems designed for the introduction or conveyance of combinations of storm and domestic/industrial wastewater in amounts which may reduce the efficiency of pollutant removal by the treatment plant is prohibited, except as provided by Rule 62-610.472, F.A.C. [62-604.130(3)]
5. Collection/transmission system overflows shall be reported to the Department in accordance with Permit Condition IX. 20. [62-604.550] [62-620.610(20)]

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6. The operating authority of a collection/transmission system and the permittee of a treatment plant are prohibited from accepting connections of wastewater discharges which have not received necessary pretreatment or which contain materials or pollutants (other than normal domestic wastewater constituents):
 - a. Which may cause fire or explosion hazards; or
 - b. Which may cause excessive corrosion or other deterioration of wastewater facilities due to chemical action or pH levels; or
 - c. Which are solid or viscous and obstruct flow or otherwise interfere with wastewater facility operations or treatment; or
 - d. Which result in treatment plant discharges having temperatures above 40°C.

[62-604.130(4)]

7. The treatment facility, storage ponds, rapid infiltration basins, and/or infiltration trenches shall be enclosed with a fence or otherwise provided with features to discourage the entry of animals and unauthorized persons. *[62-610.518(1)] [and 62-600.400(2)(b)]*
8. Screenings and grit removed from the wastewater facilities shall be collected in suitable containers and hauled to a Department approved Class I landfill or to a landfill approved by the Department for receipt/disposal of screenings and grit. *[62-701.300(1)(a)]*
9. The permittee shall provide adequate notice to the Department of the following:
 - a. Any new introduction of pollutants into the facility from an industrial discharger which would be subject to Chapter 403, F.S., and the requirements of Chapter 62-620, F.A.C. if it were directly discharging those pollutants; and
 - b. Any substantial change in the volume or character of pollutants being introduced into that facility by a source which was identified in the permit application and known to be discharging at the time the permit was issued.

Adequate notice shall include information on the quality and quantity of effluent introduced into the facility and any anticipated impact of the change on the quantity or quality of effluent or reclaimed water to be discharged from the facility.

[62-620.625(2)]

IX. GENERAL CONDITIONS

1. The terms, conditions, requirements, limitations and restrictions set forth in this permit are binding and enforceable pursuant to Chapter 403, Florida Statutes. Any permit noncompliance constitutes a violation of Chapter 403, Florida Statutes, and is grounds for enforcement action, permit termination, permit revocation and reissuance, or permit revision. *[62-620.610(1)]*
2. This permit is valid only for the specific processes and operations applied for and indicated in the approved drawings or exhibits. Any unauthorized deviations from the approved drawings, exhibits, specifications or conditions of this permit constitutes grounds for revocation and enforcement action by the Department. *[62-620.610(2)]*

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PERMITTEE: Progress Energy Florida, Inc.

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3. As provided in Subsection 403.087(6), F.S., the issuance of this permit does not convey any vested rights or any exclusive privileges. Neither does it authorize any injury to public or private property or any invasion of personal rights, nor authorize any infringement of federal, state, or local laws or regulations. This permit is not a waiver of or approval of any other Department permit or authorization that may be required for other aspects of the total project which are not addressed in this permit. [62-620.610(3)]
4. This permit conveys no title to land or water, does not constitute state recognition or acknowledgment of title, and does not constitute authority for the use of submerged lands unless herein provided and the necessary title or leasehold interests have been obtained from the State. Only the Trustees of the Internal Improvement Trust Fund may express State opinion as to title. [62-620.610(4)]
5. This permit does not relieve the permittee from liability and penalties for harm or injury to human health or welfare, animal or plant life, or property caused by the construction or operation of this permitted source; nor does it allow the permittee to cause pollution in contravention of Florida Statutes and Department rules, unless specifically authorized by an order from the Department. The permittee shall take all reasonable steps to minimize or prevent any discharge, reuse of reclaimed water, or residuals use or disposal in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment. It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit. [62-620.610(5)]
6. If the permittee wishes to continue an activity regulated by this permit after its expiration date, the permittee shall apply for and obtain a new permit. [62-620.610(6)]
7. The permittee shall at all times properly operate and maintain the facility and systems of treatment and control, and related appurtenances, that are installed and used by the permittee to achieve compliance with the conditions of this permit. This provision includes the operation of backup or auxiliary facilities or similar systems when necessary to maintain or achieve compliance with the conditions of the permit. [62-620.610(7)]
8. This permit may be modified, revoked and reissued, or terminated for cause. The filing of a request by the permittee for a permit revision, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance does not stay any permit condition. [62-620.610(8)]
9. The permittee, by accepting this permit, specifically agrees to allow authorized Department personnel, including an authorized representative of the Department and authorized EPA personnel, when applicable, upon presentation of credentials or other documents as may be required by law, and at reasonable times, depending upon the nature of the concern being investigated, to:
 - a. Enter upon the permittee's premises where a regulated facility, system, or activity is located or conducted, or where records shall be kept under the conditions of this permit;
 - b. Have access to and copy any records that shall be kept under the conditions of this permit;
 - c. Inspect the facilities, equipment, practices, or operations regulated or required under this permit; and
 - d. Sample or monitor any substances or parameters at any location necessary to assure compliance with this permit or Department rules.

[62-620.610(9)]

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Units 1, 2 & 3 Sewage Treatment Plant
PERMITTEE: Progress Energy Florida, Inc.

PERMIT NUMBER: FLA118753

10. In accepting this permit, the permittee understands and agrees that all records, notes, monitoring data, and other information relating to the construction or operation of this permitted source which are submitted to the Department may be used by the Department as evidence in any enforcement case involving the permitted source arising under the Florida Statutes or Department rules, except as such use is proscribed by Section 403.111, Florida Statutes, or Rule 62-620.302, Florida Administrative Code. Such evidence shall only be used to the extent that it is consistent with the Florida Rules of Civil Procedure and applicable evidentiary rules. [62-620.610(10)]
11. When requested by the Department, the permittee shall within a reasonable time provide any information required by law which is needed to determine whether there is cause for revising, revoking and reissuing, or terminating this permit, or to determine compliance with the permit. The permittee shall also provide to the Department upon request copies of records required by this permit to be kept. If the permittee becomes aware of relevant facts that were not submitted or were incorrect in the permit application or in any report to the Department, such facts or information shall be promptly submitted or corrections promptly reported to the Department. [62-620.610(11)]
12. Unless specifically stated otherwise in Department rules, the permittee, in accepting this permit, agrees to comply with changes in Department rules and Florida Statutes after a reasonable time for compliance; provided, however, the permittee does not waive any other rights granted by Florida Statutes or Department rules. A reasonable time for compliance with a new or amended surface water quality standard, other than those standards addressed in Rule 62-302.500, F.A.C., shall include a reasonable time to obtain or be denied a mixing zone for the new or amended standard. [62-620.610(12)]
13. The permittee, in accepting this permit, agrees to pay the applicable regulatory program and surveillance fee in accordance with Rule 62-4.052, F.A.C. [62-620.610(13)]
14. This permit is transferable only upon Department approval in accordance with Rule 62-620.340, F.A.C. The permittee shall be liable for any noncompliance of the permitted activity until the transfer is approved by the Department. [62-620.610(14)]
15. The permittee shall give the Department written notice at least 60 days before inactivation or abandonment of a wastewater facility and shall specify what steps will be taken to safeguard public health and safety during and following inactivation or abandonment. [62-620.610(15)]
16. The permittee shall apply for a revision to the Department permit in accordance with Rules 62-620.300 and the Department of Environmental Protection Guide to Wastewater Permitting at least 90 days before construction of any planned substantial modifications to the permitted facility is to commence or with Rule 62-620.325(2) for minor modifications to the permitted facility. A revised permit shall be obtained before construction begins except as provided in Rule 62-620.300, F.A.C. [62-620.610(16)]
17. The permittee shall give advance notice to the Department of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements. The permittee shall be responsible for any and all damages which may result from the changes and may be subject to enforcement action by the Department for penalties or revocation of this permit. The notice shall include the following information:
 - a. A description of the anticipated noncompliance;
 - b. The period of the anticipated noncompliance, including dates and times; and

FACILITY: Progress Energy Florida, Inc., Crystal River
Units 1, 2 & 3 Sewage Treatment Plant
PERMITTEE: Progress Energy Florida, Inc.

PERMIT NUMBER: FLA118753

- c. Steps being taken to prevent future occurrence of the noncompliance.

[62-620.610(17)]

- 18. Sampling and monitoring data shall be collected and analyzed in accordance with Rule 62-4.246, Chapters 62-160 and 62-601, F.A.C., and 40 CFR 136, as appropriate.
 - a. Monitoring results shall be reported at the intervals specified elsewhere in this permit and shall be reported on a Discharge Monitoring Report (DMR), DEP Form 62-620.910(10).
 - b. If the permittee monitors any contaminant more frequently than required by the permit, using Department approved test procedures, the results of this monitoring shall be included in the calculation and reporting of the data submitted in the DMR.
 - c. Calculations for all limitations which require averaging of measurements shall use an arithmetic mean unless otherwise specified in this permit.
 - d. Any laboratory test required by this permit shall be performed by a laboratory that has been certified by the Department of Health (DOH) under Chapter 64E-1, F.A.C., where such certification is required by Rule 62-160.300, F.A.C. The laboratory must be certified for any specific method and analyte combination that is used to comply with this permit. For domestic wastewater facilities, the on-site test procedures specified in Rule 62-160.300(4), F.A.C., shall be performed by a laboratory certified test for those parameters or under the direction of an operator certified under Chapter 62-602, F.A.C.
 - e. Field activities including on-site tests and sample collection, whether performed by a laboratory or a certified operator, must follow the applicable procedures described in DEP-SOP-001/01 (January 2002). Alternate field procedures and laboratory methods may be used where they have been approved according to the requirements of Rules 62-160.220, and 62-160.330, F.A.C.

[62-620.610(18)]

- 19. Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule detailed elsewhere in this permit shall be submitted no later than 14 days following each schedule date. [62-620.610(19)]
- 20. The permittee shall report to the Department any noncompliance which may endanger health or the environment. Any information shall be provided orally within 24 hours from the time the permittee becomes aware of the circumstances. A written submission shall also be provided within five days of the time the permittee becomes aware of the circumstances. The written submission shall contain: a description of the noncompliance and its cause; the period of noncompliance including exact dates and time, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent recurrence of the noncompliance.
 - a. The following shall be included as information which must be reported within 24 hours under this condition:
 - 1. Any unanticipated bypass which causes any reclaimed water or effluent to exceed any permit limitation or results in an unpermitted discharge,
 - 2. Any upset which causes any reclaimed water or the effluent to exceed any limitation in the permit,

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3. Violation of a maximum daily discharge limitation for any of the pollutants specifically listed in the permit for such notice, and
 4. Any unauthorized discharge to surface or ground waters.
- b. Oral reports as required by this subsection shall be provided as follows:
1. For unauthorized releases or spills of treated or untreated wastewater reported pursuant to subparagraph a.4 that are in excess of 1,000 gallons per incident, or where information indicates that public health or the environment will be endangered, oral reports shall be provided to the Department by calling the **STATE WARNING POINT TOLL FREE NUMBER (800) 320-0519**, as soon as practical, but no later than 24 hours from the time the permittee becomes aware of the discharge. The permittee, to the extent known, shall provide the following information to the State Warning Point:
 - a) Name, address, and telephone number of person reporting;
 - b) Name, address, and telephone number of permittee or responsible person for the discharge;
 - c) Date and time of the discharge and status of discharge (ongoing or ceased);
 - d) Characteristics of the wastewater spilled or released (untreated or treated, industrial or domestic wastewater);
 - e) Estimated amount of the discharge;
 - f) Location or address of the discharge;
 - g) Source and cause of the discharge;
 - h) Whether the discharge was contained on-site, and cleanup actions taken to date;
 - i) Description of area affected by the discharge, including name of water body affected, if any; and
 - j) Other persons or agencies contacted.
 2. Oral reports, not otherwise required to be provided pursuant to subparagraph b.1 above, shall be provided to the Department within 24 hours from the time the permittee becomes aware of the circumstances.
- c. If the oral report has been received within 24 hours, the noncompliance has been corrected, and the noncompliance did not endanger health or the environment, the Department shall waive the written report.

[62-620.610(20)]

21. The permittee shall report all instances of noncompliance not reported under Permit Conditions IX. 18. and 19. of this permit at the time monitoring reports are submitted. This report shall contain the same information required by Permit Condition IX. 20 of this permit. [62-620.610(21)]
22. Bypass Provisions.
 - a. Bypass is prohibited, and the Department may take enforcement action against a permittee for bypass, unless the permittee affirmatively demonstrates that:

FACILITY: Progress Energy Florida, Inc., Crystal River
Units 1, 2 & 3 Sewage Treatment Plant
PERMITTEE: Progress Energy Florida, Inc.

PERMIT NUMBER: FLA118753.

1. Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage; and
 2. There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass which occurred during normal periods of equipment downtime or preventive maintenance; and
 3. The permittee submitted notices as required under Permit Condition IX. 22. b. of this permit.
- b. If the permittee knows in advance of the need for a bypass, it shall submit prior notice to the Department, if possible at least 10 days before the date of the bypass. The permittee shall submit notice of an unanticipated bypass within 24 hours of learning about the bypass as required in Permit Condition IX. 20. of this permit. A notice shall include a description of the bypass and its cause; the period of the bypass, including exact dates and times; if the bypass has not been corrected, the anticipated time it is expected to continue; and the steps taken or planned to reduce, eliminate, and prevent recurrence of the bypass.
 - c. The Department shall approve an anticipated bypass, after considering its adverse effect, if the permittee demonstrates that it will meet the three conditions listed in Permit Condition IX. 22. a. 1. through 3. of this permit.
 - d. A permittee may allow any bypass to occur which does not cause reclaimed water or effluent limitations to be exceeded if it is for essential maintenance to assure efficient operation. These bypasses are not subject to the provisions of Permit Condition IX. 22. a. through c. of this permit.

[62-620.610(22)]

23. Upset Provisions

- a. A permittee who wishes to establish the affirmative defense of upset shall demonstrate, through properly signed contemporaneous operating logs, or other relevant evidence that:
 1. An upset occurred and that the permittee can identify the cause(s) of the upset;
 2. The permitted facility was at the time being properly operated;
 3. The permittee submitted notice of the upset as required in Permit Condition IX. 20. of this permit; and
 4. The permittee complied with any remedial measures required under Permit Condition IX. 5. of this permit.
- b. In any enforcement proceeding, the permittee seeking to establish the occurrence of an upset has the burden of proof.
- c. Before an enforcement proceeding is instituted, no representation made during the Department review of a claim that noncompliance was caused by an upset is final agency action subject to judicial review.

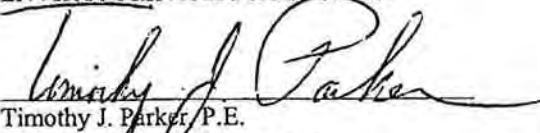
[62-620.610(23)]

• FACILITY: Progress Energy Florida, Inc., Crystal River
Units 1, 2 & 3 Sewage Treatment Plant
PERMITTEE: Progress Energy Florida, Inc.

PERMIT NUMBER: FLA118753

Executed in Tampa, Florida.

STATE OF FLORIDA DEPARTMENT OF
ENVIRONMENTAL PROTECTION


Timothy J. Parker, P.E.
Water Facilities Administrator
Southwest District

DEPARTMENT OF ENVIRONMENTAL PROTECTION DISCHARGE MONITORING REPORT - PART A

When Completed mail this report to: Department of Environmental Protection, Wastewater Compliance Evaluation Section, MS 3551, 2600 Blair Stone Road, Tallahassee, FL 32399-2400

PERMITTEE NAME: Progress Energy Florida, Inc.
MAILING ADDRESS: 15760 Powerline Street, MAC CN77
Crystal River, FL 34428-6708

PERMIT NUMBER FLA118753

LIMIT: Final
CLASS SIZE: N/A
REPORT: Monthly
GROUP: Domestic

FACILITY: Progress Energy Florida, Inc., Crystal River Units 1, 2 & 3
Sewage Treatment Plant

LOCATION: 15760 Powerline Street
Crystal River, FL 34428-6708
COUNTY: Citrus

MONITORING GROUP NUMBER: R-001
MONITORING GROUP DESC: Perc ponds (R-001), including Influent

NO DISCHARGE FROM SITE: ☐
MONITORING PERIOD From: To:

Parameter	Quantity or Loading	Units	Quality or Concentration	Units	No. Ex.	Frequency of Analysis	Sample Type
Flow, To perc pond	Sample Measurement						
PARM Code 50050 Y	Permit Requirement	0.030 (An.Avg.)		MGD		5 Days/Week	Meter
Flow	Sample Measurement						
PARM Code 50050 1	Permit Requirement	Report (Mo.Avg.)		MGD		5 Days/Week	Meter
BOD, Carbonaceous 5 day, 20C	Sample Measurement						
PARM Code 80082 Y	Permit Requirement	20.0 (An.Avg.)				Monthly	Grab
BOD, Carbonaceous 5 day, 20C	Sample Measurement						
PARM Code 80082 A	Permit Requirement	30.0 (Mo.Avg.)		MG/L		Monthly	Grab
Solids, Total Suspended	Sample Measurement						
PARM Code 00530 Y	Permit Requirement	20.0 (An.Avg.)		MG/L		Monthly	Grab
Solids, Total Suspended	Sample Measurement						
PARM Code 00530 A	Permit Requirement	30.0 (Mo.Avg.)		MG/L		Monthly	Grab

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

NAME/TITLE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT	SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT	TELEPHONE NO	DATE (YY/MM/DD)

COMMENT AND EXPLANATION OF ANY VIOLATIONS (Reference all attachments here):

DISCHARGE MONITORING 'ORT - PART A (Continued)

FACILITY: Progress Energy Florida, Inc., Crystal River Units 1, 2 & 3 Sewage Treatment Plant
 PERMIT NUMBER: FLA118753
 MONITORING GROUP NUMBER: R-001
 MONITORING PERIOD From: To

Parameter	Quantity or Loading	Units	Quality or Concentration	Units	No. Ex.	Frequency of Analysis	Sample Type
pH	Sample Measurement						
PARM Code 00400 A	Permit Requirement		6.0 (Min.)		SU	5 Days/Week	Grab
Mon. Site No. EFA-01	Sample Measurement						
Coliform, Fecal	Permit Requirement		200 (An. Avg.)		#/100ML	Monthly	Grab
PARM Code 74055 Y	Sample Measurement						
Mon. Site No. EFA-01	Permit Requirement		Report (Mo. Geo. Mean)		#/100ML	Monthly	Grab
Coliform, Fecal	Sample Measurement						
PARM Code 74055 A	Permit Requirement		0.5 (Min.)		MGL	5 Days/Week	Grab
Mon. Site No. EFA-01	Sample Measurement						
Total Residual Chlorine (For Disinfection)	Permit Requirement						
PARM Code 50060 A	Sample Measurement						
Mon. Site No. EFA-01	Permit Requirement						
Nitrogen, Nitrate, Total (as N)	Sample Measurement						
PARM Code 00620 A	Permit Requirement						
Mon. Site No. EFA-01	Sample Measurement						
Flow, To plant	Permit Requirement						
PARM Code 50050 Q	Permit Requirement						
Mon. Site No. FLW-01	Permit Requirement						
Percent Capacity, (TMADP/Permitted Capacity) x 100	Permit Requirement						
PARM Code 00180 I	Permit Requirement						
Mon. Site No. FLW-01	Permit Requirement						
BOD, Carbonaceous 5 day, 20C	Permit Requirement						
PARM Code 80082 G	Permit Requirement						
Mon. Site No. INF-01	Permit Requirement						
Solids, Total Suspended	Permit Requirement						
PARM Code 00530 G	Permit Requirement						
Mon. Site No. INF-01	Permit Requirement						

DAILY SAMPLE RESULTS - PART B

Permit Number: FLA118753

Facility: Progress Energy Florida, Inc.. Crystal River Units 1, 2 & 3
Sewage Treatment Plant

Monitoring Period From: _____ To: _____

	CBOD5 (MG/L)	Fecal Coliform Bacteria (#/100ML)	Nitrogen, Nitrate, Total (as N) (MG/L)	pH (SU)	TSS (MG/L)	TRC (For Disinfect.) (MG/L)	Flow (MGD)	Percent Capacity, (TMADF/Permitted Capacity) x 100 (PERCENT)	CBOD5 (MG/L)	TSS (MG/L)	
Code	80082	74055	00620	00400	00530	50060	50050	00180	80082	00530	
Mon. Site	EFA-01	EFA-01	EFA-01	EFA-01	EFA-01	EFA-01	FLW-01	FLW-01	INF-01	INF-01	
1											
2											
3											
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27											
28											
29											
30											
31											
Total											
Mo. Avg.											

PLANT STAFFING:

Day Shift Operator	Class: _____	Certificate No: _____	Name: _____
ng Shift Operator	Class: _____	Certificate No: _____	Name: _____
Night Shift Operator	Class: _____	Certificate No: _____	Name: _____
Lead Operator	Class: _____	Certificate No: _____	Name: _____

INSTRUCTIONS FOR COMPLETING THE W WATER DISCHARGE MONITORING REPORT

Read these instructions as well as the SUPPLEMENTAL INSTRUCTIONS FOR COMPLETING THE WASTEWATER DISCHARGE MONITORING REPORT before completing the DMR. Hard copies and/or electronic copies of the required parts of the DMR were provided with the permit. All required information shall be completed in full and typed or printed in ink. A signed, original DMR shall be mailed to the address printed on the DMR by the 28th of the month following the monitoring period. The DMR shall not be submitted before the end of the monitoring period.

The DMR consists of three parts--A, B, and D--all of which may or may not be applicable to every facility. Facilities may have one or more Part A's for reporting effluent or reclaimed water data. All domestic wastewater facilities will have a Part B for reporting daily sample results. Part D is used for reporting ground water monitoring well data.

When results are not available, the following codes should be used on parts A and D of the DMR and an explanation provided where appropriate. Note: Codes used on Part B for raw data are different.

CODE	DESCRIPTION/INSTRUCTIONS	CODE	DESCRIPTION/INSTRUCTIONS
ANC	Analysis not conducted.	NOD	No discharge from/to site.
DRY	Dry Well	OPS	Operations were shutdown so no sample could be taken.
FLD	Flood disaster.	OTH	Other. Please enter an explanation of why monitoring data were not available.
IFS	Insufficient flow for sampling.	SEF	Sampling equipment failure.
LS	Lost sample.		
MNR	Monitoring not required this period.		

When reporting analytical results that fall below a laboratory's reported method detection limits or practical quantification limits, the following instructions should be used:

1. Results greater than or equal to the PQL shall be reported as the measured quantity.
2. Results less than the PQL and greater than or equal to the MDL shall be reported as the laboratory's MDL value. These values shall be deemed equal to the MDL when necessary to calculate an average for that parameter and when determining compliance with permit limits.
3. Results less than the MDL shall be reported by entering a less than sign ("<") followed by the laboratory's MDL value, e.g. <0.001. A value of one-half the MDL or one-half the effluent limit, whichever is lower, shall be used for that sample when necessary to calculate an average for that parameter. Values less than the MDL are considered to demonstrate compliance with an effluent limitation.

PART A -DISCHARGE MONITORING REPORT (DMR)

Part A of the DMR is comprised of one or more sections, each having its own header information. Facility information is preprinted in the header as well as the monitoring group number, whether the limits and monitoring requirements are interim or final, and the required submittal frequency (e.g. monthly, annually, quarterly, etc.). Submit Part A based on the required reporting frequency in the header and the instructions shown in the permit. The following should be completed by the permittee or authorized representative:

No Discharge From Site: Check this box if no discharge occurs and, as a result, there are no data or codes to be entered for all of the parameters on the DMR for the entire monitoring group number; however, if the monitoring group includes other monitoring locations (e.g., influent sampling), the "NOD" code should be used to individually denote those parameters for which there was no discharge.

Monitoring Period: Enter the month, day, and year for the first and last day of the monitoring period (i.e. the month, the quarter, the year, etc.) during which the data on this report were collected and analyzed.

Sample Measurement: Before filling in sample measurements in the table, check to see that the data collected correspond to the limit indicated on the DMR (i.e. interim or final) and that the data correspond to the monitoring group number in the header. Enter the data or calculated results for each parameter on this row in the non-shaded area above the limit. Be sure the result being entered corresponds to the appropriate statistical base code (e.g. annual average, monthly average, single sample maximum, etc.) and units.

No. Ex.: Enter the number of sample measurements during the monitoring period that exceeded the permit limit for each parameter in the non-shaded area. If none, enter zero.

Frequency of Analysis: The shaded areas in this column contain the minimum number of times the measurement is required to be made according to the permit. Enter the actual number of times the measurement was made in the space above the shaded area.

Sample Type: The shaded areas in this column contain the type of sample (e.g. grab, composite, continuous) required by the permit. Enter the actual sample type that was taken in the space above the shaded area.

Signature: This report must be signed in accordance with Rule 62-620.305, F.A.C. Type or print the name and title of the signing official. Include the telephone number where the official may be reached in the event there are questions concerning this report. Enter the date when the report is signed.

Comment and Explanation of Any Violations: Use this area to explain any exceedances, any upset or by-pass events, or other items which require explanation. If more space is needed, reference all attachments in this area.

PART B - DA AMPLÉ RESULTS

Monitoring Period: Enter the month, day, and year for the first and last day of the monitoring period (i.e. the month, the quarter, the year, etc.) during which the data on this report were collected and analyzed.

Daily Monitoring Results: Transfer all analytical data from your facility's laboratory or a contract laboratory's data sheets for all day(s) that samples were collected. Record the data in the units indicated. Table 1 in Chapter 62-160, F.A.C., contains a complete list of all the data qualifier codes that your laboratory may use when reporting analytical results. However, when transferring numerical results onto Part B of the DMR, only the following data qualifier codes should be used and an explanation provided where appropriate.

CODE	DESCRIPTION/INSTRUCTIONS
<	The compound was analyzed for but not detected.
A	Value reported is the mean (average) of two or more determinations.
J	Estimated value, value not accurate.
Q	Sample held beyond the actual holding time.
Y	Laboratory analysis was from an unpreserved or improperly preserved sample.

Add the results to get the Total and divide by the number of days in the month to get the Monthly Average.

Plant Staffing: List the name, certificate number, and class of all state certified operators operating the facility during the monitoring period. Use additional sheets as necessary.

PART D - GROUND WATER MONITORING REPORT

Monitoring Period: Enter the month, day, and year for the first and last day of the monitoring period (i.e. the month, the quarter, the year, etc.) during which the data on this report were collected and analyzed.

Date Sample Obtained: Enter the date the sample was taken. Also, check whether or not the well was purged before sampling.

Time Sample Obtained: Enter the time the sample was taken.

Sample Measurement: Record the results of the analysis. If the result was below the minimum detection limit, indicate that.

Detection Limits: Record the detection limits of the analytical methods used.

Analysis Method: Indicate the analytical method used. Record the method number from Chapter 62-160 or Chapter 62-601, F.A.C., or from other sources.

Sampling Equipment Used: Indicate the procedure used to collect the sample (e.g. airlift, bucket/bailer, centrifugal pump, etc.)

Samples Filtered: Indicate whether the sample obtained was filtered by laboratory (L), filtered in field (F), or unfiltered (N).

Signature: This report must be signed in accordance with Rule 62-620.305, F.A.C. Type or print the name and title of the signing official. Include the telephone number where the official may be reached in the event there are questions concerning this report. Enter the date when the report is signed.

Comments and Explanation: Use this space to make any comments on or explanations of results that are unexpected. If more space is needed, reference all attachments in this area.

SPECIAL INSTRUCTIONS FOR LIMITED WET WEATHER DISCHARGES

Flow (Limited Wet Weather Discharge): Enter the measured average flow rate during the period of discharge or divide gallons discharged by duration of discharge (converted into days). Record in million gallons per day (MGD).

Flow (Upstream): Enter the average flow rate in the receiving stream upstream from the point of discharge for the period of discharge. The average flow rate can be calculated based on two measurements; one made at the start and one made at the end of the discharge period. Measurements are to be made at the upstream gauging station described in the permit.

Actual Stream Dilution Ratio: To calculate the Actual Stream Dilution Ratio, divide the average upstream flow rate by the average discharge flow rate. Enter the Actual Stream Dilution Ratio accurate to the nearest 0.1.

No. of Days the SDF > Stream Dilution Ratio: For each day of discharge, compare the minimum Stream Dilution Factor (SDF) from the permit to the calculated Stream Dilution Ratio. On Part B of the DMR, enter an asterisk (*) if the SDF is greater than the Stream Dilution Ratio on any day of discharge. On Part A of the DMR, add up the days with an "x" and record the total number of days the Stream Dilution Factor was greater than the Stream Dilution Ratio.

CBOD₅: Enter the average CBOD₅ of the reclaimed water discharged during the period shown in duration of discharge.

TKN: Enter the average TKN of the reclaimed water discharged during the period shown in duration of discharge.

Actual Rainfall: Enter the actual rainfall for each day on Part B. Enter the actual cumulative rainfall to date for this calendar year and the actual total monthly rainfall on Part A. The cumulative rainfall to date for this calendar year is the total amount of rain, in inches, that has been recorded since January 1 of the current year through the month for which this DMR contains data.

Rainfall During Average Rainfall Year: On Part A, enter the total monthly rainfall during the average rainfall year and the cumulative rainfall for the average rainfall year. The cumulative rainfall for the average rainfall year is the amount of rain, in inches, which fell during the average rainfall year from January through the month for which this DMR contains data.

No. of Days LWWD Activated During Calendar Year: Enter the cumulative number of days that the limited wet weather discharge was activated since January 1 of the current year.

Reason for Discharge: Attach to the DMR a brief explanation of the factors contributing to the need to activate the limited wet weather discharge.



Jeb Bush
Governor

Department of Environmental Protection

Southwest District
3804 Coconut Palm Drive
Tampa, Florida 33619

Colleen M. Castille
Secretary

In the Matter of an
Application for Permit by:

April 29, 2004

Progress Energy Florida, Inc.
Mr. Michael Olive
Plant Manager
15760 Powerline Street
Crystal River, FL 34428

PA File No. FLA118753-003-DW3P
Citrus County
Progress Energy Florida, Inc. - Crystal River
Units 1, 2 & 3 Sewage Treatment Plant

NOTICE OF PERMIT ISSUANCE

Enclosed is Permit Number FLA118753 to operate a domestic wastewater treatment facility issued pursuant to Chapter 403, F.S., Chapters 62-4, 62-600, 62-601, 62-602, 62-610, 62-620, 62-640, and 62-699, F.A.C.

The Department's proposed agency action shall become final unless a timely petition for an administrative hearing is filed under Sections 120.569 and 120.57, Florida Statutes, within fourteen days of receipt of notice. The procedures for petitioning for a hearing are set forth below.

A person whose substantial interests are affected by the Department's proposed permitting decision may petition for an administrative proceeding (hearing) under Sections 120.569 and 120.57, Florida Statutes. The petition must contain the information set forth below and must be filed (received by the clerk) in the Office of General Counsel of the Department at 3900 Commonwealth Boulevard, Mail Station 35, Tallahassee, Florida 32399-3000.

Under Rule 62-110.106(4), Florida Administrative Code, a person may request enlargement of the time for filing a petition for an administrative hearing. The request must be filed (received by the clerk) in the Office of General Counsel before the end of the time period for filing a petition for an administrative hearing.

Petitions by the applicant or any of the persons listed below must be filed within fourteen days of receipt of this written notice. Petitions filed by any persons other than those entitled to written notice under Section 120.60(3), Florida Statutes, must be filed within fourteen days of publication of the notice or within fourteen days of receipt of the written notice, whichever occurs first. Under Section 120.60(3), Florida Statutes, however, any person who has asked the Department for notice of agency action may file a petition within fourteen days of receipt of such notice, regardless of the date of publication.

The petitioner shall mail a copy of the petition to the applicant at the address indicated above at the time of filing. The failure of any person to file a petition within fourteen days of receipt of notice shall

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constitute a waiver of that person's right to request an administrative determination (hearing) under Sections 120.569 and 120.57, Florida Statutes. Any subsequent intervention (in a proceeding initiated by another party) will be only at the discretion of the presiding officer upon the filing of a motion in compliance with Rule 28-106.205, Florida Administrative Code.

A petition that disputes the material facts on which the Department's action is based must contain the following information:

- (a) The name, address, and telephone number of each petitioner; the name, address, and telephone number of the petitioner's representative, if any; the Department permit identification number and the county in which the subject matter or activity is located;
- (b) A statement of how and when each petitioner received notice of the Department action;
- (c) A statement of how each petitioner's substantial interests are affected by the Department action;
- (d) A statement of all disputed issues of material fact. If there are none, the petition must so indicate;
- (e) A statement of facts that the petitioner contends warrant reversal or modification of the Department action;
- (f) A concise statement of the ultimate facts alleged, as well as the rules and statutes which entitle the petitioner to relief; and
- (g) A statement of the relief sought by the petitioner, stating precisely the action that the petitioner wants the Department to take.

Because the administrative hearing process is designed to formulate final agency action, the filing of a petition means that the Department's final action may be different from the position taken by it in this notice. Persons whose substantial interests will be affected by any such final decision of the Department have the right to petition to become a party to the proceeding, in accordance with the requirements set forth above.

Mediation under Section 120.573, Florida Statutes, is not available for this proceeding.

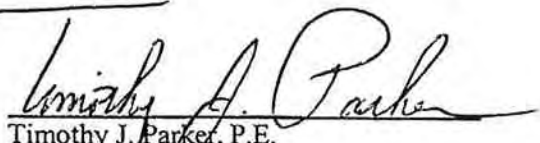
This permit action is final and effective on the date filed with the clerk of the Department unless a petition is filed in accordance with the above. Upon the timely filing of a petition this permit will not be effective until further order of the Department.

Any party to the permit has the right to seek judicial review of the permit action under Section 120.68, Florida Statutes, by the filing of a notice of appeal under Rules 9.110 and 9.190, Florida Rules of Appellate Procedure, with the clerk of the Department in the Office of General Counsel, Mail Station 35, 3900 Commonwealth Boulevard, Tallahassee, Florida, 32399-3000; and by filing a copy of the notice of appeal accompanied by the applicable filing fees with the appropriate district court of appeal. The notice of appeal must be filed within 30 days from the date when this permit action is filed with the clerk of the Department.

Progress Energy Florida, Inc.
Progress Energy Florida, Inc. – Crystal River Units 1, 2 & 3 Sewage Treatment Plant
PA File No. FLA118753-003-DW3P

Executed in Tampa, FL

STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL PROTECTION


Timothy J. Parker, P.E.
Water Facilities Administrator
Southwest District
3804 Coconut Palm Drive
Tampa, FL 33619-1352

CERTIFICATE OF SERVICE

The undersigned duly designated deputy agency clerk hereby certifies that this NOTICE OF PERMIT ISSUANCE and all copies were mailed before the close of business on 4/29/04 to the listed persons.

FILING AND ACKNOWLEDGMENT

FILED, on this date, pursuant to s. 120.52, Florida Statutes, with the designated Department Clerk, receipt of which is hereby acknowledged.

 April 29, 2004
(Clerk) (Date)

Copies Furnished To:

Shane R. Fischer, P.E., Golder Associates, Inc.
Douglas Harmon, Operator
FDEP – Joe Squitieri, Environmental Specialist

APPENDIX 10.4.3

CRYSTAL RIVER UNITS 1, 2, AND 3 IWWP #FLA01690



Florida Department of Environmental Protection

Southwest District
13051 N. Telecom Parkway
Temple Terrace, FL 33637-0926

Charlie Crist
Governor

Jeff Kottkamp
Lt. Governor

Michael W. Sole
Secretary - Designee

STATE OF FLORIDA INDUSTRIAL WASTEWATER FACILITY PERMIT

PERMITTEE:

Progress Energy Florida, Inc.
P.O. Box 14042 MAC PEF-903
St. Petersburg, FL 33701-5501

PERMIT NUMBER:

FLA016960

PA FILE NUMBER:

FLA016960-002-IW1N

ISSUANCE DATE:**EXPIRATION DATE:****RESPONSIBLE AUTHORITY:**

Mr. Bernie L. Cumble
Plant Manager

FACILITY:

Crystal River Energy Complex
15760 West Powerline Street
Crystal River, FL 34428
Citrus County

Latitude: 28° 57' 27" N Longitude: 82° 42' 36" W

This permit is issued under the provisions of Chapter 403, Florida Statutes (F.S.) and applicable rules of the Florida Administrative Code (F.A.C.). This permit is accompanied by an Administrative Order pursuant to Paragraphs 403.088(2)(e) and (f), Florida Statutes. Compliance with Administrative Order AO-114-SW is a specific requirement of this permit. The above named permittee is hereby authorized to operate the facilities shown on the application and other documents attached hereto or on file with the Department and made a part hereof and specifically described as follows:

The Crystal River Energy Complex is a steam electric power generation facility consisting of five units. Units 1, 2, 4, and 5 are coal-fired while Unit #3 is a nuclear-powered unit. Units 4 and 5 are certified pursuant to Power Plant Siting Act.

WASTEWATER TREATMENT:

The neutralized wastes are discharged into a percolation pond system consisting of three ponds. Ponds #1 and #2 are operated in parallel. The ponds act as settling basins and the settled effluent from either pond is routed to Pond #3 which overflows into an area called "South Pond Expansion" (11.0 acres) for percolation. The South Pond Expansion area has the capability to hold the wastewater as well as direct rainfall resulting from a 25-year 24-hour storm in the 16-acre pond catchment area. The sources of wastewater include power plant equipment drains, laboratory drains, floor drains, neutralized regeneration wastes from the demineralizer resin beds, wastewater from the water treatment process (carbon and media filter backwash, and lime sludge) boiler blowdown, boiler drains (chemical cleanings), air pre-heater wash drains, sewage treatment plant effluents, stormwater drainage from the transformer area, blowdown from the Flue Gas Desulfurization, precipitator washes, boiler washes, cooling water blowdown, and *reverse osmosis/micro filtration concentrate*.

PERMITTEE: Progress Energy Florida, Inc.
FACILITY: Crystal River Energy Complex

PA FILE NUMBER: FLA016960-002-IW1N

EFFLUENT DISPOSAL:

Land Application:

An existing 0.91 MGD monthly average daily flow (MADF) land application system (G-001) consisting of percolation pond. Land application system G-001 is located approximately at latitude 28° 57' 27" N, longitude 82° 42' 36" W.

IN ACCORDANCE WITH: The limitations, monitoring requirements and other conditions as set forth in Part I through Part VIII on pages 3 through 16 of this permit.

I. Effluent Limitations and Monitoring Requirements

A. Surface Water Discharges

1. This section is not applicable to this facility.

B. Underground Injection Control Systems

1. This section is not applicable to this facility.

C. Land Application Systems

1. During the period beginning on the issuance date and lasting through the expiration date of this permit, the permittee is authorized to discharge process wastewater, non process wastewater, power plant equipment drains, laboratory drains, floor drains, neutralized regeneration wastes from the demineralizer resin beds, wastewater from the water treatment process (carbon and media filter backwash, and lime sludge) boiler blowdown, boiler drains (chemical cleanings), air pre-heater wash drains, sewage treatment plant effluents, stormwater drainage from the transformer area, blowdown from the Flue Gas Desulfurization, precipitator washes, boiler washes, cooling water blowdown, and *reverse osmosis/micro filtration concentrate* to Land Application System G-001, a percolation pond. Such discharge shall be limited and monitored by the permittee as specified below and reported in accordance with condition I.E.1.:

Parameters (units)	Discharge Limitations			Monitoring Requirements		
	Monthly Average	Daily Maximum	Daily Minimum	Monitoring Frequency	Sample Type	Sample Point
Flow (MGD)	0.91	Report	--	Daily	Meter	FLW-1
pH (SU)	--	Report	Report	Quarterly	In-situ	EFF-1
Solids, Total Dissolved (TDS) (MG/L)	--	Report	--	Quarterly	Grab	EFF-1
Specific Conductance (UMHO/CM)	--	Report	--	Quarterly	In-situ	EFF-1
Oil and Grease (MG/L)	--	Report	--	Quarterly	Grab	EFF-1
Chloride (as Cl) (MG/L)	--	Report	--	Quarterly	Grab	EFF-1
Cyanide, Total (MG/L)	--	See Condition I.A.3	--	Quarterly	Grab	EFF-1
Alpha, Gross Particle Activity (PCI/L)	--	Report	--	Quarterly	Grab	EFF-1
Radium 226 + Radium 228, Total (PCI/L)	--	Report	--	Quarterly	Grab	EFF-1
Antimony, Total Recoverable (UG/L)	--	Report	--	Quarterly	Grab	EFF-1
Arsenic, Total Recoverable (UG/L)	--	Report	--	Quarterly	Grab	EFF-1
Beryllium, Total Recoverable (UG/L)	--	Report	--	Quarterly	Grab	EFF-1
Cadmium, Total Recoverable (UG/L)	--	Report	--	Quarterly	Grab	EFF-1
Copper, Total Recoverable (MG/L)	--	Report	--	Quarterly	Grab	EFF-1

Parameters (units)	Discharge Limitations			Monitoring Requirements		
	Monthly Average	Daily Maximum	Daily Minimum	Monitoring Frequency	Sample Type	Sample Point
Chromium, Total Recoverable (MG/L)	--	Report	--	Quarterly	Grab	EFF-1
Iron, Total Recoverable (MG/L)	--	Report	--	Quarterly	Grab	EFF-1
Lead, Total Recoverable (UG/L)	--	Report	--	Quarterly	Grab	EFF-1
Mercury, Total Recoverable (UG/L)	--	Report	--	Quarterly	Grab	EFF-1
Nickel, Total Recoverable (UG/L)	--	Report	--	Quarterly	Grab	EFF-1
Selenium, Total Recoverable (UG/L)	--	Report	--	Quarterly	Grab	EFF-1
Sodium, Total Recoverable (MG/L)	--	Report	--	Quarterly	Grab	EFF-1
Thallium, Total Recoverable (UG/L)	--	Report	--	Quarterly	Grab	EFF-1
Zinc, Total Recoverable (MG/L)	--	Report	--	Quarterly	Grab	EFF-1

2. Effluent samples shall be taken at the monitoring site locations listed in permit condition I.C.1 and as described below:

Sample Point	Description of Monitoring Location
FLW-1	The sum of all flows to percolation pond system.
EFF-1	At discharge pipe into the active pond, either the East Pond or West Pond. Ponds will be rotated on a yearly basis, or as necessary.

3. The permittee shall sample and monitor both the effluent and groundwater monitoring wells for cyanide after the Flue Gas Desulfurization system has been placed into commercial operation.

D. Other Methods of Disposal or Recycling

1. There shall be no discharge of industrial wastewater from this facility to ground or surface waters, except as authorized by this permit.

E. Other Limitations and Monitoring and Reporting Requirements

1. Monitoring requirements under this permit are effective on the first day of the second month following permit issuance. Until such time, the permittee shall continue to monitor and report in accordance with previously effective permit requirements, if any. During the period of operation authorized by this permit, the permittee shall complete and submit to the Southwest District Office Discharge Monitoring Reports (DMRs) in accordance with the frequencies specified by the REPORT type (i.e., monthly, toxicity, quarterly, semiannual, annual, etc.) indicated on the DMR forms attached to this permit. Monitoring results for each monitoring period shall be submitted in accordance with the associated DMR due dates below.

REPORT Type on DMR	Monitoring Period	DMR Due Date
Monthly or Toxicity	first day of month – last day of month	28 th day of following month
Quarterly	January 1 - March 31 April 1 – June 30 July 1 – September 30 October 1 – December 31	April 28 July 28 October 28 January 28
Semiannual	January 1 – June 30 July 1 – December 31	July 28 January 28
Annual	January 1 – December 31	January 28

DMRs shall be submitted for each required monitoring period including months of no discharge.

The permittee shall make copies of the attached DMR form(s) and shall submit the original completed DMR form(s) to the address specified below: (Please submit a copy of the DMR to the Southwest District Office)

Originals to:

Department of Environmental Protection
Wastewater Compliance Evaluation Section
Mail Station 3551
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Copies to:

FDEP-Southwest District
Industrial Wastewater Program
Southwest District Office
13051 North Telecom Parkway
Temple Terrace, FL 33637-0926
Facsimile (813) 632-7662

2. Unless specified otherwise in this permit, all reports and notifications required by this permit, including twenty-four hour notifications, shall be submitted to or reported to the Southwest District Office at the address specified below:

Southwest District Office
13051 North Telecom Parkway
Temple Terrace, FL 33637-0926

Phone Number - (813) 632-7600

FAX Number - (813) 632-7662 (All FAX copies shall be followed by original copies.)

3. All reports and other information shall be signed in accordance with requirements of Rule 62-620.305, F.A.C.
4. The permittee shall provide safe access points for obtaining representative samples which are required by this permit.
5. If there is no discharge from the facility on a day scheduled for sampling, the sample shall be collected on the day of the next discharge.
6. Any bypass of the treatment facility which is not included in the monitoring specified in sections I.A, I.B, I.C, or I.D, is to be monitored for flow and all other required parameters. For parameters other than flow, at least one grab sample per day shall be monitored. Daily flow shall be monitored or estimated, as appropriate, to obtain reportable data. All monitoring results shall be reported on the appropriate DMR.

II. Industrial Wastewater Residuals Management Requirements

This section is not applicable to the facility.

III. Ground Water Monitoring Requirements

A. Construction Requirements

1. Prior to construction of new ground water monitoring wells, a soil boring shall be made at each new monitoring well location in order to properly determine the well depth and screen interval.
2. The permittee shall give at least 72-hours notice to the Department, prior to the installation of any monitoring wells detailed in this permit.
3. Within 30 days after installation of a new monitoring well, the permittee shall submit to the Department's Southwest District Office detailed information on the well's location and construction on the attached DEP Form(s) 62-522.900(3), Monitor Well Completion Report.
4. Within sixty (60) days of Department approval of the facility's revised groundwater monitoring plan, the permittee shall relocate and install the new ground water monitoring wells for intermediate monitoring well MWI-7 and new background well.

B. Operational Requirements

1. During the period of operation authorized by this permit, the permittee shall sample ground water in accordance with this permit and the approved ground water monitoring plan prepared under Rule 62-522.600, F.A.C.
2. The following monitoring wells shall be sampled for Well Group For: percolation pond, Land Application System G-001:

Monitoring Well ID	Alternate Well Name and/or Description of Monitoring Location	Depth (Feet)	Aquifer Monitored	New or Existing
MWB-X	New Proposed Background Well	--	Upper Floridan	New
MWI-1	Intermediate Monitoring Well	20	Upper Floridan	Existing
MWI-2R	Intermediate Monitor Well	19.5	Upper Floridan	Existing
MWI-7R	Intermediate Monitor Well (Relocated)	--	Upper Floridan	New
MWC-12R	Compliance Monitor Well	20	Upper Floridan	Existing
MWC-16	Compliance Monitor Well	21.1	Upper Floridan	Existing
MWC-21R	Compliance Monitor Well	20	Upper Floridan	Existing
MWC-27	Compliance Monitor Well	33	Upper Floridan	Existing
MWC-28	Compliance Monitor Well	20	Upper Floridan	Existing
MWC-29	Compliance Monitor Well	20	Upper Floridan	Existing
MWC-IF2	Compliance Monitor Well	14	Upper Floridan	Existing

MWB = Background; MWI = Intermediate; MWC = Compliance; MWP = Piezometer

3. The monitor wells specified in Condition III.B.2 shall be sampled for the parameters listed below:

Parameter Name	Compliance Well Limit	Units	Sample Type	Monitoring Frequency
Radium 226 and 228	5.0	PCI/L	Grab	Quarterly
Copper, Total Recoverable	Report	MG/L	Grab	Quarterly
Chloride (as Cl)	Report	MG/L	Grab	Quarterly
Iron, Total Recoverable	Report	MG/L	Grab	Quarterly

Parameter Name	Compliance Well Limit	Units	Sample Type	Monitoring Frequency
Nitrogen, Nitrate, Total (as NO3)	10.0	MG/L	Grab	Quarterly
pH	6.5-8.5	SU	Grab	Quarterly
Sodium, Total Recoverable	160	MG/L	Grab	Quarterly
Solids, Total Dissolved (TDS)	Report	MG/L	Grab	Quarterly
Specific Conductance	Report	MMHOS/CM	In-situ	Quarterly
Turbidity	Report	NTU	In-situ	Quarterly
Water Level Relative to NGVD	Report	FEET	In-situ	Quarterly
Alpha, Gross Particle Activity	15.0	PCI/L	Grab	Quarterly
Antimony, Total Recoverable	6.0	UG/L	Grab	Quarterly
Arsenic, Total Recoverable	10.0	UG/L	Grab	Quarterly
Barium, Total Recoverable	2.0	MG/L	Grab	Quarterly
Beryllium, Total Recoverable	4.0	UG/L	Grab	Quarterly
Cadmium, Total Recoverable	5.0	UG/L	Grab	Quarterly
Lead, Total Recoverable	15.0	UG/L	Grab	Quarterly
Nickel, Total Recoverable	100.0	UG/L	Grab	Quarterly
Thallium, Total Recoverable	2.0	UG/L	Grab	Quarterly
Oxygen, Dissolved (DO)	Report	MG/L	In-situ	Quarterly
Zinc, Total Recoverable	Report	MG/L	Grab	Quarterly
Fluoride, Total (as F)	Report	MG/L	Grab	Quarterly
Cyanide, Total	0.2	MG/L	Grab	Quarterly

4. For the land application system for G-001, all ground water quality criteria specified in Chapter 62-520, F.A.C., shall be met at the edge of the zone of discharge. The zone of discharge for this project is the lateral extent of the upland environment on the property, where ground water is discharging to the marine environment.
5. The permittee's discharge to ground water shall not cause a violation of water quality standards for ground waters at the boundary of the zone of discharge in accordance with Rules 62-520.400 and 62-520.420, F.A.C.
6. The permittee's discharge to ground water shall not cause a violation of the minimum criteria for ground water specified in Rule 62-520.400, F.A.C., within the zone of discharge.
7. If the concentration for any constituent listed in Permit Condition III.B.3 in the natural background quality of the ground water is greater than the stated maximum, or in the case of pH is also less than the minimum, the representative background quality shall be the prevailing standard.
8. Water levels shall be recorded prior to evacuating the well for sample collection. Elevation references shall include the top of the well casing and land surface at each well site (NGVD allowable) at a precision of plus or minus 0.01 feet.
9. Ground water monitoring wells shall be purged prior to sampling to obtain a representative sample.

10. Analyses shall be conducted on un-filtered samples, unless filtered samples have been approved by the Department as being more representative of ground water conditions.
11. If a monitoring well becomes damaged or cannot be sampled for some reason, the permittee shall notify the Department immediately and a written report shall follow within seven days detailing the circumstances and remedial measures taken or proposed. Repair or replacement of monitoring wells shall be approved in advance by the Department.
12. All piezometers and monitoring wells not part of the approved ground water monitoring plan are to be plugged and abandoned in accordance with Rule 62-532.500(4), F.A.C., unless there is intent for their future use.
13. The permittee shall sample and monitor all groundwater monitoring wells for cyanide, beginning the next quarterly sampling event after the Flue Gas Desulfurization system has been placed into commercial operation.
14. Ground water monitoring test results shall be submitted on Part D of DEP Form 62-620.910(10) (attached) and shall be submitted to the address specified in I.E.3. Results shall be submitted with the DMR for each month listed in the following schedule.

SAMPLE PERIOD	REPORT DUE DATE
January - March	April 28
April - June	July 28
July - September	October 28
October - December	January 28

IV. Other Land Application Requirements

1. This section is not applicable to this facility.

V. Operation and Maintenance Requirements

A. Treatment and Disposal Facilities

1. The permittee shall ensure that the operation of this facility is as described in the application and supporting documents.
2. The operation of the pollution control facilities described in this permit shall be under the supervision of a person who is qualified by formal training and/or practical experience in the field of water pollution control.

B. Record keeping Requirements:

1. The permittee shall maintain the following records on the site of the permitted facility and make them available for inspection:
 - a. Records of all compliance monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, including, if applicable, a copy of the laboratory certification showing the certification number of the laboratory, for at least three years from the date the sample or measurement was taken;
 - b. Copies of all reports, other than those required in items a. and f. of this section, required by the permit for at least three years from the date the report was prepared, unless otherwise specified by Department rule;
 - c. Records of all data, including reports and documents used to complete the application for the permit for at least three years from the date the application was filed, unless otherwise specified by Department rule;
 - d. A copy of the current permit;

- e. A copy of any required record drawings;
- f. Copies of the logs and schedules showing plant operations and equipment maintenance for three years from the date on the logs or schedule.

VI. Schedules

1. The permittee shall achieve compliance with the other conditions of this permit as follows:

Operational level attained Issuance Date of permit

2. No later than 14 calendar days following a date identified in the above schedule(s) of compliance, the permittee shall submit either a report of progress or, in the case of specific actions being required by an identified date, a written notice of compliance or noncompliance. In the latter case, the notice shall include the cause of noncompliance, any remedial actions taken, and the probability of meeting the next scheduled requirement.
3. A Best Management Practices (BMP) Plan shall be prepared and implemented in accordance with Part VII of this permit and the following schedule:

Action Item		Scheduled Completion Date
1	Develop a Best Management Practice Plan (BMP).	Within sixty (60) days of permit issuance.
2	Implement BMP Plan.	Within one year of permit issuance.

4. The following implementation steps shall be completed in accordance with the following schedule:

Implementation Steps		Scheduled Completion Date
1	Submit to the Department for review and approval, a revised ground water monitoring plan (GWMP) to include the relocated well and new background well.	Within sixty (60) days of permit issuance.
2	Relocate and install all proposed groundwater monitoring wells in the approved GWMP.	Within sixty (60) days of the Department's approval of the GWMP.
3	The permittee shall notify the Department when the Flue Gas Desulfurization system (FGD) has been placed into operation.	Within sixty (60) days after placing into commercial operation.
4	Submit to the Department DEP Form 62-620.910(12), Notification of Completion of Construction.	Within thirty (30) days of placing FGD system into operation.
5	Submit to the Department detailed information on the well's location and construction on the attached DEP Form(s) 62-522.900(3), Monitor Well Completion Report.	Within 30 days after installation of all new and relocated monitoring wells.
6	Installation of flow meter(s).	Within 180-days of permit issuance.
7	<i>Installation of Reverse Osmosis Treatment System and a micro filtration unit.</i>	Within 180-days of permit issuance.

5. In accordance with sections 403.088(2)(e) and (f), F.S., a compliance schedule for this facility is contained in Administrative Order AO-114-SW that is hereby incorporated by reference.

VII. Other Specific Conditions

A. Specific Conditions Applicable to All Permits

1. Drawings, plans, documents or specifications submitted by the permittee, not attached hereto, but retained on file at the Southwest District Office, are made a part hereof.
2. Where required by Chapter 471 (P.E.) or Chapter 492 (P.G.) F.S., applicable portions of reports to be submitted under this permit, shall be signed and sealed by the professional(s) who prepared them.
3. This permit satisfies Industrial Wastewater program permitting requirements only and does not authorize operation of this facility prior to obtaining any other permits required by local, state or federal agencies.
4. The permittee shall provide verbal notice to the Department as soon as practical after discovery of a sinkhole within an area for the management or application of wastewater or sludge. The permittee shall immediately implement measures appropriate to control the entry of contaminants, and shall detail these measures to the Department in a written report within 7 days of the sinkhole discovery.

B. Specific Conditions Related to Construction

1. This section is not applicable to this facility.

C. Duty to Reapply

- 1 The permittee shall apply for renewal of this permit at least 180 days before the expiration date of the permit using the appropriate forms listed in Rule 62-620.910, F.A.C., including submittal of the appropriate processing fee set forth in Rule 62-4.050, F.A.C. The existing permit shall not expire until the Department has taken final action on the application renewal in accordance with the provisions of 62-620.335(3) and (4), F.A.C.

D. Specific Conditions Related to Existing Manufacturing, Commercial, Mining, and Silviculture Wastewater Facilities or Activities

1. Existing manufacturing, commercial, mining, and silvicultural wastewater facilities or activities that discharge into surface waters shall notify the Department as soon as they know or have reason to believe:
 - a. That any activity has occurred or will occur which would result in the discharge, on a routine or frequent basis, of any toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the following levels
 - (1) One hundred micrograms per liter,
 - (2) Two hundred micrograms per liter for acrolein and acrylonitrile; five hundred micrograms per liter for 2,4-dinitrophenol and for 2-methyl-4,6-dinitrophenol; and one milligram per liter for antimony, or
 - (3) Five times the maximum concentration value reported for that pollutant in the permit application.
 - b. That any activity has occurred or will occur which would result in any discharge, on a non-routine or infrequent basis, of a toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the following levels
 - (1) Five hundred micrograms per liter,
 - (2) One milligram per liter for antimony, or
 - (3) Ten times the maximum concentration value reported for that pollutant in the permit application.

E. Specific Conditions Related to Best Management Practices

1. BMP Plan:

For purposes of this part, the terms "pollutant" or "pollutants" refer to any substance listed as toxic under Section 307(a)(1) of the Clean Water Act (the "Act"), oil, as defined in Section 311(a)(1) of the Act, and any substance listed as hazardous under Section 311 of the Act. The permittee shall develop and implement a Best Management Practices (BMP) plan which prevents, or minimizes, the potential for the release of pollutants from ancillary activities, including material storage areas; plant site runoff; in-plant transfer, process and material handling areas; loading and unloading operations; and sludge and waste disposal areas, to the waters of the State through plant site runoff; spillage or leaks; sludge or waste disposal; or drainage from raw material storage.

2. Implementation:

The BMP plan shall be developed and implemented in accordance with the schedule contained in Part VI of this permit.

3. General Requirements:

The BMP plan shall:

- a. Be documented in narrative form, and shall include any necessary plot plans, drawings or maps.
- b. Establish specific objectives for the control of pollutants.
 - (1) Each facility component or system shall be examined for its potential for causing a release of significant amounts of pollutants to waters of the State due to equipment failure, improper operation, natural phenomena such as rain or snowfall, etc.
 - (2) Where experience indicates a reasonable potential for equipment failure (e.g., a tank overflow or leakage), natural conditions (e.g., precipitation), or other circumstances to result in significant amounts of pollutants reaching surface waters, the plan should include a prediction of the direction, rate of flow, and total quantity of pollutants which could be discharged from the facility as a result of each condition or circumstance.
- c. Establish specific best management practices to meet the objectives identified under paragraph (b) of this subsection, addressing each component or system capable of causing a release of significant amounts of pollutants to the waters of the State, and identifying specific preventative or remedial measures to be implemented.
- d. Be reviewed by plant engineering staff and plant manager.

4. Documentation:

The permittee shall maintain the BMP plan at the facility and shall make the plan available to the Department upon request.

5. BMP Plan Modification:

The permittee shall amend the BMP plan whenever there is a change in the facility or change in the operation of the facility which materially increases the potential for the ancillary activities to result in a discharge of significant amounts of pollutants.

6. **Modification for Ineffectiveness:**

If the BMP plan proves to be ineffective in achieving the general objective of preventing the release of significant amounts of pollutants to surface waters and the specific objectives and requirements under paragraphs (b) and (c) of item 3, the permit shall be subject to modification pursuant to rule 62-620.325, F.A.C., to incorporate revised BMP requirements.

F. Reopener Clause

1. The permit shall be revised, or alternatively, revoked and reissued in accordance with the provisions contained in Rules 62-620.325 and 62-620.345, F.A.C., if applicable, or to comply with any applicable effluent standard or limitation issued or approved under Sections 301(b)(2)(C) and (D), 304(b)(2) and 307(a)(2) of the Clean Water Act (the Act), as amended, if the effluent standards, limitations, or water quality standards so issued or approved:

- a. Contains different conditions or is otherwise more stringent than any condition in the permit/or;
- b. Controls any pollutant not addressed in the permit.

The permit as revised or reissued under this paragraph shall also contain any other requirements of the Act then applicable.

2. The permit may be reopened to adjust effluent limitations or monitoring requirements should future Water Quality Based Effluent Limitation determinations, water quality studies, DEP approved changes in water quality standards, or other information show a need for a different limitation or monitoring requirement.
3. The Department may develop a Total Maximum Daily Load (TMDL) during the life of the permit. Once a TMDL has been established and adopted by rule, the Department shall revise this permit to incorporate the final findings of the TMDL.

VIII. General Conditions

1. The terms, conditions, requirements, limitations and restrictions set forth in this permit are binding and enforceable pursuant to Chapter 403, F.S. Any permit noncompliance constitutes a violation of Chapter 403, F.S., and is grounds for enforcement action, permit termination, permit revocation and reissuance, or permit revision. [62-620.610(1), F.A.C.]
2. This permit is valid only for the specific processes and operations applied for and indicated in the approved drawings or exhibits. Any unauthorized deviation from the approved drawings, exhibits, specifications or conditions of this permit constitutes grounds for revocation and enforcement action by the Department. [62-620.610(2), F.A.C.]
3. As provided in subsection 403.087(7), F.S., the issuance of this permit does not convey any vested rights or any exclusive privileges. Neither does it authorize any injury to public or private property or any invasion of personal rights, nor authorize any infringements of federal, state, or local laws or regulations. This permit is not a waiver of or approval of any other Department permit or authorization that may be required for other aspects of the total project which are not addressed in this permit. [62-620.610(3), F.A.C.]
4. This permit conveys no title to land or water, does not constitute state recognition or acknowledgment of title, and does not constitute authority for the use of submerged lands unless herein provided and the necessary title or leasehold interests have been obtained from the State. Only the Trustees of the Internal Improvement Trust Fund may express State opinion as to title. [62-620.610(4), F.A.C.]
5. This permit does not relieve the permittee from liability and penalties for harm or injury to human health or welfare, animal or plant life, or property caused by the construction or operation of this permitted source; nor does it allow the permittee to cause pollution in contravention of Florida Statutes and Department rules, unless

specifically authorized by an order from the Department. The permittee shall take all reasonable steps to minimize or prevent any discharge, reuse of reclaimed water, or residuals use or disposal in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment. It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit. *[62-620.610(5), F.A.C.]*

6. If the permittee wishes to continue an activity regulated by this permit after its expiration date, the permittee shall apply for and obtain a new permit. *[62-620.610(6), F.A.C.]*
7. The permittee shall at all times properly operate and maintain the facility and systems of treatment and control, and related appurtenances, that are installed and used by the permittee to achieve compliance with the conditions of this permit. This provision includes the operation of backup or auxiliary facilities or similar systems when necessary to maintain or achieve compliance with the conditions of the permit. *[62-620.610(7), F.A.C.]*
8. This permit may be modified, revoked and reissued, or terminated for cause. The filing of a request by the permittee for a permit revision, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance does not stay any permit condition. *[62-620.610(8), F.A.C.]*
9. The permittee, by accepting this permit, specifically agrees to allow authorized Department personnel, including an authorized representative of the Department and authorized EPA personnel, when applicable, upon presentation of credentials or other documents as may be required by law, and at reasonable times, depending upon the nature of the concern being investigated, to
 - a. Enter upon the permittee's premises where a regulated facility, system, or activity is located or conducted, or where records shall be kept under the conditions of this permit;
 - b. Have access to and copy any records that shall be kept under the conditions of this permit;
 - c. Inspect the facilities, equipment, practices, or operations regulated or required under this permit; and
 - d. Sample or monitor any substances or parameters at any location necessary to assure compliance with this permit or Department rules. *[62-620.610(9), F.A.C.]*
10. In accepting this permit, the permittee understands and agrees that all records, notes, monitoring data, and other information relating to the construction or operation of this permitted source which are submitted to the Department may be used by the Department as evidence in any enforcement case involving the permitted source arising under the Florida Statutes or Department rules, except as such use is proscribed by Section 403.111, Florida Statutes, or Rule 62-620.302, F.A.C. Such evidence shall only be used to the extent that it is consistent with the Florida Rules of Civil Procedure and applicable evidentiary rules. *[62-620.610(10), F.A.C.]*
11. When requested by the Department, the permittee shall within a reasonable time provide any information required by law which is needed to determine whether there is cause for revising, revoking and reissuing, or terminating this permit, or to determine compliance with the permit. The permittee shall also provide to the Department upon request copies of records required by this permit to be kept. If the permittee becomes aware of relevant facts that were not submitted or were incorrect in the permit application or in any report to the Department, such facts or information shall be promptly submitted or corrections promptly reported to the Department. *[62-620.610(11), F.A.C.]*
12. Unless specifically stated otherwise in Department rules, the permittee, in accepting this permit, agrees to comply with changes in Department rules and Florida Statutes after a reasonable time for compliance; provided however, the permittee does not waive any other rights granted by Florida Statutes or Department rules. A reasonable time for compliance with a new or amended surface water quality standard, other than those standards addressed in Rule 62-302.500, F.A.C., shall include a reasonable time to obtain or be denied a mixing zone for the new or amended standard. *[62-620.610(12), F.A.C.]*
13. The permittee, in accepting this permit, agrees to pay the applicable regulatory program and surveillance fee in accordance with Rule 62-4.052, F.A.C. *[62-620.610(13), F.A.C.]*

14. This permit is transferable only upon Department approval in accordance with Rule 62-620.340, F.A.C. The permittee shall be liable for any noncompliance of the permitted activity until the Department approves the transfer. *[62-620.610(14), F.A.C.]*
15. The permittee shall give the Department written notice at least 60 days before inactivation or abandonment of a wastewater facility and shall specify what steps will be taken to safeguard public health and safety during and following inactivation or abandonment. *[62-620.610(15), F.A.C.]*
16. The permittee shall apply for a revision to the Department permit in accordance with Rule 62-620.300, F.A.C., and the Department of Environmental Protection Guide to Wastewater Permitting at least 90 days before construction of any planned substantial modifications to the permitted facility is to commence or with Rule 62-620.325(2), F.A.C., for minor modifications to the permitted facility. A revised permit shall be obtained before construction begins except as provided in Rule 62-620.300, F.A.C. *[62-620.610(16), F.A.C.]*
17. The permittee shall give advance notice to the Department of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements. The permittee shall be responsible for any and all damages which may result from the changes and may be subject to enforcement action by the Department for penalties or revocation of this permit. The notice shall include the following information:
 - a. A description of the anticipated noncompliance;
 - b. The period of the anticipated noncompliance, including dates and times; and
 - c. Steps being taken to prevent future occurrence of the noncompliance. *[62-620.610(17), F.A.C.]*
18. Sampling and monitoring data shall be collected and analyzed in accordance with Rule 62-4.246, Chapters 62-160 and 62-601, F.A.C., and 40 CFR 136, as appropriate.
 - a. Monitoring results shall be reported at the intervals specified elsewhere in this permit and shall be reported on a Discharge Monitoring Report (DMR), DEP Form 62-620.910(10), or as specified elsewhere in the permit.
 - b. If the permittee monitors any contaminate more frequently than required by the permit, using Department approved test procedures, the results of this monitoring shall be included in the calculation and reporting of the data submitted in the DMR.
 - c. Calculations for all limitations which require averaging of measurements shall use an arithmetic mean unless otherwise specified in this permit.
 - d. Except as specifically provided in Rule 62-160.300, F.A.C., any laboratory test required by this permit shall be performed by a laboratory that has been certified by the Department of Health Environmental Laboratory Certification Program (DOH ELCP). Such certification shall be for the matrix, test method and analyte(s) being measured to comply with this permit. For domestic wastewater facilities, testing for parameters listed in Rule 62-160.300(4), F.A.C., shall be conducted under the direction of a certified operator.
 - e. Field activities including on-site tests and sample collection shall follow the applicable standard operating procedures described in DEP-SOP-001/01 adopted by reference in Chapter 62-160, F.A.C.
 - f. Alternate field procedures and laboratory methods may be used where they have been approved in accordance with Rules 62-160.220 and 62-160.330, F.A.C. *[62-620.610(18), F.A.C.]*
19. Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule detailed elsewhere in this permit shall be submitted no later than 14 days following each schedule date. *[62-620.610(19), F.A.C.]*
20. The permittee shall report to the Department's Southwest District Office any noncompliance which may endanger health or the environment. Any information shall be provided orally within 24 hours from the time the permittee becomes aware of the circumstances. A written submission shall also be provided within five days of the time the permittee becomes aware of the circumstances. The written submission shall contain: a description of the noncompliance and its cause; the period of noncompliance including exact dates and time, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent recurrence of the noncompliance.
 - a. The following shall be included as information which must be reported within 24 hours under this condition:
 - (1) Any unanticipated bypass which causes any reclaimed water or effluent to exceed any permit limitation or results in an unpermitted discharge,

- (2) Any upset which causes any reclaimed water or the effluent to exceed any limitation in the permit,
 - (3) Violation of a maximum daily discharge limitation for any of the pollutants specifically listed in the permit for such notice, and
 - (4) Any unauthorized discharge to surface or ground waters.
- b. Oral reports as required by this subsection shall be provided as follows:
- (1) For unauthorized releases or spills of untreated or treated wastewater reported pursuant to subparagraph a.(4) that are in excess of 1,000 gallons per incident, or where information indicates that public health or the environment will be endangered, oral reports shall be provided to the Department by calling the STATE WARNING POINT TOLL FREE NUMBER (800) 320-0519, as soon as practical, but no later than 24 hours from the time the permittee becomes aware of the discharge. The permittee, to the extent known, shall provide the following information to the State Warning Point:
 - (a) Name, address, and telephone number of person reporting;
 - (b) Name, address, and telephone number of permittee or responsible person for the discharge;
 - (c) Date and time of the discharge and status of discharge (ongoing or ceased);
 - (d) Characteristics of the wastewater spilled or released (untreated or treated, industrial or domestic wastewater);
 - (e) Estimated amount of the discharge;
 - (f) Location or address of the discharge;
 - (g) Source and cause of the discharge;
 - (h) Whether the discharge was contained on-site, and cleanup actions taken to date;
 - (i) Description of area affected by the discharge, including name of water body affected, if any; and
 - (j) Other persons or agencies contacted.
 - (2) Oral reports, not otherwise required to be provided pursuant to subparagraph b.(1) above, shall be provided to Department's Southwest District Office within 24 hours from the time the permittee becomes aware of the circumstances.
- c. If the oral report has been received within 24 hours, the noncompliance has been corrected, and the noncompliance did not endanger health or the environment, the Department's Southwest District Office shall waive the written report. [62-620.610(20), F.A.C.]
21. The permittee shall report all instances of noncompliance not reported under Conditions VIII.17., 18. and 19. of this permit at the time monitoring reports are submitted. This report shall contain the same information required by Condition VIII.20. of this permit. [62-620.610(21), F.A.C.]
22. Bypass Provisions.
- a. Bypass is prohibited, and the Department may take enforcement action against a permittee for bypass, unless the permittee affirmatively demonstrates that:
 - (1) Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage; and
 - (2) There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass which occurred during normal periods of equipment downtime or preventative maintenance; and
 - (3) The permittee submitted notices as required under Condition VIII.22.b. of this permit.
 - b. If the permittee knows in advance of the need for a bypass, it shall submit prior notice to the Department, if possible at least 10 days before the date of the bypass. The permittee shall submit notice of an unanticipated bypass within 24 hours of learning about the bypass as required in Condition VIII.20. of this permit. A notice shall include a description of the bypass and its cause; the period of the bypass, including exact dates and times; if the bypass has not been corrected, the anticipated time it is expected to continue; and the steps taken or planned to reduce, eliminate, and prevent recurrence of the bypass.
 - c. The Department shall approve an anticipated bypass, after considering its adverse effect, if the permittee demonstrates that it will meet the three conditions listed in Condition VIII.22 a.(1) through (3) of this permit.
 - d. A permittee may allow any bypass to occur which does not cause reclaimed water or effluent limitations to be exceeded if it is for essential maintenance to assure efficient operation. These bypasses are not subject to the provision of Condition VIII.22.a. through c. of this permit. [62-620.610(22), F.A.C.]

PERMITTEE: Progress Energy Florida, Inc.
FACILITY: Crystal River Energy Complex

PA FILE NUMBER: FLA016960-002-IW1N

23. Upset Provisions

- a. A permittee who wishes to establish the affirmative defense of upset shall demonstrate, through properly signed contemporaneous operating logs, or other relevant evidence that:
 - (1) An upset occurred and that the permittee can identify the cause(s) of the upset;
 - (2) The permitted facility was at the time being properly operated;
 - (3) The permittee submitted notice of the upset as required in Condition VIII.20. of this permit; and
 - (4) The permittee complied with any remedial measures required under Condition VIII.5. of this permit.
- b. In any enforcement proceeding, the burden of proof for establishing the occurrence of an upset rests with the permittee.
- c. Before an enforcement proceeding is instituted, no representation made during the Department review of a claim that noncompliance was caused by an upset is final agency action subject to judicial review.
[62-620.610(23), F.A.C.]

Executed in Hillsborough County, Florida.

STATE OF FLORIDA DEPARTMENT OF
ENVIRONMENTAL PROTECTION

Jeffrey S. Greenwell, P.E.
Water Facilities Administrator
Southwest District

APPENDIX 10.4.4

**CRYSTAL RIVER 3 – SECTION 7 CONSULTATION
U.S. NMFS BIOLOGICAL OPINION**



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

September 19, 2002

Mr. Dale E. Young, Vice President
Crystal River Nuclear Plant (NA1B)
ATTN: Supervisor, Licensing & Regulatory Programs
15760 W. Power Line Street
Crystal River, Florida 34428-6708

SUBJECT: CRYSTAL RIVER UNIT 3 - SECTION 7 CONSULTATION UNDER THE
ENDANGERED SPECIES ACT REGARDING SEA TURTLES AT THE CRYSTAL
RIVER ENERGY COMPLEX (TAC NO. MB1562)

Dear Mr. Young

Enclosed is a copy of the National Marine Fisheries Service's (NMFS's) Biological Opinion, which was issued August 8, 2002. This Opinion is a reinitiation of consultation subsequent to the June 1999 Opinion. The U.S. Nuclear Regulatory Commission formally requested reinitiation on April 2, 2001, because of a possibility that the Crystal River Energy Complex (CREC) would exceed the NMFS anticipated incidental take levels for live turtles established in the Incidental Take Statement of the June 1999 Opinion.

The August 8, 2002, Opinion states the NMFS belief that the continued operation of the cooling water intake system located near the Gulf of Mexico is not likely to jeopardize the continued existence of the five species of sea turtles found at CREC. However, it revises the Incidental Take Statement and modifies some of the Terms and Conditions of the previous Opinion. These should be evaluated for the potential need to revise the Crystal River Unit 3 Technical Specifications and plant procedures. If you have any questions following review of the document, please contact me at (301) 415-2020.

Sincerely,

A handwritten signature in cursive script that reads "Brenda Mozafari".

Brenda L. Mozafari, Senior Project Manager, Section 2
Project Directorate II
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket No. 50-302

Enclosure: NMFS Biological Opinion

cc w/o encl: J. Powers, NMFS

cc: See next page



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Southeast Regional Office
9721 Executive Center Drive North
St. Petersburg, FL 33702
(727) 570-5312; FAX 570-5517
<http://caldera.sero.nmfs.gov>

AUG 18 2002

F/SER3:BH:tg

Mr. Herbert N. Berkow, Director
Project Directorate II
Division of Licensing Project Management
Office of Nuclear Reactor Regulation
Nuclear Regulatory Commission
Washington, D.C. 20555-0001

50-302

Dear Mr. Berkow:

This document represents the National Marine Fisheries Service's (NOAA Fisheries) biological opinion (Opinion) based on your request for reinitiation of Endangered Species Act (ESA) section 7 consultation for the operation of the Crystal River Energy Complex's (CREC) cooling water intake system located near the Gulf of Mexico in Citrus County, Florida, and its effects on loggerhead turtles (*Caretta caretta*), Kemp's ridley turtles (*Lepidochelys kempii*), leatherback turtles (*Dermochelys coriacea*), hawksbill turtles (*Eretmochelys imbricata*), and green turtles (*Chelonia mydas*). This Opinion has been prepared in accordance with section 7(a)(2) of the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. 1536 *et seq.*). The NOAA Fisheries consultation number for this action is F/SER/2001/01080. If you have any questions about this consultation, please refer to this number.

This Opinion is based on information provided in a letter from the Nuclear Regulatory Commission (NRC) dated October 11, 2001, with an attached biological assessment; phone conversations and meetings between NOAA Fisheries staff, NRC staff, and CREC staff; published and unpublished scientific information on the biology and ecology of threatened and endangered turtles within the action area; and other sources of information. A complete administrative record of this consultation is on file at the NOAA Fisheries' Southeast Regional Office in St. Petersburg, Florida.

The Opinion states NOAA Fisheries' belief that the proposed action is not likely to jeopardize the continued existence of loggerhead, Kemp's ridley, green, hawksbill and leatherback sea turtles. However, NOAA Fisheries anticipates incidental takes of these species and has issued an Incidental Take Statement (ITS), pursuant to section 7 of the ESA. This ITS contains reasonable and prudent measures with implementing terms and conditions to help minimize this take.

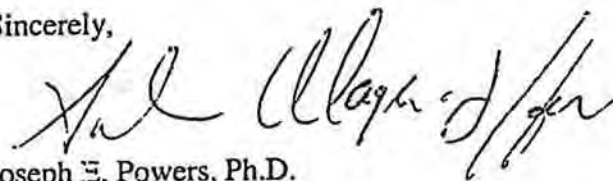
Incidental takes of marine mammals are not authorized. If the NRC believes such takes may occur, an incidental take authorization under Marine Mammal Protection Act, Section 101 (a)(5),



Per B. Mozafari

is necessary. In this regard, please contact Ken Hollingshead of our headquarters Protected Resources staff at (301) 713-2055.

Sincerely,

A handwritten signature in black ink, appearing to read "Joe Powers", written over a horizontal line.

Joseph E. Powers, Ph.D.
Acting Regional Administrator

Enclosure

cc: F/PR3
o:\section7\formal\crys2002.wpd
File: 1514.22.m.3

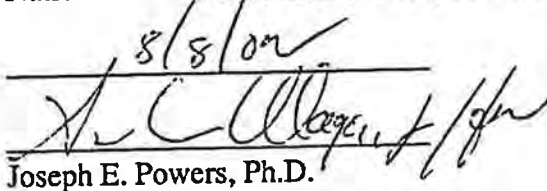
**Endangered Species Act - Section 7 Consultation
Biological Opinion**

Agency: United States Nuclear Regulatory Commission

Activity: Cooling water intake system at the Crystal River Energy Complex (F/SER/2001/01080)

Consultation Conducted By: National Marine Fisheries Service, Southeast Region

Date Issued: 8/8/01

Approved By: 
Joseph E. Powers, Ph.D.
Acting Regional Administrator

This document represents the National Marine Fisheries Service's (NOAA Fisheries) biological opinion (Opinion) based on our review of the operation of the Crystal River Energy Complex's (CREC) cooling water intake system located near the Gulf of Mexico in Citrus County, Florida, and its effects on loggerhead turtles (*Caretta caretta*), Kemp's ridley turtles (*Lepidochelys kempii*), leatherback turtles (*Dermochelys coriacea*), hawksbill turtles (*Eretmochelys imbricata*), and green turtles (*Chelonia mydas*). This Opinion has been prepared in accordance with section 7(a)(2) of the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. 1536 *et seq.*). The NOAA Fisheries consultation number for this action is F/SER/2001/01080. If you have any questions about this consultation, please refer to this number.

History of the Consultation

In a letter dated April 2, 2001, the Nuclear Regulatory Commission (NRC) reinitiated ESA section 7 consultation for the operation of the CREC cooling water intake system. The NOAA Fisheries, Southeast Regional Office (SERO), Protected Resources Division received this letter on April 9, 2001. The NRC reinitiated consultation because it felt that CREC would exceed the incidental take levels for live turtles issued with the June 16, 1999, incidental take statement (ITS) that concluded the no jeopardy Opinion issued for the operation of CREC's cooling water intake system. In a letter dated April 9, 2001, NOAA Fisheries agreed that CREC would likely exceed its ITS levels and agreed that reinitiation of section 7 consultation was warranted.

NOAA Fisheries staff met with CREC and NRC staff at the CREC facility on May 9, 2001. During this meeting NOAA Fisheries staff requested an update of NRC's and CREC's October 1998 biological assessment (BA) in order to complete a formal section 7 consultation. NOAA

Fisheries received the updated BA on October 22, 2001, and considers this information to be a complete initiation package. This Opinion is based on information provided in the letter from the NRC dated October 11, 2001, with the attached BA; phone conversations and meetings between NOAA Fisheries staff, NRC staff, and CREC staff; published and unpublished scientific information on the biology and ecology of threatened and endangered turtles within the action area; and other sources of information. A complete administrative record of this consultation is on file at the NOAA Fisheries' Southeast Regional Office in St. Petersburg, Florida.

I. Description of the Proposed Action

The Proposed Action

The CREC contains five separate power plants. Unit 1 is an approximately 400 MW electric (MWe) coal-fueled plant. Unit 2 is an approximately 500 MWe coal-fueled plant. Unit 3 is an approximately 890 MWe pressurized water, nuclear-fueled plant. Units 4 and 5 are coal-fueled plants rated at approximately 640 MWe each. This consultation will analyze the cooling water intake systems for Units 1, 2, and 3.

The intake structures for Units 1, 2, and 3 are concrete structures with bar racks, traveling screens, and seawater pump components. Surface water trash barriers are deployed in front of the bar racks to collect large floating debris. Water is drawn from the intake canal through the bar racks, through the traveling screens, into the pumps, and then flows through the plant's condensers and auxiliary systems. The water is then discharged through an outfall into the discharge canal. The discharge canal directs water back to the Gulf of Mexico.

The intake bar racks prevent trash and large debris carried by the seawater from entering the intake structure. The seawater must pass through the bar racks which are made of steel bars spaced on 4-inch centers. The bar racks extend from well above the water line to the concrete base at the bottom of the intake canal. Debris and marine life smaller than the bar rack openings pass through the bar racks. The traveling screens effectively remove this floating or suspended debris from the intake water. Intake water passing through these screens suspends debris and solid materials onto the screens. The screens are conveyed upwards to an overlapping water spray system which washes these materials off the screens and into a debris trough. The traveling screen system is operated approximately three times a day.

Each of the three plants that use seawater for cooling have four large circulating pumps used to draw seawater into the plant. The water is then pumped through the condensers and out to the discharge canal. On Units 1 and 2, the total design flow is 638,000 gallons per minute (gpm). Unit 3 design flow is 680,000 gpm. In addition, Unit 3 has a low flow nuclear services water pumping system with a normal flow rate of approximately 10,000 gpm. Under emergency conditions, additional pumps would increase this flow up to approximately 20,000 gpm. From the discharge of the pumps, the water flows to the main condensers; and for Unit 3, an additional flow path exists for the nuclear services and decay heat cooling water heat exchangers. After the

seawater passes through the tubes of the condenser and/or heat exchangers, the seawater is transported in underground pipes to the discharge canal. The discharge canal directs the water back to the Gulf of Mexico.

The bar racks are inspected 24 hours a day during times of high turtle concentrations in the intake canal (February through May) and once every two hours during other times of the year. If a turtle is stranded on the bar racks, it is immediately recovered with dip nets. Healthy turtles are placed in a holding tank at the CREC Mariculture Center, where Mariculture Center Staff members determine the proper disposition of the turtle, in conjunction with Florida Fish and Wildlife Conservation Commission (FWC) personnel. Non-healthy turtles are also taken to the Mariculture Center with disposition to be determined by FWC. Dead turtles are sent to the Mariculture Center and picked up by FWC.

Action Area

The CREC is located on an approximate 5,000-acre site near the Gulf of Mexico in Citrus County, Florida. The Complex is approximately 7.5 miles northwest of the city of Crystal River, within the coastal salt marsh area of west central Florida. The action area consists of 3 of the 5 power plants (Plants 1, 2 and 3) that make up CREC, the 2.8-mile discharge canal, and the intake canal and intake structures, which includes the bar racks, traveling screens, and sea water pump components. The intake canal is a dredged canal approximately 14 miles long with an average depth of 20 feet (the area of the intake canal has a natural rock bottom starting under the initial layer of sand and sediment. The depth of the sand and sediment layer varies greatly in the area. The canal was dredged through the sand and sediment leaving a rock bottom that extends the length of the canal). The canal is bordered on both sides by land beginning from the plant site and extending 3 miles to the west. The canal then extends westward an additional 11 miles out into the Gulf of Mexico.

II. Status of the Species

The following endangered and threatened marine mammal, sea turtle, and marine plant species under the jurisdiction of NOAA Fisheries are known to occur in or near the action area:

<u>Common Name</u>	<u>Scientific Name</u>
<u>Endangered</u>	
Green sea turtle	<i>Chelonia mydas*</i>
Kemp's ridley sea turtle	<i>Lepidochelys kempii</i>
Hawksbill sea turtle	<i>Eretmochelys imbricata</i>
Leatherback sea turtle	<i>Dermochelys coriacea</i>
Right whale	<i>Eubalaena glacialis</i>
Humpback whale	<i>Megaptera novaeangliae</i>

Sperm whale

Physeter macrocephalus

Threatened

Loggerhead sea turtle

Caretta caretta

Gulf sturgeon

Acipenser oxyrinchus desotoi

Critical Habitat

There is no critical habitat in the action area.

** Green turtles in U.S. waters are listed as threatened except for the Florida breeding population, which is listed as endangered. Due to the inability to distinguish between the populations away from the nesting beaches, green turtles are considered endangered wherever they occur in U.S. waters.*

Sperm whales (*Physeter macrocephalus*), occur in the Gulf of Mexico but are rare in state waters. Other endangered whales, including North Atlantic right whales (*Eubalaena glacialis*) and humpback whales (*Megaptera novaengliae*), have been observed occasionally in the Gulf of Mexico. The individuals observed have likely been inexperienced juveniles straying from the normal range of these stocks. NOAA Fisheries does not believe that there are resident stocks of these species in the Gulf of Mexico; therefore, these species are not likely to be adversely affected by projects in the Gulf. Based on this information, NOAA Fisheries believes that the chance of the proposed action affecting listed species of large whales is discountable.

Although the Gulf sturgeon's migratory habits are not well known, NOAA Fisheries believes it is unlikely that Gulf sturgeon will stray from mud and sand bottom marine foraging areas in the Gulf to enter the rocky bottomed intake canal of the CREC and subsequently be affected by the cooling water intake system. Studies conducted by CREC from 1980 to 1983, to determine the species of fish and invertebrates affected by the cooling water system, showed no evidence of Gulf sturgeon. Based on this information, NOAA Fisheries believes that the chance of the proposed action adversely affecting Gulf sturgeon is discountable. Therefore, the remainder of the analysis in this Opinion will focus on the five species of sea turtles in or near the action area.

A. Species/critical habitat description

Loggerhead Sea Turtle

The loggerhead sea turtle was listed as a threatened species in 1978. This species inhabits the continental shelves and estuarine environments along the margins of the Atlantic, Pacific, and Indian oceans, and within the continental United States it nests from Louisiana to Virginia. The major nesting areas include coastal islands of Georgia, South Carolina, and North Carolina, and the Atlantic and Gulf coasts of Florida, with the bulk of the nesting occurring on the Atlantic

coast of Florida. Developmental habitat for small juveniles are the pelagic waters of the North Atlantic and the Mediterranean Sea.

There is no critical habitat designated for the loggerhead sea turtle.

Green Sea Turtle

Federal listing of the green sea turtle occurred on July 28, 1978, with all populations listed as threatened except for the Florida and Pacific coast of Mexico breeding populations which are endangered. The complete nesting range of the green turtle within the NOAA Fisheries' Southeast Region includes sandy beaches of mainland shores, barrier islands, coral islands, and volcanic islands between Texas and North Carolina and at the U.S. Virgin Islands (U.S.V.I.) and Puerto Rico (NOAA Fisheries and USFWS 1991a). Principal U.S. nesting areas for green turtles are in eastern Florida, predominantly Brevard through Broward counties (Ehrhart and Witherington 1992). Regular green turtle nesting also occurs on St Croix, U.S.V.I., and on Vieques, Culebra, Mona, and the main island of Puerto Rico (Mackay and Rebholz 1996, Díez pers. comm.).

Critical habitat for the green sea turtle has been designated for the waters surrounding Isla Culebra, Puerto Rico, and its associated keys.

Kemp's Ridley Sea Turtle

The Kemp's ridley was listed as endangered on December 2, 1970. Internationally, the Kemp's ridley is considered the most endangered sea turtle (Zwinnenberg 1977, Groombridge 1982). Kemp's ridleys nest in daytime aggregations known as arribadas, primarily at Rancho Nuevo, a stretch of beach in Mexico, Tamaulipas State. The species occurs mainly in coastal areas of the Gulf of Mexico and the northwestern Atlantic Ocean. Occasional individuals reach European waters (Brongersma 1972). Adults of this species are usually confined to the Gulf of Mexico, although adult-sized individuals sometimes are found on the Eastern Seaboard of the United States.

There is no designated critical habitat for the Kemp's ridley sea turtle.

Leatherback Sea Turtle

The leatherback was listed as endangered on June 2, 1970. Leatherbacks are widely distributed throughout the oceans of the world, and are found in waters of the Atlantic, Pacific, and Indian oceans; the Caribbean Sea; and the Gulf of Mexico (Ernst and Barbour 1972). Adult leatherbacks forage in temperate and subpolar regions from 71°N to 47°S latitude in all oceans and undergo extensive migrations between 90°N and 20°S, to and from the tropical nesting beaches. In the Atlantic Ocean, leatherbacks have been recorded as far north as Newfoundland, Canada, and Norway, and as far south as Uruguay, Argentina, and South Africa (see NOAA

Fisheries, SEFSC 2001). Female leatherbacks nest from the southeastern United States to southern Brazil in the western Atlantic and from Mauritania to Angola in the eastern Atlantic. The most significant nesting beaches in the Atlantic, and perhaps in the world, are in French Guiana and Suriname (see NOAA Fisheries, SEFSC 2001).

Critical habitat for the leatherback includes the waters adjacent to Sandy Point, St. Croix, U.S.V.I.

Hawksbill Sea Turtles

The hawksbill turtle is listed as endangered under the ESA, and is considered Critically Endangered by the International Union for the Conservation of Nature (IUCN) based on global population declines of over 80% during the last three generations (105 years) (Meylan and Donnelly 1999). Only five regional nesting populations remain with more than 1,000 females nesting annually (Seychelles, Mexico, Indonesia, and two in Australia) (Meylan and Donnelly 1999). Most populations are declining, depleted, or remnants of larger aggregations. Although hawksbills are subject to the suite of threats that affect other marine turtles, the decline of the species is primarily attributed to centuries of exploitation for tortoiseshell, the beautifully patterned scales that cover the turtle's shell (Parsons 1972).

Critical habitat for the hawksbill includes the waters around Mona and Monito Islands, Puerto Rico.

B. Life history

Loggerhead Sea Turtle

Mating takes place in late March-early June, and eggs are laid throughout the summer, with a mean clutch size of 100-126 eggs in the southeastern United States. Individual females nest multiple times during a nesting season, with a mean of 4.1 nests/nesting individual (Murphy and Hopkins 1984). Nesting migrations for an individual female loggerhead are usually on an interval of 2-3 years, but can vary from 1-7 years (Dodd 1988). Loggerhead sea turtles originating from the western Atlantic nesting aggregations are believed to lead a pelagic existence in the North Atlantic Gyre for as long as 7-12 years or more, but there is some variation in habitat use by individuals at all life stages. Turtles in this life history stage are called "pelagic immatures." Stranding records indicate that when pelagic immature loggerheads reach 40-60 cm straight-line carapace length they begin to recruit to coastal inshore and nearshore waters of the continental shelf throughout the U.S. Atlantic and Gulf of Mexico.

Benthic immature loggerheads, the life stage following the pelagic immature stage, have been found from Cape Cod, Massachusetts, to southern Texas, and occasionally strand on beaches in northeastern Mexico. Large benthic immature loggerheads (70-91 cm) represent a larger proportion of the strandings and in-water captures (Schroeder et al. 1998) along the south and

western coasts of Florida as compared with the rest of the coast, which could indicate that the larger animals are either more abundant in these areas or just more abundant within the area relative to the smaller turtles. Benthic immature loggerheads foraging in northeastern U.S. waters are known to migrate southward in the fall as water temperatures cool (Epperly et al. 1995b, Keinath 1993, Morreale and Standora 1999, Shoop and Kenney 1992), and migrate northward in spring. Past literature gave an estimated age at maturity of 21-35 years (Frazer and Ehrhart 1985, Frazer et al. 1994) and the benthic immature stage as lasting at least 10-25 years. However, NOAA Fisheries, SEFSC (2001) reviewed the literature and constructed growth curves from new data, estimating ages of maturity ranging from 20-38 years and benthic immature stage lengths from 14-32 years.

Juveniles are omnivorous and forage on crabs, mollusks, jellyfish, and vegetation at or near the surface (Dodd 1988). Sub-adult and adult loggerheads are primarily coastal and typically prey on benthic invertebrates such as mollusks and decapod crustaceans in hard bottom habitats.

Green Sea Turtle

Green sea turtle mating occurs in the waters off the nesting beaches. Each female deposits 1-7 clutches (usually 2-3) during the breeding season at 12-14 day intervals. Mean clutch size is highly variable among populations, but averages 110-115. Females usually have 2-4 or more years between breeding seasons, while males may mate every year (Balazs 1983). After hatching, green sea turtles go through a post-hatchling pelagic stage where they are associated with drift lines of algae and other debris

Green turtle foraging areas in the southeast United States include any neritic waters having macroalgae or sea grasses near mainland coastlines, islands, reefs, or shelves, and any open-ocean surface waters, especially where advection from wind and currents concentrates pelagic organisms (Hirth 1997, NOAA Fisheries and USFWS 1991). Principal benthic foraging areas in the region include Aransas Bay, Matagorda Bay, Laguna Madre, and the Gulf inlets of Texas (Doughty 1984, Hildebrand 1982, Shaver 1994), the Gulf of Mexico off Florida from Yankeetown to Tarpon Springs (Caldwell and Carr 1957, Carr 1984), Florida Bay and the Florida Keys (Schroeder and Foley 1995), the Indian River Lagoon System, Florida (Ehrhart 1983), and the Atlantic Ocean off Florida from Brevard through Broward counties (Wershoven and Wershoven 1992, Guseman and Ehrhart 1992). Adults of both sexes are presumed to migrate between nesting and foraging habitats along corridors adjacent to coastlines and reefs. Age at sexual maturity is estimated to be between 20 to 50 years (Balazs 1982, Frazer and Ehrhart 1985).

Green sea turtles are primarily herbivorous, feeding on algae and sea grasses, but also occasionally consume jellyfish and sponges. The post-hatchling, pelagic-stage individuals are assumed to be omnivorous, but little data are available.

Kemp's Ridley Sea Turtle

Remigration of females to the nesting beach varies from annually to every 4 years, with a mean of 2 years (TEWG 1998). Nesting occurs from April into July and is essentially limited to the beaches of the western Gulf of Mexico, near Rancho Nuevo in southern Tamaulipas, Mexico. The mean clutch size for Kemp's ridleys is 100 eggs/nest, with an average of 2.5 nests/female/season.

Juvenile/subadult Kemp's ridleys have been found along the Eastern Seaboard of the United States and in the Gulf of Mexico. Atlantic juveniles/subadults travel northward with vernal warming to feed in the productive, coastal waters of Georgia through New England, returning southward with the onset of winter to escape the cold (Lutcavage and Musick 1985, Henwood and Ogren 1987, Ogren 1989). In the Gulf, juvenile/subadult ridleys occupy shallow, coastal regions. Ogren (1989) suggested that in the northern Gulf they move offshore to deeper, warmer water during winter. Studies suggest that subadult Kemp's ridleys stay in shallow, warm, nearshore waters in the northern Gulf of Mexico until cooling waters force them offshore or south along the Florida coast (Renaud 1995). Little is known of the movements of the post-hatching, planktonic stage within the Gulf. Studies have shown the post-hatchling pelagic stage varies from 1-4 or more years, and the benthic immature stage lasts 7-9 years (Schmid and Witzell 1997). The Turtle Expert Working Group (1998) (TEWG) estimates age at maturity to range from 7-15 years.

Stomach contents of Kemp's ridleys along the lower Texas coast consisted of a predominance of nearshore crabs and mollusks, as well as fish, shrimp and other foods considered to be shrimp fishery discards (Shaver 1991). Pelagic stage, neonatal Kemp's ridleys presumably feed on the available Sargassum and associated infauna or other epipelagic species found in the Gulf of Mexico.

Leatherback Sea Turtle

Female leatherbacks nest from the southeastern United States to southern Brazil in the western Atlantic and from Mauritania to Angola in the eastern Atlantic, with nesting occurring as early as late February or March. When they leave the nesting beaches, leatherbacks move offshore but eventually utilize both coastal and pelagic waters. Very little is known about the pelagic habits of the hatchlings and juveniles, and they have not been documented to be associated with the Sargassum areas as are other species. Leatherbacks are deep divers, with recorded dives to depths in excess of 1,000 m (Eckert et al. 1989), but they may come into shallow waters if there is an abundance of jellyfish nearshore.

Although leatherbacks are a long-lived species (> 30 years), they are somewhat faster to mature than loggerheads. Leatherbacks have an estimated age at sexual maturity reported of about 13-14 years for females, with 9 years reported as a likely minimum (Zug 1996) and 19 years as a likely maximum (NOAA Fisheries, SEFSC 2001). They nest frequently (up to 7 nests per year) during

a nesting season and nest about every 2-3 years. During each nesting, they produce 100 eggs or more in each clutch and, thus, can produce 700 eggs or more per nesting season (Schultz 1975).

Leatherback sea turtles feed primarily on jellyfish as well as cnidarians and tunicates. They are also the most pelagic of the turtles, but have been known to enter coastal waters on a seasonal basis to feed in areas where jellyfish are concentrated.

Hawksbill Sea Turtles

The life history of hawksbills consists of a pelagic stage that lasts from the time they leave the nesting beach as hatchlings until they are approximately 22-25 cm in straight carapace length (Meylan 1988, Meylan in prep.), followed by residency in developmental habitats (foraging areas where immatures reside and grow) in coastal waters. Adult foraging habitat, which may or may not overlap with developmental habitat, is typically coral reefs, although other hard-bottom communities and occasionally mangrove-fringed bays may be occupied. Hawksbills show fidelity to their foraging areas over periods of time as great as several years (van Dam and Díez 1998).

Hawksbills may undertake developmental migrations (migrations as immatures) and reproductive migrations that involve travel over hundreds or thousands of kilometers (Meylan 1999b). Reproductive females undertake periodic (usually non-annual) migrations to their natal beach to nest. Movements of reproductive males are less well known, but are presumed to involve migrations to the nesting beach or to courtship stations along the migratory corridor. Females nest an average of 3-5 times per season with some geographic variation in this parameter (see references on pp. 204-205, Meylan and Donnelly 1999; Richardson et al. 1999). Clutch size is higher on average (up to 250 eggs) than that of green turtles (Hirth 1980). Reproductive females may exhibit a high degree of fidelity to their nest sites. This, plus the tendency of hawksbills to nest at regular intervals within a season, make them vulnerable to capture on the nesting beach.

C. Population dynamics, status, and distribution

Loggerhead Sea Turtle

Loggerhead sea turtles occur throughout the temperate and tropical regions of the Atlantic, Pacific, and Indian oceans and are the most abundant species of sea turtle occurring in U.S. waters. Loggerhead sea turtles concentrate their nesting in the north and south temperate zones and subtropics, but generally avoid nesting in tropical areas of Central America, northern South America, and the Old World (Magnuson et al. 1990).

In the western Atlantic, most loggerhead sea turtles nest from North Carolina to Florida and along the Gulf coast of Florida. There are five western Atlantic subpopulations, divided geographically as follows: (1) a northern nesting subpopulation, occurring from North Carolina to northeast Florida at about 29° N (approximately 7,500 nests in 1998); (2) a south Florida

nesting subpopulation, occurring from 29° N on the east coast to Sarasota on the west coast (approximately 83,400 nests in 1998); (3) a Florida Panhandle nesting subpopulation, occurring at Eglin Air Force Base and the beaches near Panama City, Florida (approximately 1,200 nests in 1998); (4) a Yucatán nesting subpopulation, occurring on the eastern Yucatán Peninsula, Mexico (Márquez 1990) (approximately 1,000 nests in 1998) (TEWG 2000); and (5) a Dry Tortugas nesting subpopulation, occurring in the islands of the Dry Tortugas, near Key West, Florida (approximately 200 nests per year) (NOAA Fisheries, SEFSC 2001). Natal homing of females to the nesting beach provides the barrier between these subpopulations, preventing recolonization with turtles from other nesting beaches.

Based on the data available, it is difficult to estimate the size of the loggerhead sea turtle population in the United States or its territorial waters. There is, however, general agreement that the number of nesting females provides a useful index of the species' population size and stability at this life stage. Nesting data collected on index nesting beaches in the United States from 1989-1998 represent the best data set available to index the population size of loggerhead sea turtles. However, an important caveat for population trends analysis based on nesting beach data is that this may reflect trends in adult nesting females but not reflect overall population growth rates. Given this caveat, between 1989 and 1998, the total number of nests laid along the U.S. Atlantic and Gulf coasts ranged from 53,014 to 92,182 annually, with a mean of 73,751. On average, 90.7% of these nests were from the south Florida subpopulation, 8.5% were from the northern subpopulation, and 0.8% were from the Florida Panhandle nest sites. There is limited nesting throughout the Gulf of Mexico west of Florida, but it is not known to which subpopulation the turtles making these nests belong.

The number of nests in the northern subpopulation from 1989 to 1998 was 4,370 to 7,887, with a 10-year mean of 6,247 nests. With each female producing an average of 4.1 nests in a nesting season, the average number of nesting females per year in the northern subpopulation was 1,524. The total nesting and non-nesting adult female population is estimated as 3,810 adult females in the northern subpopulation (TEWG 1998, 2000). The northern population, based on number of nests, has been classified as stable or declining (TEWG 2000). Another consideration adding to the vulnerability of the northern subpopulation is that NOAA Fisheries' scientists estimate that the northern subpopulation produces 65% males, while the south Florida subpopulation is estimated to produce 80% females (NOAA Fisheries, SEFSC 2001).

The southeastern U.S. nesting aggregation is of great importance on a global scale and is second in size only to the nesting aggregation on islands in the Arabian Sea off Oman (Ross 1979, Ehrhart 1989, NOAA Fisheries and USFWS 1991b). The global importance of the southeast U.S. nesting aggregation is especially significant because the status of the Oman colony has not been evaluated recently, but it is located in an area of the world where it is highly vulnerable to disruptive events such as political upheavals, wars, catastrophic oil spills, and lack of strong protections (Meylan et al. 1995).

Ongoing threats to the western Atlantic populations include incidental takes from dredging, commercial trawling, longline fisheries, and gillnet fisheries; loss or degradation of nesting habitat from coastal development and beach armoring; disorientation of hatchlings by beachfront lighting; nest predation by native and non-native predators; degradation of foraging habitat; marine pollution and debris; watercraft strikes; and disease.

Green Sea Turtle

The vast majority of green turtle nesting within the southeast United States occurs in Florida. In Florida from 1989-1999, green turtle abundance from nest counts ranges from 109-1,389 nesting females per year (Meylan et al. 1995 and Florida Marine Research Institute Statewide Nesting 2001 Database, unpublished data; estimates assume 4 nests per female per year, Johnson and Ehrhart 1994). High biennial variation and a predominant 2-year re-migration interval (Witherington and Ehrhart 1989, Johnson and Ehrhart 1994) warrant combining even and odd years into 2-year cohorts. This gives an estimate of total nesting females that ranges from 705-1,509 during the period 1990-1999. It is important to note that because methodological limitations make the clutch frequency number (4 nests/female/year) an underestimate (by as great as 50%), a more conservative estimate is 470-1,509 nesting females in Florida between 1990 and 1999. In Florida during the period 1989-1999, numbers of green turtle nests by year show no trend. However, odd-even year cohorts of nests do show a significant increase during the period 1990-1999 (Florida Marine Research Institute, 2001 Index Nesting Beach Survey Database).

It is unclear how greatly green turtle nesting in the whole of Florida has been reduced from historical levels (Dodd 1981), although one account indicates that nesting in Florida's Dry Tortugas may now be only a small fraction of what it once was (Audubon 1926). Total nest counts and trends at index beach sites during the past decade suggest that green turtles that nest within the southeast United States are recovering and have only recently reached a level of approximately 1,000 nesting females. There are no reliable estimates of the number of green turtles inhabiting foraging areas within the southeast United States, and it is likely that green turtles foraging in the region come from multiple genetic stocks. These trends are also uncertain because of a lack of data. However, there is one sampling area in the region with a large time series of constant turtle-capture effort that may represent trends for a limited area within the region. This sampling area is at an intake canal for a power plant on the Atlantic coast of Florida where 2,578 green turtles have been captured during the period 1977-1999 (FPL 2000). At the power plant, the annual number of immature green turtle captures (minimum straight-line carapace length < 85 cm) has increased significantly during the 23-year period.

Status of immature green turtles foraging in the southeast United States might also be assessed from trends at nesting beaches where many of the turtles originated, principally, Florida, Yucatán, and Tortuguero. Trends at Florida beaches are presented above. Trends in nesting at Yucatán beaches cannot be assessed because of irregularity in beach survey methods over time. Trends at Tortuguero (ca. 20,000-50,000 nests/year) show a significant increase in nesting during the period 1971-1996 (Bjorndal et al. 1999).

The principal cause of past declines and extirpations of green turtle assemblages has been the over-exploitation of green turtles for food and other products. Although intentional take of green turtles and their eggs is not extensive within the southeast United States, green turtles that nest and forage in the region may spend large portions of their life history outside the region and outside United States' jurisdiction, where exploitation is still a threat. Adult green turtles and immatures are exploited heavily on foraging grounds off Nicaragua and to a lesser extent off Colombia, Mexico, Panama, Venezuela, and the Tortuguero nesting beach (Carr et al. 1978, Nietschmann 1982, Bass et al. 1998, Lagueux 1998).

There are significant and ongoing threats to green turtles from human-related causes. Threats to nesting beaches in the region include beach armoring, erosion control, artificial lighting, and disturbance, which can be expected to increase with time. Pollution is known to have both direct (ingestion of foreign materials such as tar balls and plastics) and indirect (degradation of foraging grounds) impacts on green sea turtles. Foraging habitat loss also occurs as a result of direct destruction by dredging, siltation, boat damage, and other human activities. Green turtles are often captured and occasionally killed by interactions with fishing gear. Collisions with power boats and encounters with suction dredges have killed green turtles along the U.S. coast and may be common elsewhere where boating and dredging activities are frequent (Florida Marine Research Institute, Sea Turtle Stranding and Salvage Network Database). Threats from increasing incidences of disease, which may or may not have some relation to human influences, are also a concern. The occurrence of green turtle fibropapillomatosis disease was originally reported in the 1930s, when it was thought to be rare (Smith and Coates 1938). Presently, this disease is cosmopolitan and has been found to affect large numbers of animals in some areas, including Hawaii and Florida (Herbst 1994, Jacobson 1990, Jacobson et al. 1991).

Kemp's Ridley Sea Turtle

L. kempii has a very restricted distribution relative to the other sea turtle species. Data suggests that adult Kemp's ridley turtles are restricted somewhat to the Gulf of Mexico in shallow near shore waters, and benthic immature turtles of 20-60 cm straight line carapace length are found in nearshore coastal waters including estuaries of the Gulf of Mexico and the Atlantic, although adult-sized individuals sometimes are found on the Eastern Seaboard of the United States. The post-pelagic stages are commonly found dwelling over crab-rich sandy or muddy bottoms. Juveniles frequent bays, coastal lagoons, and river mouths.

Of the seven extant species of sea turtles in the world, the Kemp's ridley has declined to the lowest population level. Most of the population of adult females nest on the Rancho Nuevo beaches (Pritchard 1969). When nesting aggregations at Rancho Nuevo were discovered in 1947, adult female populations were estimated to be in excess of 40,000 individuals (Hildebrand 1963). By the early 1970s, the world population estimate of mature female Kemp's ridleys had been reduced to 2,500-5,000 individuals. The population declined further through the mid-1980s. Recent observations of increased nesting suggest that the decline in the ridley population has stopped and the population is now increasing.

The TEWG (1998) identified three population trends in benthic immature ridleys. Benthic immatures are not yet reproductively mature but have recruited to feed in the nearshore benthic environment, where they are exposed to nearshore mortality sources that often result in strandings. Increased production of hatchlings from the nesting beach beginning in 1966 resulted in an increase in benthic ridleys that leveled off in the late 1970s. A second period of increase followed by leveling occurred between 1978 and 1989 as hatchling production was further enhanced by the cooperative program between the U.S. Fish and Wildlife Service and Mexico's Instituto Nacional de Pesca to increase the nest protection and relocation program in 1978. A third period of steady increase, which has not leveled off to date, has occurred since 1990 and appears to be due to the greatly increased hatchling production and an apparent increase in survival rates of immature turtles beginning in 1990, due in part to the introduction of turtle excluder devices (TEDs) in the U.S. and Mexican shrimping fleets. Adult ridley numbers have now grown, as shown in nesting increases at the main nesting sites in Mexico. Nesting at Tamaulipas and Veracruz increased from a low of 702 nests in 1985, to 1,930 nests in 1995, to 6,277 nests in 2000 (USFWS 2000). The population model used by the TEWG (1998) projected that Kemp's ridleys could reach the intermediate recovery goal identified in the Recovery Plan, of 10,000 nesters by the year 2020 if the assumptions of age to sexual maturity and age specific survivorship rates used in their model are correct.

The largest contributor to the decline of the ridley in the past was commercial and local exploitation, especially poaching of nests at the Rancho Nuevo site, as well as the Gulf of Mexico trawl fisheries. The advent of TED regulations for trawlers and protections for the nesting beaches have allowed the species to begin to rebound. Many threats to the future of the species remain, including interactions with fishery gear, marine pollution, foraging habitat destruction, illegal poaching of nests and potential threats to the nesting beaches from such sources as global climate change, development, and tourism pressures.

Leatherback Sea Turtle

Leatherbacks are widely distributed throughout the oceans of the world, and are found in waters of the Atlantic, Pacific, Caribbean, and the Gulf of Mexico (Ernst and Barbour 1972). The leatherback is the largest living turtle and it ranges farther than any other sea turtle species, exhibiting broad thermal tolerances (NOAA Fisheries and USFWS 1995). Genetic analyses of leatherbacks to date indicate that within the Atlantic basin significant genetic differences occur among St. Croix (U.S.V.I.) and mainland Caribbean populations (Florida, Costa Rica, Suriname/French Guiana), and between Trinidad and the mainland Caribbean populations (Dutton et al. 1999), leading to the conclusion that there are at least three separate subpopulations of leatherbacks in the Atlantic.

Nest counts are the only reliable population information available for leatherback turtles. Recent declines have been seen in the number of leatherbacks nesting worldwide (NOAA Fisheries and USFWS 1995). A population estimate of 34,500 females (26,200-42,900) was made by Spotila

et al. (1996), who stated that the species as a whole was declining and local populations were in danger of extinction. Historically, decline was due primarily to intense exploitation of the eggs (Ross 1979), but adult mortality has increased significantly from interactions with fishery gear (Spotila et al. 1996). The Pacific population is in a critical state of decline, now estimated to number less than 3,000 total adult and subadult animals (Spotila et al. 2000). The status of the Atlantic population is less clear. In 1996, it was reported to be stable, at best (Spotila et al. 1996), but numbers in the western Atlantic at that time were reported to be on the order of 18,800 nesting females. According to Spotila (pers. comm.), the western Atlantic population currently numbers about 15,000 nesting females, whereas current estimates for the Caribbean (4,000) and the eastern Atlantic, off Africa, (numbering ca. 4,700) have remained consistent with numbers reported by Spotila et al. in 1996.¹

The nesting aggregation in French Guiana has been declining at about 15% per year since 1987. From 1979-1986, the number of nests was increasing at about 15% annually. The number of nests in Florida and the U.S. Caribbean has been increasing at about 10.3% and 7.5%, respectively, per year since the early 1980s but the magnitude of nesting is much smaller than that along the French Guiana coast (see NOAA Fisheries SEFSC 2001). In summary, the conflicting information regarding the status of Atlantic leatherbacks makes it difficult to conclude whether or not the population is currently in decline. Numbers at some nesting sites are up, while at others they are down.

Zug (1996) pointed out that the combination of the loss of long-lived adults in fishery-related mortality (especially entanglement in gear and drowning in trawls), and the lack of recruitment stemming from elimination of annual influxes of hatchlings because of intense egg harvesting, has caused the sharp decline in leatherback populations. Other important ongoing threats to the population include pollution, loss of nesting habitat, and boat strikes.

Hawksbill Sea Turtle

The hawksbill is a medium-sized sea turtle with adults in the Caribbean ranging in size from approximately 62.5 to 94.0 cm straight carapace length. The species occurs in all ocean basins although it is relatively rare in the Eastern Atlantic and Eastern Pacific, and absent from the Mediterranean Sea. Hawksbills are the most tropical of the marine turtles, ranging from approximately 30°N to 30° S. They are closely associated with coral reefs and other hard-bottom habitats, but they are also found in other habitats including inlets, bays, and coastal lagoons. The diet is highly specialized and consists primarily of sponges (Meylan 1988), although other food items, notably corallimorphs and zooanthids, have been documented to be important in some areas of the Caribbean (van Dam and Díez 1997, Mayor et al. 1998, Leon and Díez 2000).

In the Western Atlantic, the largest hawksbill nesting population occurs in the Yucatán Peninsula of Mexico, where several thousand nests are recorded annually in the states of Campeche, Yucatán, and Quintana Roo (Garduño-Andrade et al. 1999). Important but significantly smaller nesting aggregations are documented elsewhere in the region in Puerto Rico, the U.S.V.I.,

Antigua, Barbados, Costa Rica, Cuba, and Jamaica (Meylan 1999a). Estimates of the annual number of nests for each of these areas are of the order of hundreds to a few thousand. Nesting within the southeastern U.S. and U.S. Caribbean is restricted to Puerto Rico (>650 nests/yr), the U.S.V.I. (~400 nests/yr), and, rarely, Florida (0-4 nests/yr) (Eckert 1995, Meylan 1999a, Florida Statewide Nesting Beach Survey database). At the two principal nesting beaches in the U.S. Caribbean where long-term monitoring has been carried out, populations appear to be increasing (Mona Island, Puerto Rico) or stable (Buck Island Reef National Monument, St. Croix, U.S.V.I.) (Meylan 1999a).

D. Analysis of the species/critical habitat likely to be affected

Of the above listed species occurring in the action area, NOAA Fisheries believes that Kemp's ridley, loggerhead, green, hawksbill, and leatherback sea turtles are likely to be adversely affected by the proposed action, but no critical habitat for any species will be impacted. These five species are known to occur in the action area and the likelihood of them being impacted by the activities in the action area is not discountable.

III. Environmental Baseline

This section contains an analysis of the effects of past and ongoing human and natural factors leading to the current status of the species, its habitat, and ecosystem, within the action area. The environmental baseline is a snapshot of a species' health at a specified point in time and includes state, tribal, local, and private actions already affecting the species, or that will occur contemporaneously with the consultation in progress. Unrelated Federal actions affecting the same species or critical habitat that have completed formal or informal consultation are also part of the environmental baseline, as are Federal and other actions within the action area that may benefit listed species or critical habitat.

The environmental baseline for this Opinion includes the effects of several activities that affect the survival and recovery of threatened and endangered species in the action area. The activities that shape the environmental baseline in the action area of this consultation are primarily fisheries and recovery activities associated with reducing fisheries impacts. Other environmental impacts include effects of discharges, dredging, military activities, and industrial cooling water intake.

A. Status of the species within the action area

The five species of sea turtles that occur in the action area are all highly migratory. NOAA Fisheries believes that no individual members of any of the species are likely to be year-round residents of the action area. Individual animals will make migrations into nearshore waters as well as other areas of the North Atlantic Ocean, Gulf of Mexico, and the Caribbean Sea. Therefore, the range-wide status of the five species of sea turtles, given in Section II above, most accurately reflects the species' status within the action area.

B. Factors affecting species environment within the action area.

As explained above, sea turtles found in the action area are not year-round residents of the area, and may travel widely throughout the Atlantic, Gulf of Mexico, and Caribbean Sea. Therefore, individuals found in the action area can potentially be affected by activities anywhere else within this wide range.

Federal Actions

In recent years, NOAA Fisheries has undertaken several ESA section 7 consultations to address the effects of federally-permitted fisheries and other Federal actions on threatened and endangered species. Each of those consultations sought to develop ways of reducing the probability of adverse effects of the action on sea turtles. Similarly, recovery actions NOAA Fisheries has undertaken under the ESA are addressing the problem of take of sea turtles in the fishing and shipping industries. The following summary of anticipated sources of incidental take of turtles includes only those Federal actions which have undergone formal section 7 consultation.

Potential adverse effects from Federal vessel operations in the action area and throughout the range of sea turtles include operations of the Navy (USN) and Coast Guard (USCG), the Environmental Protection Agency, the National Oceanic and Atmospheric Administration (NOAA), and the Army Corps of Engineers (COE). NOAA Fisheries has conducted formal consultations with the USCG, and the USN on their vessel operations. Through the section 7 process, where applicable, NOAA Fisheries has and will continue to establish conservation measures for all these agency vessel operations to avoid or minimize adverse effects to listed species. At the present time, however, they represent potential for some level of interaction.

In addition to vessel operations, other military activities including training exercises and ordnance detonation also adversely affect sea turtles. Consultations on individual activities have been completed, but no formal consultation on overall USCG or USN activities in any region has been completed at this time.

The construction and maintenance of Federal navigation channels has also been identified as a source of turtle mortality. Hopper dredges move relatively rapidly (compared to sea turtle swimming speeds) and can entrain and kill sea turtles, presumably as the drag arm of the moving dredge overtakes the slower moving turtle. Regional biological opinions (RBOs) with corresponding ITSs have been issued to the COE for the southeast Atlantic waters and the Gulf of Mexico. Consultation is currently underway, on a new RBO for the COE's Gulf of Mexico hopper dredging operations.

The COE and Minerals Management Service (MMS) (the latter is non-military) oil and gas exploration, well development, production, and abandonment/rig removal activities also

adversely affect sea turtles. Both of these agencies have consulted with NOAA Fisheries on these types of activities.

Adverse effects on threatened and endangered species from several types of fishing gear occur in the action area. Efforts to reduce the adverse effects of commercial fisheries are addressed through the ESA section 7 process. Gillnet, longline, trawl gear, and pot fisheries have all been documented as interacting with sea turtles. For all fisheries for which there is a Federal fishery management plan (FMP) or for which any Federal action is taken to manage that fishery, impacts have been evaluated under section 7. Several formal consultations have been conducted on the following fisheries that NOAA Fisheries has determined are likely to adversely affect threatened and endangered species: American lobster, monkfish, dogfish, southeastern shrimp trawl fishery, northeast multispecies, Atlantic pelagic swordfish/tuna/shark, and summer flounder/scup/black sea bass fisheries.

On June 14, 2001, NOAA Fisheries issued a jeopardy opinion for the Highly Migratory Species (HMS) fisheries off the eastern United States. The HMS Opinion found that the continued prosecution of the pelagic longline fishery in the manner described in the HMS FMP was likely to jeopardize the continued existence of loggerhead and leatherback sea turtles. This determination was made by analyzing the effects of the fishery on sea turtles in conjunction with the environmental baseline and cumulative effects. The environmental baseline section of the HMS Opinion is incorporated herein by reference and can be found at the following NOAA Fisheries website:
http://www.nmfs.noaa.gov/prot_res/readingrm/ESAsec7/HMS060801final.pdf

The environmental baseline for the June 14, 2001, HMS Opinion also considered the impacts from the North Carolina offshore spring monkfish gillnet fishery and the inshore fall southern flounder gillnet fishery, both of which were responsible for large numbers of sea turtle mortalities in 1999 and 2000, especially loggerhead sea turtles. However, during the 2001 season NOAA Fisheries implemented an observer program that observed 100% of the effort in the monkfish fishery, and then in 2002 a rule was enacted creating a seasonal monkfish gillnet closure along the Atlantic coast based upon sea surface temperature data and turtle migration patterns. In 2001, NOAA Fisheries also issued an ESA section 10 permit with mitigative measures for the southern flounder fishery. Subsequently, the sea turtle mortalities in these fisheries were drastically reduced. The reduction of turtle mortalities in these fisheries reduces the negative effects these fisheries have on the environmental baseline.

NOAA Fisheries has implemented a reasonable and prudent alternative (RPA) in the HMS fishery which would allow the continuation of the pelagic longline fishery without jeopardizing the continued existence of loggerhead and leatherback sea turtles. The provisions of this RPA include the closure of the Grand Banks region off the northeast United States and gear restrictions that are expected to reduce the by-catch of loggerheads by as much as 76% and leatherbacks by as much as 65%. Further, NOAA Fisheries is implementing a major research project to develop measures aimed at further reducing longline by-catch. The implementation of this RPA reduces the negative effects that the HMS fishery has on the environmental baseline.

The conclusions of the June 14, 2001, HMS Opinion and the subsequent implementation of the RPA are hereby incorporated into the environmental baseline section of this Opinion.

Another action with Federal oversight which has impacts on sea turtles is the operation of electrical generating plants. Sea turtles entering coastal or inshore areas have been affected by entrainment in the cooling-water systems of electrical generating plants. Biological opinions have already been written for a number of electrical generating plants, and others are currently undergoing section 7 consultation.

State or Private Actions

Commercial vessel traffic and recreational pursuits can have an adverse effect on sea turtles through propeller and boat strike damage. Private vessels participate in high speed marine events concentrated in the southeastern United States and are a particular threat to sea turtles, and occasionally to marine mammals as well. The magnitude of these marine events is not currently known. NOAA Fisheries and the USCG are in early consultation on these events, but a thorough analysis has not been completed.

Various fishing methods used in state fisheries, including trawling, pot fisheries, fly nets, and gillnets are known to cause interactions with sea turtles. Georgia and South Carolina prohibit gillnets for all but the shad fishery. Florida has banned all but very small nets in state waters, as has Texas. Louisiana, Mississippi, and Alabama have also placed restrictions on gillnet fisheries within state waters such that very little commercial gillnetting takes place in southeast waters, with the exception of North Carolina. Most pot fisheries in the Southeast are prosecuted in areas frequented by sea turtles.

Strandings in the North Carolina area represent, at best, 7%-13% of the actual nearshore mortality (Epperly et al. 1996). Studies by Bass et al. (1998), Norrgard (1995), and Rankin-Baransky (1997) indicate that the percentage of northern loggerheads in this area is highly over-represented in the strandings when compared to the approximately 9% representation from this subpopulation in the overall U.S. sea turtle nesting populations. Specifically, the genetic composition of sea turtles in this area is 25%-54% from the northern subpopulation, 46%-64% from the South Florida subpopulation, and 3%-16% from the Yucatán subpopulation. The cumulative removal of these turtles on an annual basis would severely impact the recovery of this species.

Other Potential Sources of Impacts in the Environmental Baseline

A number of activities that may indirectly affect listed species include discharges from wastewater systems, dredging, ocean dumping and disposal, and aquaculture. The impacts from these activities are difficult to measure. Where possible, however, conservation actions are being implemented to monitor or study impacts from these elusive sources.

NOAA Fisheries and the USN have been working cooperatively to establish a policy for monitoring and managing acoustic impacts from anthropogenic sound sources in the marine environment. Acoustic impacts can include temporary or permanent injury, habitat exclusion, habituation, and disruption of other normal behavior patterns.

Conservation and Recovery Actions Shaping the Environmental Baseline

NOAA Fisheries implemented a series of regulations aimed at reducing potential for incidental mortality of sea turtles in commercial fisheries. In particular, NOAA Fisheries has required the use of TEDs in southeast U.S. shrimp trawls since 1989 and in summer flounder trawls in the mid-Atlantic area (south of Cape Charles, Virginia) since 1992. It has been estimated that TEDs exclude 97% of the turtles caught in such trawls. These regulations have been refined over the years to ensure that TED effectiveness is maximized through proper placement and installation, configuration (e.g., width of bar spacing), floatation, and more widespread use. Recent analyses by Epperly and Teas (1999) indicate that the minimum requirements for the escape opening dimensions are too small, and that as many as 47% of the loggerheads stranding annually along the Atlantic seaboard and Gulf of Mexico were too large to fit through existing openings. On October 2, 2001, NOAA Fisheries published a proposed rule to require larger escape openings in TEDs and is planning to publish a final rule in 2002.

In 1993 (with a final rule implemented in 1995), NOAA Fisheries established a Leatherback Conservation Zone to restrict shrimp trawl activities from the coast of Cape Canaveral, Florida, to the North Carolina/Virginia border. This provides for short-term closures when high concentrations of normally pelagic-distributed leatherbacks are recorded in more coastal waters where the shrimp fleet operates. This measure is necessary because, due to their size, adult leatherbacks are larger than the escape openings of most NOAA Fisheries-approved TEDs.

NOAA Fisheries is also working to develop a TED which can be effectively used in a type of trawl known as a fly net, which is sometimes used in the mid-Atlantic and northeast fisheries to target sciaenids and bluefish. Limited observer data indicate that takes can be quite high in this fishery. A prototype design has been developed, but testing under commercial conditions is still necessary.

In addition, NOAA Fisheries has been active in public outreach efforts to educate fishermen regarding sea turtle handling and resuscitation techniques. As well as making this information widely available to all fishermen, NOAA Fisheries recently conducted a number of workshops with longline fishermen to discuss bycatch issues including protected species, and to educate them regarding handling and release guidelines. NOAA Fisheries intends to continue these outreach efforts and hopes to reach all fishermen participating in the pelagic longline fishery over the next one to two years. There is also an extensive network of Sea Turtle Stranding and Salvage Network participants along the Atlantic and Gulf of Mexico which not only collects data on dead sea turtles, but also rescues and rehabilitates any live stranded turtles.

IV. Effects of the Action

Since Units 1, 2, and 3 began commercial operation, marine turtles have occasionally been found in the intake canal. CREC records indicate that from 1994 to 1997, eight sea turtles were stranded on the Unit 3 intake bar racks. CREC records for these years were opportunistic, and do not indicate species, time of year, size or disposition of the stranded turtles (dead or alive). Sea turtle monitoring activities at CREC have increased substantially since 1997, with the monitoring program implemented in March 1998 and the implementation of the Sea Turtle Rescue Guidelines dated September 1998. The increased monitoring should provide a more realistic estimate of the number of sea turtles stranded or killed each year at the plants.

The records indicate that this activity has not taken many sea turtles for years up to 1998. For the four years from 1994 to 1997, the activities at CREC have taken an average of two sea turtles per year. Records for 1998 show a dramatic increase in the numbers of sea turtle strandings at CREC, especially for the months of February to May. In 1998, a total of 40 takes were stranded at the power plants, 5 being lethal. Of these, 37 of the turtles released alive were Kemp's ridley and all 5 lethal takes were also Kemp's ridley. All sea turtles stranded at CREC were sub-adults with carapace lengths ranging from 21 cm to 55 cm. There are no proven environmental factors that have caused this increase and population numbers are not monitored for this area so the increase could be from an increase in population or an increase in sub-adult turtles moving into this area from some other area (pers. comm. Allen Foley, FWC).

The number of marine sea turtles taken in 1999 was significantly lower than 1998. A total of 9 live sea turtles were recovered from the bar racks in 1999. Of these, 7 were Kemp's ridleys, 1 was a loggerhead, and 1 was a green turtle. In 2000, a total of 19 turtles were taken from the bar racks: 13 were alive, 5 were considered non-causal mortalities (killed by something other than plant activities, such as a boat strike, and verified by FWC), and 1 was considered killed as a result of plant activities. Of these, 11 were Kemp's ridleys, 6 were green turtles, 1 was a loggerhead, and 1 was a hawksbill.

More turtles were taken in 2001 than in 1998. There were 66 sea turtles taken incidentally in 2001, 62 were released alive, 3 were considered non causal mortalities, and 1 was considered killed as a result of plant activities. The vast majority of these turtles were Kemp's ridleys, followed by green and loggerhead turtles. These numbers exceeded the biennial ITS levels set in the June 1999 Opinion, which established an incidental take level of 50 live takes, 5 turtles killed as a result of plant activities and 8 dead turtles not causally related to plant operations. As of May 21, 2002, there have been 11 turtles incidentally taken at CREC, 8 of which were alive and 3 dead turtles not causally related to plant operations.

Based on this information and recorded take levels for 1998 and 2001, NOAA Fisheries believes that the level of live take of sea turtles in CREC's intake canal may reach 75 sea turtles rescued alive from the bar racks annually and 3 lethal takes annually that are causally related to plant operations. The majority of these turtles are expected to be Kemp's ridleys, followed by greens

and loggerheads. Hawksbills and leatherbacks, although occasionally found in the area, are expected to make up a very small portion of this take (less than 1%). NOAA Fisheries does not expect leatherbacks or hawksbills to be part of the lethal take because of their rarity in the action area.

V. Cumulative Effects

Cumulative effects are the effects of future state, local, or private activities that are reasonably certain to occur within the action area considered in this biological opinion. Federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the ESA. Within the action area, major future changes are not anticipated in ongoing human activities described in the environmental baseline. The present, major human uses of the action area such as commercial fishing, recreational boating and fishing, and the transport of petroleum and other chemical products, are expected to continue at the present levels of intensity in the near future as are their associated risks of injury or mortality to sea turtles posed by incidental capture by fishermen, accidental oil spills, vessel collisions, marine debris, chemical discharges, and man-made noises. As discussed in Section III, however, listed species of turtles migrate throughout the Gulf of Mexico and Atlantic and may be affected during their life cycles by non-Federal activities outside the action area.

Beachfront development, lighting, and beach erosion control are all ongoing activities along the southeastern coast of the United States. These activities potentially reduce or degrade sea turtle nesting habitats or interfere with hatchling movement to sea. Nocturnal human activities along nesting beaches may also discourage sea turtles from nesting sites. The extent to which these activities reduce sea turtle nesting and hatchling production is unknown. However, more and more coastal counties have or are adopting more stringent protective measures to protect hatchling sea turtles from the disorienting effects of beach lighting. Some of these measures were drafted in response to law suits brought against the counties by concerned citizens who charged the counties with failing to uphold the ESA by allowing unregulated beach lighting which results in takes of hatchlings.

State-regulated commercial and recreational boating and fishing activities in the Gulf of Mexico, off Citrus County waters currently result in the incidental take of threatened and endangered species. It is expected that states will continue to license/permit large vessel and thrill-craft operations which do not fall under the purview of a Federal agency and will issue regulations that will affect fishery activities. Any increase in recreational vessel activity in inshore and offshore waters of the Atlantic Ocean and the Gulf of Mexico will likely increase the risk of turtles taken by injury or mortality in vessel collisions. Recreational hook-and-line fisheries have been known to lethally take sea turtles, including Kemp's ridleys. Future cooperation between NOAA Fisheries and the states on these issues should help decrease take of sea turtles caused by recreational activities. NOAA Fisheries will continue to work with states to develop ESA section 6 agreements and section 10 permits to enhance programs to quantify and mitigate these takes.

VI. Conclusion

The annual live take, tagging, and release of 75 turtles (Kemp's ridleys, greens, hawksbills, leatherbacks, and loggerheads) will not have an impact on turtles populations. The annual lethal take of 3 Kemp's ridley, loggerhead, or green sea turtles, or some combination of all three, represents a very small percentage of the total sea turtle take in the Southeast United States from such things as commercial fishing. As explained in this Opinion (in the environmental baseline and species description), nesting for these species has been increasing or remaining stable in the Southeast United States (except for the northern nesting population of loggerheads which has been stable and may be decreasing) in spite of the current amount of take. Therefore, after reviewing the current status of endangered green, leatherback, hawksbill, and Kemp's ridley sea turtles, and threatened loggerhead sea turtles; the environmental baseline; the effects of the proposed action; and the cumulative effects, it is NOAA Fisheries biological opinion that the implementation of the proposed action, as described in the Proposed Action section of this Opinion, is not likely to jeopardize the continued existence of endangered green, leatherback, hawksbill, and Kemp's ridley sea turtles, or threatened loggerhead sea turtles. No critical habitat has been designated for these species in the action area; therefore, none will be affected.

VII. Incidental Take Statement

Section 9 of the ESA and Federal regulations pursuant to section 4(d) of the ESA prohibit the take of endangered and threatened species, respectively, without special exemption. Take is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, collect, or to attempt to engage in any such conduct. Incidental take is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered to be prohibited taking under the ESA provided that such taking is in compliance with the terms and conditions of this incidental take statement.

The measures described below are non-discretionary and must be undertaken by the NRC so that they become binding conditions of any grant or permit issued to the applicant, as appropriate, for the exemption in section 7(o)(2) to apply. The NRC has a continuing duty to regulate the activity covered by this incidental take statement. If the NRC fails to assume and implement the terms and conditions, the protective coverage of section 7(o)(2) may lapse. In order to monitor the impact of incidental take, the NRC must report the progress of the action and its impact on the species to NOAA Fisheries as specified in the incidental take statement.

Amount or Extent of Anticipated Take

Based on stranding records, incidental captures aboard commercial shrimp vessels, and historical data, five species of sea turtles are known to occur in the action area. Current available information on the relationship between sea turtles and CREC's cooling water intake system indicates that injury and/or death of sea turtles is likely to occur from entrainment on the bar racks of the water intake system. Therefore, pursuant to section 7(b)(4) of the ESA, NOAA

Fisheries anticipates an annual incidental take of up to **seventy-five** live sea turtles and **three** sea turtles killed as a result of plant operations, in any combination of loggerheads, greens, Kemp's ridleys, hawksbills, or leatherbacks. This level of take is anticipated for the operation of CREC's cooling water intake system. If the actual incidental take meets or exceeds this level, the NRC must immediately request reinitiation of formal consultation. NOAA Fisheries' Southeast Region will cooperate with the NRC in the review of the incident. NOAA Fisheries also expects that the CREC may capture and collect an additional unquantifiable number of previously dead sea turtles (turtles not killed as a result of plant operations) such as turtles with obvious signs of injury, such as prop scars, or disease.

Effect of the Take

NOAA Fisheries believes that the aforementioned level of anticipated annual take, over the next five years, is not likely to appreciably reduce the survival and recovery of Kemp's ridley, green, loggerhead, hawksbill, or leatherback sea turtles in the wild by reducing their reproduction, numbers, or distribution, even if all incidental takes are from the same species. In particular, NOAA Fisheries determined that it does not expect activities associated with the proposed action, when added to ongoing activities affecting these species in the action area and cumulative effects, to affect sea turtles in a way that reduces the number of animals born in a particular year (i.e., a specific age-class), the reproductive success of adult sea turtles, or the number of young sea turtles that annually recruit into the adult breeding population.

Reasonable and Prudent Measures

NOAA Fisheries believes the following reasonable and prudent measures are necessary and appropriate to minimize impacts of incidental take of Kemp's ridley, green, loggerhead, leatherback, and hawksbill sea turtles:

1. NRC will monitor sea turtle activities around the bar racks and rescue sea turtles stranded on the bar racks.
2. NRC will keep records of sea turtle strandings at the plants.

Terms and Conditions

In order to be exempt from the prohibitions of section 9 of the ESA, the NRC must comply with the following terms and conditions, which implement the reasonable and prudent measures described above and outline required reporting and monitoring requirements. These terms and conditions are nondiscretionary.

1. Continue implementation of the procedures outlined in the Florida Power Corporation's Sea Turtle Rescue and Handling Guidelines (AI-571) which are incorporated by reference. All updates of the rescue plan will be reviewed by the FWC and NOAA Fisheries.

2. If any listed species are apparently injured or killed in the intake canal or the bar racks, a report summarizing the incident must be provided to the NOAA Fisheries' Southeast Regional Office (SERO) Assistant Regional Administrator, Protected Resources Division, within 30 days of the incident.
3. All sea turtle takings at the plant will be recorded by species, size, date and time collected, location, condition, and disposition. Details on the information to be collected and recorded shall be specified in the Sea Turtle Rescue and Handling Guidelines. Data collected will be tabulated and submitted to NOAA Fisheries' SERO Assistant Regional Administrator, Protected Resources Division and the FWC by March 1 of each year.
4. If non-lethal take reaches 70 individuals, causally related lethal take reaches 2 individuals, or if take of non-causally related dead turtles reaches 8 individuals (although there is no specified take limit on non-causally related dead turtles, NOAA Fisheries is requiring this information in case there are other issues it may need to look into) in any one year, NRC will notify the SERO Assistant Regional Administrator, Protected Resources Division within 5 days.

NOAA Fisheries anticipates that no more than 78 sea turtles will be incidentally taken annually as a result of the proposed action and that three of these takes will be lethal. The reasonable and prudent measures and their implementing terms and conditions are designed to minimize the impact of incidental take that might otherwise result from the proposed action. If, during the course of this action, this level of incidental take is met or exceeded, such incidental take represents new information requiring reinitiation of consultation and review of the reasonable and prudent measures provided. The NRC must immediately provide an explanation of the causes of the taking and review with NOAA Fisheries the need for possible modification of the reasonable and prudent measures.

VIII. Conservation Recommendations

Section 7(a)(1) of the ESA directs Federal agencies to utilize their authorizations to further the purposes of the ESA by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop information.

NRC should continue the evaluation and experimentation on methods to be employed that could be used to keep sea turtles away from the bar racks.

In order for NOAA Fisheries to be kept informed of actions minimizing or avoiding adverse effects or benefitting listed species or their habitats, NOAA Fisheries requests notification of the implementation of any conservation recommendations.

IX. Reinitiation of Consultation

This concludes formal consultation on the actions outlined in the NRC's BA dated October 11, 2001. As provided in 50 CFR 402.16, reinitiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been retained (or is authorized by law) and if (1) the amount or extent of taking specified in the incidental take statement is met or exceeded, (2) new information reveals effects of the action that may affect listed species or critical habitat (when designated) in a manner or to an extent not previously considered, (3) the identified action is subsequently modified in a manner that causes an effect to listed species or critical habitat that was not considered in the biological opinion, or (4) a new species is listed or critical habitat designated that may be affected by the identified action. In instances where the amount or extent of incidental take is exceeded, the NRC must immediately request reinitiation of formal consultation.

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APPENDIX 10.4.5

**TITLE V AIR OPERATION PERMIT REVISION
FINAL PERMIT NO.: 0170004-015-AV**

Florida Power Corporation dba Progress Energy Florida, Inc.
Crystal River Power Plant
Facility ID No.: 0170004
Citrus County

Title V Air Operation Permit Revision
FINAL Permit No.: 0170004-015-AV

Permitting Authority:
State of Florida
Department of Environmental Protection
Division of Air Resources Management
Bureau of Air Regulation
Title V Section

Mail Station #5505
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Telephone: 850/488-1344
Fax: 850/922-6979

Compliance Authority:
Department of Environmental Protection
Southwest District Office
13051 North Telecom Parkway
Temple Terrace, FL 33637-0926
Telephone: 813/632-7600
Fax: 813/632-7668



Florida Department of Environmental Protection

Bob Martinez Center
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Charlie Crist
Governor

Jeff Kottkamp
Deputy Governor

Bill H. Smith
Secretary

STATE OF FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION NOTICE OF FINAL PERMIT

In the Matter of an
Application for Permit by:

Mr. Bernie M. Cumbie, Manager
Florida Power Corporation dba Progress Energy Florida, Inc.
2929 Allen Parkway, Suite 2200
St. Petersburg, Florida 33701

Title V Permit Project No.: 0170004-015-AV
Crystal River Power Plant
Citrus County

Enclosed is Final Permit Number 0170004-015-AV. The purpose of this revision is to reflect changes made to the coal yard that are authorized by permit number 0170004-014-AC (which was issued concurrently with this Title V permit revision). In order to decrease the time required to unload a coal barge, Progress Energy has chosen to replace the existing clamshell bucket and traveling gantry with a new crane-operated clamshell bucket on a traveling gantry. This replacement will increase the unloading capabilities from 1,500 tons of coal per hour to 2,500 tons of coal per hour. To accommodate this increase, the speed of the conveyors and crusher feeding boilers 1 and 2 is being increased from 600 tons per hour to 900 tons per hour. This permitting action will also be used to replace Appendix TV-4, Title V Conditions (version dated 02/12/02) with Appendix TV-6, Title V Conditions (version dated 6/23/06), as well as other minor administrative corrections as described in the Statement of Basis.

Any party to this order has the right to seek judicial review of it under section 120.68 of the Florida Statutes, by filing a notice of appeal under rule 9.110 of the Florida Rules of Appellate Procedure with the clerk of the Department of Environmental Protection in the Office of General Counsel, Mail Station #35, 3900 Commonwealth Boulevard, Tallahassee, Florida, 32399-3000, and by filing a copy of the notice of appeal accompanied by the applicable filing fees with the appropriate District Court of Appeal. The notice must be filed within thirty days after this order is filed with the clerk of the Department.

Executed in Tallahassee, Florida.

Trina L. Vielhauer, Chief
Bureau of Air Regulation

CERTIFICATE OF SERVICE

The undersigned duly designated deputy agency clerk hereby certifies that this Notice of Final Permit (including the Final permit) was sent by Internet e-mail before the close of business on 2/22/07 to the person(s) listed:

Mr. Bernie M. Cumbie, Manager, Progress Energy Florida, Inc. (bernie.cumbie@pgnmail.com)

Mr. Dave Meyer, Progress Energy Florida, Inc. (dave.meyer@pgnmail.com)

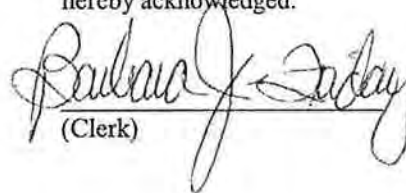
Mr. Scott Osbourn, P.E., Golder Associates (sosbourn@golder.com)

Ms. Cindy Zhang-Torres, P.E., DEP -- SWD (cindy.zhang-torres@dep.state.fl.us)

U.S. EPA, Region 4

Clerk Stamp

FILING AND ACKNOWLEDGMENT FILED, on this date, pursuant to §120.52, Florida Statutes, with the designated Department Clerk, receipt of which is hereby acknowledged.


(Clerk) 2/22/07 (Date)

FINAL Determination

Title V Air Operation Permit Revision
FINAL Title V Air Operation Permit No.: 0170004-015-AV
Florida Power Corporation dba Progress Energy Florida, Inc.
Crystal River Power Plant
Page 1 of 1

I. Comment(s).

No comments were received from the USEPA during their 45 day review period of the PROPOSED Permit.

II. Conclusion.

In conclusion, the permitting authority hereby issues the FINAL Permit.

Title V Air Operation Permit Revision
FINAL Permit No.: 0170004-015-AV

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Permittee:

Florida Power Corporation
dba Progress Energy Florida, Inc.
One Power Plaza
263 13th Avenue South, BB1A
St. Petersburg, FL 33701-5511

FINAL Permit No.: 0170004-015-AV**Facility ID No.:** 0170004**SIC Nos.:** 49, 4911**Project:** Title V Air Operation Permit Revision

This facility is located on Power Line Road, West of U.S. Hwy. 19, Crystal River, Citrus County; UTM Coordinates: Zone 17, 334.3 km East and 3204.5 km North; Latitude: 28° 57' 34" North and Longitude: 82° 42' 1" West.

STATEMENT OF BASIS: This Title V air operation permit is issued under the provisions of Chapter 403, Florida Statutes (F.S.), and Florida Administrative Code (F.A.C.) Chapters 62-4, 62-210, 62-213, and 62-214. The above named permittee is hereby authorized to perform the work or operate the facility shown on the application and approved drawing(s), plans, and other documents, attached hereto or on file with the permitting authority, in accordance with the terms and conditions of this permit. The purpose of this revision is to incorporate the terms and conditions of permit number 0170004-014-AC relating to the replacement of the coal barge unloading equipment.

Referenced attachments made a part of this permit:

Appendix A, 40 CFR 60, Subpart A Standard Conditions

Appendix Y, 40 CFR 60, Subpart Y Standard Conditions

Appendix U-1, List of Unregulated Emissions Units and/or Activities

Appendix I-1, List of Insignificant Emissions Units and/or Activities

Appendix CAM

Appendix TV-6, Title V Conditions (version dated 06/23/06)

Appendix SS-1, Stack Sampling Facilities (version dated 10/07/96)

Appendix P, Sensitive Paper Sampling Locations and Apparatus

Table 297.310-1, Calibration Schedule (version dated 10/07/96)

Figure 1 - Summary Report-Gaseous And Opacity Excess Emission And Monitoring System Performance Report (version dated 7/96)

Phase II Acid Rain Application/Compliance Plans received 12/22/95 and 06/30/2004

Phase I Acid Rain permit dated 3/27/97

Alternate Sampling Procedure: ASP Number 97-B-01 and ASP Number 00-E-01

Order Granting Petition for Reduced Frequency of Particulate Testing, OGC Case No. 86-1576, Order dated December 12, 1986 (Emissions Unit 001)

Best Management Plan, KBN, November 1990

Figure A, Ambient Air Monitoring Locations, Crystal River, Florida

Effective Date: May 29, 2006**Revision Effective Date:** February 14, 2007**Renewal Application Due Date:** July 5, 2009**Expiration Date:** December 31, 2009

Joseph Kahn, Director
Division of Air Resource Management

Section I. Facility Information.

Subsection A. Facility Description.

This facility consists of four coal-fired fossil fuel steam generating (FFSG) units with electrostatic precipitators; two natural draft cooling towers for FFSG Units 4 and 5; helper mechanical cooling towers for FFSG Units 1, 2 and Nuclear Unit 3; coal, fly ash, and bottom ash handling facilities, and relocatable diesel fired generator(s). The nuclear unit (Unit 3) is not considered part of this permit, although certain emissions units associated with Unit 3 are included in this permit.

Also included in this permit are miscellaneous unregulated/insignificant emissions units and/or activities.

Based on the initial Title V permit application received June 14, 1996 and renewal application received June 30, 2004, this facility is a major source of hazardous air pollutants (HAPs).

Subsection B. Summary of Emissions Unit ID No(s). and Brief Description(s).

E.U. ID No.	Brief Description
001	Fossil Fuel Steam Generator (FFSG), Unit 1
002	FFSG, Unit 2
004	FFSG, Unit 4
003	FFSG, Unit 5
006	Fly ash transfer (Source 1) from FFSG Unit 1
008	Fly ash storage silo (Source 3) for FFSG Units 1 and 2
009	Fly ash transfer (Source 4) from FFSG Unit 2
010	Fly ash transfer (Source 5) from FFSG Unit 2
014	Bottom ash storage silo for FFSG Units 1 and 2, with associated vacuum blower exhausts and bin vent filter (total of three emission points)
7775047, 001	Relocatable diesel generator(s) will have a maximum (combined) heat input of 25.74 MMBtu/hour while being fueled by 186.3 gallons of new No. 2 fuel oil per hour with a maximum (combined) rating of 2460 kilowatts.
013	Cooling towers for FFSG Units 1, 2, and 3, used to reduce plant discharge water temperature
015	Cooling towers for FFSG Units 4 and 5 used to reduce plant discharge water temperature
016	Material handling activities for coal-fired steam units

Unregulated Emissions Units and/or Activities	
017	Fuel and lube oil tanks and vents
018	Sewage treatment, water treatment, lime storage
019	Three 3500 kW diesel generators associated with Unit 3

Please reference the Permit No., Facility ID No., and appropriate Emissions Unit(s) ID No(s). on all correspondence, test report submittals, applications, etc.

Subsection C. Relevant Documents.

The documents listed below are not a part of this permit; however, they are specifically related to this permitting action.

These documents are provided to the permittee for information purposes only:

Appendix A-1, Abbreviations, Acronyms, Citations, and Identification Numbers

Appendix H-1, Permit History/ID Number Changes

Table 1-1, Summary of Air Pollutant Standards and Terms

Table 2-1, Summary of Compliance Requirements

Documents on file with USEPA:

Risk Management Plan submitted to the RMP Reporting Center on 06/21/99 (received date).

These documents are on file with the permitting authority:

Initial Title V Permit Application received June 14, 1996

BACT Determination dated 8/29/90 (Cooling Tower Drift Emission Rate)

BACT Determinations ordered 2/5/79 (proposed 1/26/79) and 8/16/79 (Fly Ash Transfer)

Revision to Permit Application received April 17, 1998

Letter received November 9, 1998, from Mr. Scott Osbourn.

Letter received August 2, 1999, from Mr. J. Michael Kennedy

Title V Permit Revision Application received September 5, 2000

Renewal Title V Permit Application received June 30, 2004

Letter received September 22, 2004, from Mr. Mike Olive

Title V Revision Application Received July 14, 2006

Request for Additional Information Sent August 11, 2006

Additional Information Letter Received September 5, 2006, from Mr. Scott Osbourn

Section II. Facility-wide Conditions.

The following conditions apply facility-wide:

1. APPENDIX TV-6, TITLE V CONDITIONS is a part of this permit.

{Permitting note: APPENDIX TV-6, TITLE V CONDITIONS, is distributed to the permittee only. Other persons requesting copies of these conditions shall be provided a copy when requested or otherwise appropriate.}

2. Not Federally Enforceable. General Pollutant Emission Limiting Standards. Objectionable Odor Prohibited.

The permittee shall not cause, suffer, allow, or permit the discharge of air pollutants which cause or contribute to an objectionable odor.

[Rule 62-296.320(2), F.A.C.]

3. General Particulate Emission Limiting Standards. General Visible Emissions Standard.

Except for emissions units that are subject to a particulate matter or opacity limit set forth or established by rule and reflected by conditions in this permit, no person shall cause, let, permit, suffer or allow to be discharged into the atmosphere the emissions of air pollutants from any activity, the density of which is equal to or greater than that designated as Number 1 on the Ringelmann Chart (20 percent opacity). EPA Method 9 is the method of compliance pursuant to Chapter 62-297, F.A.C.

[Rule 62-296.320(4)(b)1. & 4, F.A.C.]

4. Prevention of Accidental Releases (Section 112(r) of CAA).

a. As required by Section 112(r)(7)(B)(iii) of the CAAA and 40 CFR 68, the owner or operator shall submit an updated Risk Management Plan (RMP) to the Chemical Emergency Preparedness and Prevention Office (CEPPO) RMP Reporting Center.

b. As required under Section 252.941(1)(c), F.S., the owner or operator shall report to the appropriate representative of the Department of Community Affairs (DCA), as established by department rule, within one working day of discovery of an accidental release of a regulated substance from the stationary source, if the owner or operator is required to report the release to the United States Environmental Protection Agency under Section 112(r)(6) of the CAAA.

c. The owner or operator shall submit the required annual registration fee to the DCA on or before April 1, in accordance with Part IV, Chapter 252, F.S. and Rule 9G-21, F.A.C.

Any required written reports, notifications, certifications, and data required to be sent to the DCA, should be sent to:

Department of Community Affairs
Division of Emergency Management
2555 Shumard Oak Boulevard
Tallahassee, FL 32399-2100
Telephone: 850/413-9921, Fax: 850/488-1739

Any Risk Management Plans, original submittals, revisions or updates to submittals, should be sent to:

RMP Reporting Center
Post Office Box 1515
Lanham-Seabrook, MD 20703-1515
Telephone: 301/429-5018

Any required reports to be sent to the National Response Center, should be sent to:

National Response Center
EPA Office of Solid Waste and Emergency Response
USEPA (5305 W)
401 M Street, SW
Washington, D.C. 20460
Telephone: 1/800/424-8802

Send the required annual registration fee using approved forms made payable to:

Cashier
Department of Community Affairs
State Emergency Response Commission
2555 Shumard Oak Boulevard
Tallahassee, FL 32399-2149

[Part IV, Chapter 252, F.S. and Rule 9G-21, F.A.C.]

5. Unregulated Emissions Units and/or Activities. Appendix U-1, List of Unregulated Emissions Units and/or Activities, is a part of this permit.

[Rule 62-213.440(1), F.A.C.]

6. Insignificant Emissions Units and/or Activities. Appendix I-1, List of Insignificant Emissions Units and/or Activities, is a part of this permit.

[Rules 62-213.440(1), 62-213.430(6), and 62-4.040(1)(b), F.A.C.]

7. Not Federally Enforceable. General Pollutant Emission Limiting Standards. Volatile Organic Compounds (VOC) Emissions or Organic Solvents (OS) Emissions. The permittee shall allow no person to store, pump, handle, process, load, unload or use in any process or installation, volatile organic compounds (VOC) or organic solvents (OS) without applying known and existing vapor emission control devices or systems deemed necessary and ordered by the Department. The owner or operator shall:

- a. Tightly cover or close all VOC or OS containers when they are not in use.
- b. Tightly cover all open tanks which contain VOC or OS when they are not in use.
- c. Maintain all pipes, valves, fittings, etc., which handle VOC or OS in good operating condition.
- d. Immediately confine and clean up VOC or OS spills and make sure wastes are placed in closed containers for reuse, recycling or proper disposal.

[Rule 62-296.320(1)(a), F.A.C.; Proposed by applicant in the initial Title V permit application received June 14, 1996]

8. Not Federally Enforceable. No person shall cause, let, permit, suffer or allow the emissions of unconfined particulate matter from any activity without taking reasonable precautions to prevent such emissions. Reasonable precautions to prevent emissions of unconfined particulate matter at this facility may include, as needed:

- a. Maintenance of paved areas as needed.
- b. Regular mowing of grass and care of vegetation.
- c. Limiting access to plant property by unnecessary vehicles.

[Rule 62-296.320(4)(c)2., F.A.C.; Proposed by applicant in the initial Title V permit application received June 14, 1996]

9. When appropriate any recording, monitoring or reporting requirements that are time-specific shall be in accordance with the effective date of this permit, which defines day one.

[Rule 62-213.440, F.A.C.]

10. The permittee shall submit all compliance related notifications and reports required of this permit to the Department's Southwest District office:

Department of Environmental Protection
Southwest District Office
13051 North Telecom Parkway
Temple Terrace, FL 33637-0926
Telephone: 813/632-7600
Fax: 813/632-7668

Any reports, data, notifications, certifications and requests required to be sent to the United States Environmental Protection Agency, Region 4, should be sent to:

United States Environmental Protection Agency
Region 4
Air, Pesticides & Toxics Management Division
Air and EPRCA Enforcement Branch
Air Enforcement Section
61 Forsyth Street
Atlanta, GA 30303-8960
Phone: 404/562-9155
Fax: 404/562-9163 or 404/562-9164

11. Statement of Compliance. The annual statement of compliance pursuant to Rule 62-213.440(3)(a)2., F.A.C., shall be submitted within 60 (sixty) days after the end of the calendar year using DEP Form number 62-213.900(7), F.A.C. [Rule 62-213.440(3), F.A.C.]

{Permitting Note: This condition implements the requirements of Rules 62-213.440(3)(a)2. & 3., F.A.C. (see Condition 51. of APPENDIX TV-6, TITLE V CONDITIONS)}

12. Certification by Responsible Official (RO). In addition to the professional engineering certification required for applications by Rule 62-4.050(3), F.A.C., any application form, report, compliance statement, compliance plan and compliance schedule submitted pursuant to Chapter 62-213, F.A.C., shall contain a certification signed by a responsible official that, based on information and belief formed after reasonable inquiry, the statements and information in the document are true, accurate, and complete.
[Rule 62-213.420(4), F.A.C.]

Section III. Emissions Unit(s) and Conditions.

Subsection A. This section addresses the following emissions units.

E.U. ID No.	Brief Description
001	Fossil Fuel Steam Generator, Unit 1: a tangentially fired unit, rated at 440.5 MW, 3750 MMBtu/hr, burning bituminous coal; or a bituminous coal and bituminous coal briquette mixture. Distillate fuel oil may be burned as a startup fuel. Emissions are exhausted through a 499 ft. stack. This unit may also burn oily flyash.
002	Fossil Fuel Steam Generator, Unit 2: a tangentially fired unit, rated at 523.8 MW, 4795 MMBtu/hr, burning bituminous coal; or a bituminous coal and bituminous coal briquette mixture. Distillate fuel oil may be burned as a startup fuel. Emissions are exhausted through a 502 ft. stack. This unit may also burn oily flyash.

Fossil Fuel Steam Generators, Units 1 and 2, are pulverized coal dry bottom boilers, tangentially-fired. Emissions are controlled from each unit with a high efficiency electrostatic precipitator, manufactured by Buell Manufacturing Company, Inc.

Compliance Assurance Monitoring (CAM) Requirements

These emissions units are subject to the Compliance Assurance Monitoring (CAM) requirements contained in the attached Appendix CAM. Failure to adhere to the monitoring requirements specified does not necessarily indicate an exceedance of a specific emissions limitation; however, it may constitute good reason to require compliance testing pursuant to Rule 62-297.310(7)(b), F.A.C.

[40 CFR 64; and, Rules 62-204.800 and 62-213.440(1)(b)1.a., F.A.C.]

{Permitting Notes: These emissions units are regulated under Acid Rain, Phase I and II and Rule 62-296.405, F.A.C., Fossil Fuel Steam Generators with More than 250 million Btu per Hour Heat Input, and Power Plant Siting Certification PA 77-09 conditions. Fossil fuel fired steam generator Unit 1 began commercial operation in 1966. Fossil fuel fired steam generator Unit 2 began commercial operation in 1969.}

The following specific conditions apply to the emissions unit(s) listed above:

{Permitting note: In addition to the requirements listed below, these emissions units are also subject to the standards and requirements contained in the Acid Rain Part of this permit (see Section IV).}

Essential Potential to Emit (PTE) Parameters

A.1. Permitted Capacity. The maximum operation heat input rates are as follows:

Unit No.	MMBtu/hr Heat Input	Fuel Type
001	3750	Bituminous Coal; or Bituminous Coal and Bituminous Coal Briquette Mixture
002	4795	Bituminous Coal; or Bituminous Coal and Bituminous Coal Briquette Mixture

[Rules 62-4.160(2), 62-210.200(PTE) and 62-296.405, F.A.C.]

{Permitting note: The heat input limitations have been placed in each permit to identify the capacity of each unit for the purposes of confirming that emissions testing is conducted within 90 to 100 percent of the unit's rated capacity (or to limit future operation to 110 percent of the test load), to establish appropriate emission limits and to aid in

determining future rule applicability. Regular record keeping is not required for heat input. Instead the owner or operator is expected to determine heat input whenever emission testing is required, to demonstrate at what percentage of the rated capacity that the unit was tested. Rule 62-297.310(5), F.A.C., included in the permit, requires measurement of the process variables for emission tests. Such heat input determination may be based on measurements of fuel consumption by various methods including but not limited to fuel flow metering or tank drop measurements, using the heat value of the fuel determined by the fuel vendor or the owner or operator, to calculate average hourly heat input during the test.)

A.2. Emissions Unit Operating Rate Limitation After Testing. See specific condition **I.11**.
[Rule 62-297.310(2), F.A.C.]

A.3. Methods of Operation. Fuels. The only fuels allowed to be burned by this permit are: bituminous coal; a bituminous coal and bituminous coal briquette mixture, and distillate fuel oil for startup. These emissions units may also burn used oil in accordance with other conditions of this permit (see **Subsection K**). Emissions units 001 and 002 may also burn oily flyash in accordance with specific condition **A.16** of this permit.
[Rule 62-213.410, F.A.C.; 0170004-002-AO; 0170004-005-AO; and, 0170004-006-AC]

Emission Limitations and Standards

A.4.a. Visible Emissions - Emissions Unit 001. Visible emissions shall not exceed 40 percent opacity, six minute average. Emissions units governed by this visible emissions standard shall compliance test for particulate matter emissions annually.
[Rule 62-296.405(1)(a), F.A.C.; and OGC Case No. 86-1576, Order dated December 12, 1986.]

A.4.b. Visible Emissions - Emissions Unit 002. Visible emissions shall not exceed 20 percent opacity, six minute average, except for one two-minute period per hour during which opacity shall not exceed 40 percent. Emissions units governed by this visible emissions limit shall compliance test for particulate matter emissions annually and as otherwise required by Chapter 62-297, F.A.C.
[Rule 62-296.405(1)(a), F.A.C.]

A.5. Visible Emissions - Soot Blowing and Load Change. Excess emissions from existing fossil fuel steam generators resulting from boiler cleaning (soot blowing) and load change shall be permitted provided the duration of such excess emissions shall not exceed 3-hours in any 24 hour period and visible emissions shall not exceed Number 3 of the Ringelmann Chart (60 percent opacity), six minute average, and providing (1) best operational practices to minimize emissions are adhered to and (2) the duration of the excess emissions shall be minimized.

A load change occurs when the operational capacity of a unit is in the 10 percent to 100 percent capacity range, other than startup or shutdown, which exceeds 10 percent of the unit's rated capacity and which occurs at a rate of 0.5 percent per minute or more.

Visible emissions above 60 percent opacity shall be allowed for not more than 4, six (6)-minute periods, during the 3-hour period of excess emissions allowed by this condition, for boiler cleaning and load changes, at units which have installed and are operating continuous opacity monitors.

[Rule 62-210.700(3), F.A.C. Note: these units have operational continuous opacity monitors.]

A.6. Particulate Matter. Particulate matter emissions shall not exceed 0.1 pound per million Btu heat input , as measured by applicable compliance methods.
[Rule 62-296.405(1)(b), F.A.C.]

A.7. Particulate Matter - Soot Blowing and Load Change. Particulate matter emissions shall not exceed an average of 0.3 pound per million Btu heat input during the 3-hours in any 24-hour period of excess emissions allowed for boiler cleaning (soot blowing) and load change.
[Rule 62-210.700(3), F.A.C.]

{Permitting note: The averaging time for the particulate matter standard corresponds to the cumulative sampling time of the specified test method.}

A.8. Sulfur Dioxide.

- (a) When burning coal, sulfur dioxide emissions shall not exceed 2.1 pounds per million Btu heat input, 24-hour average.
- (b) The maximum percent sulfur content of the coal/briquette mixture shall not exceed 1.05%, by weight, averaged on an annual basis.

[Rule 62-213.440, F.A.C.; PPSC PA 77-09; 0170004-003-AC; and, 0170004-006-AC]

Test Methods and Procedures

A.9. Particulate Matter. The test methods for particulate emissions shall be EPA Methods 17 or 5 incorporated by reference in Chapter 62-297, F.A.C. The minimum sample volume shall be 30 dry standard cubic feet. EPA Method 5 may be used with filter temperature no more than 320 degrees Fahrenheit. For EPA Method 17, stack temperature shall be less than 375 degrees Fahrenheit. The owner or operator may use EPA Method 5 to demonstrate compliance. EPA Method 3 or 3A with Orsat analysis shall be used when the oxygen based F-factor, computed according to EPA Method 19, is used in lieu of heat input. Acetone wash shall be used with EPA Method 5 or 17. [Rules 62-213.440, 62-296.405(1)(e)2., and 62-297.401, F.A.C.]

A.10. Visible Emissions. The test method for visible emissions shall be EPA Method 9, incorporated in Chapter 62-297, F.A.C. A transmissometer may be used and calibrated according to Rule 62-297.520, F.A.C. [Rules 62-296.405(1)(e)1. and 62-297.401, F.A.C.]

A.11. Sulfur Dioxide. The test methods for sulfur dioxide emissions shall be EPA Methods 6, 6A, 6B, or 6C, incorporated by reference in Chapter 62-297, F.A.C. Fuel sampling and analysis may be used as an alternate sampling procedure if such a procedure is incorporated into the operation permit for the emissions unit. If the emissions unit obtains an alternate procedure under the provisions of Rule 62-297.620, F.A.C., the procedure shall become a condition of the emissions unit's permit. The Department will retain the authority to require EPA Method 6 or 6C if it has reason to believe that exceedences of the sulfur dioxide emissions limiting standard are occurring. Results of an approved fuel sampling and analysis program shall have the same effect as EPA Method 6 test results for purposes of demonstrating compliance or noncompliance with sulfur dioxide standards. **The permittee may use the EPA test methods, referenced above, to demonstrate compliance; however, as an alternate sampling procedure authorized by permit, the permittee may demonstrate compliance using fuel sampling and analysis.** If the permittee elects to discontinue fuel sampling and analysis, it shall perform a stack test for sulfur dioxide at the time of the next particulate matter test, and annually thereafter until fuel sampling and analysis is resumed. [Rules 62-213.440, 62-296.405(1)(e)3. and 62-297.401, F.A.C.]

A.12. Sulfur Dioxide. The owner or operator may demonstrate compliance with the sulfur dioxide limitation using fuel sampling and analysis. This protocol is allowed because the emissions unit does not have an operating flue gas desulfurization device. See specific conditions **A.11** and **A.13**. [Rule 62-296.405(1)(f)1.b., F.A.C.]

A.13. Sulfur Dioxide - Fuel Sampling. The following fuel sampling and analysis program shall be used as an alternate sampling procedure authorized by permit to demonstrate compliance with the sulfur dioxide standard:

- a. Determine and record the as-fired fuel sulfur content, percent by weight, for coal using appropriate ASTM methods such as, ASTM D2013-72, ASTM D3177-75, and ASTM D4239-85, or latest ASTM edition methods, to analyze a representative sample of coal following each fuel delivery.
- b. Record daily the amount of coal fired, the density of each fuel, the Btu value, and the percent sulfur content by weight of each fuel.
- c. Utilize the information in a. and b., above, to calculate the SO₂ emission rate to ensure compliance at all times.

[Rules 62-213.440, 62-296.405(1)(e)3., 62-296.405(1)(f)1.b. and 62-297.440, F.A.C.]

Monitoring of Operations

A.14. Annual Tests Required - PM and VE. Except as provided in specific conditions **I.6** and **I.7** of this permit, emission testing for particulate matter emissions and visible emissions shall be performed annually.
[Rules 62-4.070(3), 62-213.440, and 62-297.310(7), F.A.C.]

A.15. Excess Emissions - Report. Submit to the Southwest District Air Section a written report of emissions in excess of emission limiting standards as set forth in this permit, for each calendar quarter. The nature and cause of the excess emissions shall be explained. This report does not relieve the owner or operator of the legal liability for violations. [Rules 62-213.440 and 62-296.405(1)(g), F.A.C.]

Oily Flyash

A.16. Oily Flyash. These emissions units may burn oily flyash ("flyash") from Bartow Unit 1 in accordance with the following:

- a. Only flyash from Bartow Unit 1 may be burned in these emissions units. Once the accumulated backlog of Bartow Unit 1 flyash (estimated at approximately 13,000 tons) is burned, only the additional flyash generated at Bartow Unit 1 shall be burned in these emissions units.
- b. The maximum flyash blend rate shall not exceed 2% of the total boiler feed on a weight basis.
- c. The owner or operator shall make and maintain the following records for each day that flyash is burned in the boiler:
 1. Date and Unit number;
 2. Time period of flyash burning and start and end times;
 3. Total quantity of flyash burned in tons per day;
 4. Maximum flyash blend rate during period of flyash burn (percent flyash in total emissions unit fuel feed on a weight basis).

[Rules 62-4.070(3) and 62-213.440, F.A.C.; and, 0170004-005-AO]

Common Conditions

A.17. These emissions units are also subject to conditions **I.1** through **I.15** contained in **Subsection I. Common Conditions**.

A.18. These emissions units are also subject to condition **K.1** contained in **Subsection K. Used Oil Common Condition**.

Record Keeping and Reporting Requirements:

A.19. COMS for Periodic Monitoring:

Periodic monitoring for opacity shall be COMS, which are maintained and operated in conformance with 40 CFR Part 75.

[Rule 62-213.440, F.A.C.]

Subsection B. This section addresses the following emissions unit.

E.U. ID No.	Brief Description
004	Fossil Fuel Steam Generator, Unit 4, a dry bottom wall-fired unit, rated at 760 MW, 6665 MMBtu/hr, capable of burning bituminous coal, a bituminous coal and bituminous coal briquette mixture, and used oil, with number 2 fuel oil as a startup fuel, and natural gas as a startup and low-load flame stabilization fuel, with emissions exhausted through a 600 ft. stack.
003	Fossil Fuel Steam Generator, Unit 5, a dry bottom wall-fired unit, rated at 760 MW, 6665 MMBtu/hr, capable of burning bituminous coal, a bituminous coal and bituminous coal briquette mixture, and used oil, with number 2 fuel oil as a startup fuel, and natural gas as a startup and low-load flame stabilization fuel, with emissions exhausted through a 600 ft. stack.

Fossil Fuel Steam Generators, Units 4 and 5, are pulverized coal dry bottom boilers, wall-fired. Emissions are controlled from each unit with a high efficiency electrostatic precipitator, manufactured by Combustion Engineering.

Compliance Assurance Monitoring (CAM) Requirements

These emissions units are subject to the Compliance Assurance Monitoring (CAM) requirements contained in the attached Appendix CAM. Failure to adhere to the monitoring requirements specified does not necessarily indicate an exceedance of a specific emissions limitation; however, it may constitute good reason to require compliance testing pursuant to Rule 62-297.310(7)(b), F.A.C.

[40 CFR 64; and, Rules 62-204.800 and 62-213.440(1)(b)1.a., F.A.C.]

{Permitting Notes: These emissions units are regulated under Acid Rain, Phase I and II and Rule 62-210.300, F.A.C., Permits Required; 40 CFR 60 Subpart D, Standards of Performance for Fossil-Fuel-Fired Steam Generators for Which Construction Is Commenced After August 17, 1971; and, Power Plant Siting Certification PA 77-09 conditions. Fossil fuel fired steam generator Unit 4 began commercial operation in 1982. Fossil fuel fired steam generator Unit 5 began commercial operation in 1984.}

The following specific conditions apply to the emissions unit(s) listed above:

{Permitting note: In addition to the requirements listed below, these emissions units are also subject to the standards and requirements contained in the Acid Rain Part of this permit (see Section IV).}

Essential Potential to Emit (PTE) Parameters

B.1. Permitted Capacity. The maximum operation heat input rates are as follows:

Unit No.	MMBtu/hr Heat Input	Fuel Type
004	6665	Bituminous Coal and Bituminous Coal /Bituminous Coal Briquette Mixture
003	6665	Bituminous Coal and Bituminous Coal /Bituminous Coal Briquette Mixture

[Rules 62-4.160(2) and 62-210.200(PTE), F.A.C.]

{Permitting note: The heat input limitations have been placed in each permit to identify the capacity of each unit for the purposes of confirming that emissions testing is conducted within 90 to 100 percent of the unit's rated capacity (or to limit future operation to 110 percent of the test load), to establish appropriate emission limits and to aid in determining future rule applicability. Regular record keeping is not required for heat input. Instead the owner or operator is expected to determine heat input whenever emission testing is required, to demonstrate at what

percentage of the rated capacity that the unit was tested. Rule 62-297.310(5), F.A.C., included in the permit, requires measurement of the process variables for emission tests. Such heat input determination may be based on measurements of fuel consumption by various methods including but not limited to fuel flow metering or tank drop measurements, using the heat value of the fuel determined by the fuel vendor or the owner or operator, to calculate average hourly heat input during the test.)

B.2. Emissions Unit Operating Rate Limitation After Testing. See specific condition **I.11.**
[Rule 62-297.310(2), F.A.C.]

B.3. Methods of Operation. Fuels. The only fuel allowed to be burned is bituminous coal or bituminous coal and bituminous coal briquette mixture with the exception that number 2 fuel oil may be used as an ignitor fuel, and natural gas may be used as a startup and low-load flame stabilization fuel. Fuel oil shall not contain more than 0.73% sulfur by weight. These emissions units may also burn used oil in accordance with other conditions of this permit (see **Subsection K**).
[Rule 62-213.410, F.A.C.; and, PPSC PA 77-09 and modified conditions]

Emission Limitations and Standards

B.4. Pursuant to 40 CFR 60.42 Standard For Particulate Matter.

(a) No owner or operator shall cause to be discharged into the atmosphere from any affected facility any gases which:

- (1) Contain particulate matter in excess of 43 nanograms per joule heat input (0.10 lb per million Btu) derived from fossil fuel.
- (2) Exhibit greater than 20 percent opacity, six minute average, except for one six-minute period per hour of not more than 27 percent opacity.

[40 CFR 60.42(a)(1) & (2)]

B.5.a. Standard For Sulfur Dioxide.

(a) No owner or operator shall cause to be discharged into the atmosphere from any affected facility any gases which contain sulfur dioxide in excess of:

- (1) 340 nanograms per joule heat input (0.80 lb per million Btu), 24-hour average, derived from liquid fossil fuel.
 - (2) 520 nanograms per joule heat input (1.2 lb per million Btu), 24-hour average, derived from solid fossil fuel.
- (b) When different fossil fuels are burned simultaneously in any combination, the applicable standard (in ng/J) shall be determined by proration using the following formula:

$$PS_{SO_2} = [y(340) + z(520)] / (y + z)$$

where:

PS_{SO_2} is the prorated standard for sulfur dioxide when burning different fuels simultaneously, in nanograms per joule heat input derived from all fossil fuels fired or from all fossil fuels and wood residue fired,

y is the percentage of total heat input derived from liquid fossil fuel, and

z is the percentage of total heat input derived from solid fossil fuel.

(c) Compliance shall be based on the total heat input from all fossil fuels burned, including gaseous fuels.

[40 CFR 60.43(a), (b) and (c); and, PPSC PA 77-09]

B.5.b. Standard For Sulfur Dioxide. The maximum percent sulfur content of the coal/briquette mixture shall not exceed 0.68%, by weight, averaged on an annual basis. {See specific conditions **B.10.** and **B.11.**}
[Rule 62-213.440, F.A.C.; and, 0170004-006-AC]

B.6. Pursuant to 40 CFR 60.44 Standard For Nitrogen Oxides.

(a) On and after the date on which the performance test required to be conducted by 40 CFR 60.8 is completed, no owner or operator subject to the provisions of 40 CFR 60, Subpart D, shall cause to be discharged into the atmosphere from any affected facility any gases which contain nitrogen oxides, expressed as NO₂ in excess of:

(1) 86 nanograms per joule heat input (0.20 lb per million Btu), 30-day rolling average, derived from gaseous fossil fuel.

(2) 129 nanograms per joule heat input (0.30 lb per million Btu), 30-day rolling average, derived from liquid fossil fuel.

(3) 300 nanograms per joule heat input (0.70 lb per million Btu), 30-day rolling average, derived from solid fossil fuel.

(b) When different fossil fuels are burned simultaneously in any combination, the applicable standard (in ng/J) is determined by proration using the following formula:

$$PS_{NOx} = \frac{x(86)+y(130)+z(300)}{x+y+z}$$

where:

PS_{NOx} = is the prorated standard for nitrogen oxides when burning different fuels simultaneously, in nanograms per joule heat input derived from all fossil fuels fired or from all fossil fuels fired;

x = is the percentage of total heat input derived from gaseous fossil fuel;

y = is the percentage of total heat input derived from liquid fossil fuel; and,

z = is the percentage of total heat input derived from solid fossil fuel.

[40 CFR 60.44(a)(2) and (3), and (b); and, PPSC PA 77-09]

B.7. Unit Specific State Only Limit For Nitrogen Oxides. A unit specific, state-only average annual NO_x emission limit of 0.50 lb/mmBtu applies. Compliance shall be demonstrated within the Annual Operating Report (AOR).
[Applicant Request]

Test Methods and Procedures

B.8. Pursuant to 40 CFR 60.46 Test methods and Procedures.

(a) When conducting emissions tests, the owner or operator shall use as reference methods and procedures the test methods in Appendix A of 40 CFR 60 or other methods and procedures as specified in 40 CFR 60.46, except as provided in 40 CFR 60.8(b). Acceptable alternative methods and procedures are given in 40 CFR 60.46(d).

(b) The owner or operator shall determine compliance with the particulate matter, SO₂, and NO_x standards in 40 CFR 60.42, 60.43, and 60.44 as follows:

(1) The emission rate (E) of particulate matter, SO₂, or NO_x shall be computed for each run using the following equation:

$$E = C F_d (20.9)/(20.9 - \%O_2)$$

E = emission rate of pollutant, ng/J (1b/million Btu).

C = concentration of pollutant, ng/dscm (1b/dscf).

% O₂ = oxygen concentration, percent dry basis.

F_d = factor as determined from Method 19.

(2) Method 5 shall be used to determine the particulate matter concentration (C) at affected facilities without wet flue-gas-desulfurization (FGD) systems.

(i) The sampling time and sample volume for each run shall be at least 60 minutes and 0.85 dscm (30 dscf). The probe and filter holder heating systems in the sampling train may be set to provide a gas temperature no greater than 160 ± 14 °C (320 ± 25 °F).

(ii) The emission rate correction factor, integrated or grab sampling and analysis procedure of Method 3B shall be used to determine the O₂ concentration (%O₂). The O₂ sample shall be obtained simultaneously with, and at the same traverse points as, the particulate sample. If the grab sampling procedure is used, the O₂ concentration for the run shall be the arithmetic mean of all the individual O₂ sample concentrations at each traverse point.

(iii) If the particulate run has more than 12 traverse points, the O₂ traverse points may be reduced to 12 provided that Method 1 is used to locate the 12 O₂ traverse points.

(3) Method 9 and the procedures in 40 CFR 60.11 shall be used to determine opacity.

(4) Method 6 shall be used to determine the SO₂ concentration.

(i) The sampling site shall be the same as that selected for the particulate sample. The sampling location in the duct shall be at the centroid of the cross section or at a point no closer to the walls than 1 m (3.28 ft). The sampling time and sample volume for each sample run shall be at least 20 minutes and 0.020 dscm (0.71 dscf). Two samples shall be taken during a 1-hour period, with each sample taken within a 30-minute interval.

(ii) The emission rate correction factor, integrated sampling and analysis procedure of Method 3B shall be used to determine the O₂ concentration (%O₂). The O₂ sample shall be taken simultaneously with, and at the same point as, the SO₂ sample. The SO₂ emission rate shall be computed for each pair of SO₂ and O₂ samples. The SO₂ emission rate (E) for each run shall be the arithmetic mean of the results of the two pairs of samples.

(5) Method 7 shall be used to determine the NO_x concentration.

(i) The sampling site and location shall be the same as for the SO₂ sample. Each run shall consist of four grab samples, with each sample taken at about 15-minute intervals.

(ii) For each NO_x sample, the emission rate correction factor, grab sampling and analysis procedure of Method 3B shall be used to determine the O₂ concentration (%O₂). The sample shall be taken simultaneously with, and at the same point as, the NO_x sample.

(iii) The NO_x emission rate shall be computed for each pair of NO_x and O₂ samples. The NO_x emission rate (E) for each run shall be the arithmetic mean of the results of the four pairs of samples.

(c) When combinations of fossil fuels are fired, the owner or operator (in order to compute the prorated standard as shown in 40 CFR 60.43(b) and 60.44(b)) shall determine the percentage (x, y, or z) of the total heat input derived from each type of fuel as follows:

(1) The heat input rate of each fuel shall be determined by multiplying the gross calorific value of each fuel fired by the rate of each fuel burned.

(2) ASTM Methods D 2015-77 (solid fuels), D 240-76 (liquid fuels), or D 1826-77 (gaseous fuels) (incorporated by reference-see 40 CFR 60.17) shall be used to determine the gross calorific values of the fuels.

(3) Suitable methods shall be used to determine the rate of each fuel burned during each test period, and a material balance over the steam generating system shall be used to confirm the rate.

(d) The owner or operator may use the following as alternatives to the reference methods and procedures in 40 CFR 60.46 or in other sections as specified:

(1) The emission rate (E) of particulate matter, SO₂ and NO_x may be determined by using the F_c factor, provided that the following procedure is used:

(i) The emission rate (E) shall be computed using the following equation:

$$E = C F_c (100 / \%CO_2)$$

where:

E = emission rate of pollutant, ng/J (lb/million Btu).

C = concentration of pollutant, ng/dscm (lb/dscf).

%CO₂ = carbon dioxide concentration, percent dry basis.

F_c = factor as determined in appropriate sections of Method 19.

(ii) If and only if the average F_c factor in Method 19 is used to calculate E and either E is from 0.97 to 1.00 of the emission standard or the relative accuracy of a continuous emission monitoring system is from 17 to 20 percent, then three runs of Method 3B shall be used to determine the O₂ and CO₂ concentration according to the procedures in 40 CFR 60.46(b) (2)(ii), (4)(ii), or (5)(ii). Then if F_o (average of three runs), as calculated from the equation in Method 3B, is more than ± 3 percent than the average F_o value, as determined from the average values of F_d and F_c in Method 19, i.e., $F_{oa} = 0.209 (F_{da} / F_{ca})$, then the following procedure shall be followed:

(A) When F_o is less than $0.97 F_{oa}$, then E shall be increased by that proportion under $0.97 F_{oa}$, e.g., if F_o is $0.95 F_{oa}$, E shall be increased by 2 percent. This recalculated value shall be used to determine compliance with the emission standard.

(B) When F_o is less than $0.97 F_{oa}$ and when the average difference ($\bar{d}$) between the continuous monitor minus the reference methods is negative, then E shall be increased by that proportion under $0.97 F_{oa}$, e.g., if F_o is $0.95 F_{oa}$, E shall be increased by 2 percent. This recalculated value shall be used to determine compliance with the relative accuracy specification.

(C) When F_o is greater than $1.03 F_{oa}$ and when $\bar{d}$ is positive, then E shall be decreased by that proportion over $1.03 F_{oa}$, e.g., if F_o is $1.05 F_{oa}$, E shall be decreased by 2 percent. This recalculated value shall be used to determine compliance with the relative accuracy specification.

(2) For Method 5 or 5B, Method 17 may be used at facilities with or without wet FGD systems if the stack gas temperature at the sampling location does not exceed an average temperature of 160°C (320°F). The procedures of sections 2.1 and 2.3 of Method 5B may be used with Method 17 only if it is used after wet FGD systems. Method 17 shall not be used after wet FGD systems if the effluent gas is saturated or laden with water droplets.

(3) Particulate matter and SO_2 may be determined simultaneously with the Method 5 train provided that the following changes are made:

(i) The filter and impinger apparatus in sections 2.1.5 and 2.1.6 of Method 8 is used in place of the condenser (section 2.1.7) of Method 5.

(ii) All applicable procedures in Method 8 for the determination of SO_2 (including moisture) are used:

(4) For Method 6, Method 6C may be used. Method 6A may also be used whenever Methods 6 and 3B data are specified to determine the SO_2 emission rate, under the conditions in 40 CFR 60.46(d)(1).

(5) For Method 7, Method 7A, 7C, 7D, or 7E may be used. If Method 7C, 7D, or 7E is used, the sampling time for each run shall be at least 1 hour and the integrated sampling approach shall be used to determine the O_2 concentration ($\%\text{O}_2$) for the emission rate correction factor.

(6) For Method 3, Method 3A or 3B may be used.

(7) For Method 3B, Method 3A may be used.

[40 CFR 60.46(a), (b), (c) & (d)]

B.9. Annual RATA Tests May Substitute for Annual NO_x and SO_2 Tests. Annual RATA tests performed for nitrogen oxides and sulfur dioxide may be substituted for the annual compliance tests for these pollutants. To substitute for the annual compliance tests, the owner or operator must notify the Department of the RATA tests and the results must be submitted as the compliance tests, in accordance with the requirements of specific conditions I.6.(a)9. and I.15 of this permit. The requirements of specific conditions I.9 and I.12.(a)1. shall not apply to these tests. The test runs shall be consecutively completed in a manner that fulfills the test length requirements of the EPA test methods.

[Request of applicant, February 11, 1998]

B.10. The permittee shall demonstrate compliance with the sulfur dioxide limit in specific condition **B.5.b.** by means of a fuel analysis provided by the vendor or the permittee upon each fuel delivery. See specific condition **B.5.b.** and **B.11.**

[Rule 62-213.440, F.A.C.; and, 0170004-006-AC]

B.11. Sulfur Dioxide - Fuel Sampling. The following fuel sampling and analysis program shall be used as an alternate sampling procedure authorized by permit to demonstrate compliance with the fuel sulfur standard:

a. Determine and record the as-fired fuel sulfur content, percent by weight, for coal using appropriate ASTM methods such as, ASTM D2013-72, ASTM D3177-75, and ASTM D4239-85, or latest ASTM edition methods, to analyze a representative sample of coal following each fuel delivery.

b. Record daily the amount of coal fired, the density of each fuel, the Btu value, and the percent sulfur content by weight of each fuel.

c. Utilize the information in a. and b., above, to calculate the SO_2 emission rate to ensure compliance at all times.

[Rule 62-213.440, F.A.C.; and, 0170004-006-AC]

Monitoring of Operations

B.12. Maintain Daily Log. The owner or operator shall maintain a daily log of the amounts and types of fuels used and copies of fuel analyses containing information on sulfur content, ash content and heating values to facilitate calculations of emissions.
[PPSC PA 77-09]

B.13. Annual Tests Required - PM, VE, SO₂ and NO_x. Except as provided in specific conditions I.6 and I.7 of this permit, emission testing for particulate matter emissions, visible emissions, sulfur dioxide and nitrogen oxides shall be performed annually.
[Rules 62-4.070(3), 62-213.440, and 62-297.310(7), F.A.C.]

B.14. Pursuant to 40 CFR 60.45 Emission Monitoring.

CMS for Opacity, SO₂, NO_x, and CO₂ are Required.

(a) Each owner or operator shall install, calibrate, maintain, and operate continuous monitoring systems for measuring the opacity of emissions, sulfur dioxide emissions, nitrogen oxides emissions, and carbon dioxide except as provided in 40 CFR 60.45(b).

(c) For performance evaluations under 40 CFR 60.13(c) and calibration checks under 40 CFR 60.13(d), the following procedures shall be used:

(1) Methods 6, 7, and 3B, as applicable, shall be used for the performance evaluations of sulfur dioxide and nitrogen oxides continuous monitoring systems. Acceptable alternative methods for Methods 6, 7, and 3B are given in 40 CFR 60.46(d).

(2) Sulfur dioxide or nitric oxide, as applicable, shall be used for preparing calibration gas mixtures under Performance Specification 2 of Appendix B to 40 CFR 60.

(3) For affected facilities burning fossil fuel(s), the span value for a continuous monitoring system measuring the opacity of emissions shall be 80, 90, or 100 percent and for a continuous monitoring system measuring sulfur oxides or nitrogen oxides the span value shall be determined per the applicable requirements in 40 CFR Part 75.

(4) All span values computed under 40 CFR 60.45(c)(3) for burning combinations of fossil fuels shall be rounded to the nearest 500 ppm.

(e) For any continuous monitoring system installed under 40 CFR 60.45(a), the following conversion procedures shall be used to convert the continuous monitoring data into units of the applicable standards (ng/J, lb/million Btu):

(1) When a continuous monitoring system for measuring oxygen is selected, the measurement of the pollutant concentration and oxygen concentration shall each be on a consistent basis (wet or dry). Alternative procedures approved by the Administrator shall be used when measurements are on a wet basis. When measurements are on a dry basis, the following conversion procedure shall be used:

$$E = CF[20.9/(20.9 - \text{percent O}_2)]$$

where:

E, C, F, and % O₂ are determined under 40 CFR 60.45(f).

(2) When a continuous monitoring system for measuring carbon dioxide is selected, the measurement of the pollutant concentration and carbon dioxide concentration shall each be on a consistent basis (wet or dry) and the following conversion procedure shall be used:

$$E = CF_c [100/\text{percent CO}_2]$$

where:

E, C, F_c and %CO₂ are determined under 40 CFR 60.45(f).

(f) The values used in the equations under 40 CFR 60.45(e) (1) and (2) are derived as follows:

(1) E = pollutant emissions, ng/J (lb/million Btu).

(2) C = pollutant concentration, ng/dscm (lb/dscf), determined by multiplying the average concentration (ppm) for each one-hour period by 4.15×10^{-4} M ng/dscm per ppm (2.59×10^{-9} M lb/dscf per ppm) where M = pollutant molecular weight, g/g-mole (lb/lb-mole). M = 64.07 for sulfur dioxide and 46.01 for nitrogen oxides.

(3) % O₂, %CO₂ = oxygen or carbon dioxide volume (expressed as percent), determined with equipment specified under 40 CFR 60.45(a).

(4) F, F_c = a factor representing a ratio of the volume of dry flue gases generated to the calorific value of the fuel combusted (F), and a factor representing a ratio of the volume of carbon dioxide generated to the calorific value of the fuel combusted (F_c), respectively. Values of F and F_c are given as follows:

(ii) For subbituminous and bituminous coal as classified according to ASTM D388-77 (incorporated by reference-see 40 CFR 60.17), F = 2.637×10^{-7} dscm/J (9,820 dscf/million Btu) and F_c = 0.486×10^{-7} scm CO₂ /J (1,810 scf CO₂ /million Btu).

(iii) For liquid fossil fuels including crude, residual, and distillate oils, F = 2.476×10^{-7} dscm/J (9,220 dscf/million Btu) and F_c = 0.384×10^{-7} scm CO₂ /J (1,430 scf CO₂ /million Btu).

(iv) For gaseous fossil fuels, F = 2.347×10^{-7} dscm/J (8,740 dscf/million Btu). For natural gas, propane, and butane fuels, F_c = 0.279×10^{-7} scm CO₂ /J (1,040 scf CO₂ /million Btu) for natural gas, 0.322×10^{-7} scm CO₂ /J (1,200 scf CO₂ /million Btu) for propane, and 0.338×10^{-7} scm CO₂ /J (1,260 scf CO₂ /million Btu) for butane.

(5) The owner or operator may use the following equation to determine an F factor (dscm/J or dscf/million Btu) on a dry basis (if it is desired to calculate F on a wet basis, consult the Administrator) or F_c factor (scm CO₂ /J, or scf CO₂ /million Btu) on either basis in lieu of the F or F_c factors specified in 40 CFR 60.45(f)(4):

$$F = 10^{-6} \frac{[227.2 (\text{pct. II}) + 95.5 (\text{pct. C}) + 35.6 (\text{pct. S}) + 8.7 (\text{pct. N}) - 28.7 (\text{pct. O})]}{\text{GCV}}$$

$$F_c = \frac{2.0 \times 10^{-5} (\text{pct. C})}{\text{GCV}} \\ (\text{SI units})$$

$$F = 10^6 \frac{3.64(\%H) + 1.53(\%C) + 0.57(\%S) + 0.14(\%N) - 0.46(\%O)}{\text{GCV}} \\ (\text{English units})$$

$$F_c = \frac{20.0(\%C)}{\text{GCV}} \\ (\text{SI units})$$

$$F_c = \frac{321 \times 10^3 (\%C)}{\text{GCV}} \\ (\text{English units})$$

(i) H, C, S, N, and O are content by weight of hydrogen, carbon, sulfur, nitrogen, and oxygen (expressed as percent), respectively, as determined on the same basis as GCV by ultimate analysis of the fuel fired, using ASTM method D3178-74 or D3176 (solid fuels) or computed from results using ASTM method D1137-53(75), D1945-64(76), or D1946-77 (gaseous fuels) as applicable. (These five methods are incorporated by reference-see 40 CFR 60.17.)

(ii) GCV is the gross calorific value (kJ/kg, Btu/lb) of the fuel combusted determined by the ASTM test methods D2015-77 for solid fuels and D1826-77 for gaseous fuels as applicable. (These two methods are incorporated by reference-see 40 CFR 60.17.)

(6) For affected facilities firing combinations of fossil fuels, the F or F_c factors determined by paragraphs 40 CFR 60.45(f)(4) or (f)(5) shall be prorated in accordance with the applicable formula as follows:

$$F = \sum_{i=1}^n X_i F_i \quad \text{or} \quad F_c = \sum_{i=1}^n X_i (F_c)_i$$

where:

X_i = the fraction of total heat input derived from each type of fuel (e.g. natural gas, bituminous coal, etc.)

F_i or (F_c)_i = the applicable F or F_c factor for each fuel type determined in accordance with paragraphs (f)(4) and (f)(5) of this section.

n = the number of fuels being burned in combination.

[40 CFR 60.45(a), (b), (c), (e) and (f); PPSC PA 77-09]

COMS for Periodic Monitoring:

Periodic monitoring for opacity shall be COMS, which are maintained and operated in conformance with 40 CFR Part 75.

[Rule 62-213.440, F.A.C.]

B.15. Excess Emission Reports.

(g) Excess emission reports shall be submitted to the Department for every calendar quarter. All quarterly reports shall be postmarked by the 30th day following the end of each calendar quarter. Each excess emission report shall include the information required in 40 CFR 60.7(c). Periods of excess emissions that shall be reported are defined as follows:

(1) Opacity. Excess emissions are defined as any six-minute period during which the average opacity of emissions exceeds 20 percent opacity, except that one six-minute average per hour of up to 27 percent opacity need not be reported.

(2) Sulfur dioxide. Excess emissions for affected facilities are defined as:

(i) Any three-hour period during which the average emissions (arithmetic average of three contiguous one-hour periods) of sulfur dioxide as measured by a continuous monitoring system exceed the applicable standard under 40 CFR 60.43.

(3) Nitrogen oxides. Excess emissions for affected facilities using a continuous monitoring system for measuring nitrogen oxides are defined as any three-hour period during which the average emissions (arithmetic average of three contiguous one-hour periods) exceed the applicable standards under 40 CFR 60.44.

[40 CFR 60.45(g)]

Other NSPS Subpart D Conditions

B.16. Pursuant to 40 CFR 60.41 Definitions. As used in 40 CFR 60 Subpart D, all terms not defined in 40 CFR 60.41 shall have the meaning given them in the Act, and in Subpart A of 40 CFR 60.

Ambient Air Monitoring

B.17. Ambient Air Monitoring. The owner or operator shall continue to operate the existing ambient monitoring devices for sulfur dioxide and suspended particulate at the two existing locations (sites) designated on Figure A, Ambient Air Monitoring Locations, Crystal River, Florida, attached to this permit. The frequency of operation of each monitoring device for suspended particulate shall be every six days, and continuously for sulfur dioxide, unless otherwise specified by the Department. New or existing monitoring devices shall be located as designated by the Department. The monitoring devices for sulfur dioxide shall meet the requirements of 40 CFR 53.

[PPSC PA 77-09, and order modifying conditions of certification, OGC Case No. 83-0818, dated February 2, 1984, and Rules 62-213.440 and 62-296.405(1)(c)3., F.A.C.]

B.18. Flue Gas Desulfurization (FGD) equipment. Prior to the installation of any FGD equipment, plans and specifications for such equipment shall be submitted to the Department for review and approval.
[PPSC PA 77-09]

Common Conditions

B.19. These emissions units are also subject to conditions **I.1** through **I.15**, except for **I.2** and **I.3**, contained in **Subsection I. Common Conditions.**

B.20. These emissions units are also subject to conditions **J.1** through **J.5** contained in **Subsection J. NSPS Common Conditions.**

B.21. These emissions units are also subject to condition **K.1** contained in **Subsection K. Used Oil Common Condition.**

Subsection C. This section addresses the following emissions units.

E.U. ID No.	Brief Description
006	Fly ash transfer (Source 1) from Fossil Fuel Steam Generator (FFSG) Unit 1.
008	Fly ash storage silo (Source 3) for FFSG Units 1 and 2.
009	Fly ash transfer (Source 4) from FFSG Unit 2.
010	Fly ash transfer (Source 5) from FFSG Unit 2.

Emissions unit 006 is a fly ash transfer (Source 1) from Fossil Fuel Steam Generator (FFSG) Unit 1. This emissions unit consists of the fly ash conveying line, dense phase transfer vessel and separator used to transfer fly ash from the FFSG Unit 1 electrostatic precipitator to the fly ash storage silo (Source 3) at a design transfer rate of 44 tons per hour. Particulate matter emissions are controlled by a Monex Resources, Inc. Model MD80 baghouse at a design air flow of 1820 acfm.

Emissions unit 008 is a fly ash storage silo (Source 3) for FFSG Units 1 and 2. This emissions unit consists of the fly ash storage silo used to store fly ash from the electrostatic precipitators of FFSG Units 1 and 2. Fly ash is pneumatically conveyed from the FFSG Units 1 and 2 ESPs at a combined transfer rate of 174 tons per hour. Particulate matter emissions are controlled by a PulseKing Model M 100 S baghouse at a design air flow of 2546 acfm. Fly ash from the storage silo is disposed of either in a dry form by loading into enclosed tanker trucks or in a wet form by loading wet ash into open trucks.

Emissions unit 009 is a fly ash transfer (Source 4) from FFSG Unit 2. This emissions unit consists of the fly ash conveying line, dense phase transfer vessel and separator used to transfer fly ash from the FFSG Unit 2 ESP number 2C to the fly ash storage silo (Source 3) at a design transfer rate of 60 tons per hour. Particulate matter emissions are controlled by a Monex Resources, Inc. Model MD80 baghouse at a design air flow of 2200 acfm.

Emissions unit 010 is a fly ash transfer (Source 5) from FFSG Unit 2. This emissions unit consists of the fly ash conveying line, dense phase transfer vessel and separator used to transfer fly ash from the FFSG Unit 2 ESP number 2A and 2B to the fly ash storage silo (Source 3) at a maximum design transfer rate of 70 tons per hour. Particulate matter emissions are controlled by a Monex Resources, Inc. Model MD80 baghouse at a design air flow of 2800 acfm.

{Permitting note(s): These emissions units are regulated under Best Available Control Technology (BACT) Determinations ordered 2/5/79 (proposed 1/26/79) and 8/16/79.}

The following specific conditions apply to the emissions unit(s) listed above:

Essential Potential to Emit (PTE) Parameters

C.1. Permitted Capacity. The transfer rates shall not exceed:

Emissions Unit	Transfer Rate (tons per hour)
006	44
008	174
009	60
010	70

[Rules 62-4.160(2) and 62-210.200(PTE), F.A.C.]

Emission Limitations and Standards

C.2. Emission Limitations. Emissions of particulate matter from the following emissions units shall not exceed:

Emissions Unit	Emission Limit (pounds per hour)	Emission Limit (tons per year)
006	3.5 ^a	15.4 ^a
008	0.6 ^a	2.6 ^a
009	2.2 ^b	9.6 ^{b, c}
010	2.2 ^b	9.6 ^{b, c}

Notes:

- a Emission limits based on a BACT Determination proposed 1/26/79, ordered 2/5/79. BACT for emissions units 006 and 007 included a VE limit of 5% opacity, six minute average.
- b Emission limits based on a BACT Determination ordered 8/16/79.
- c The tons per year limits for emissions units 009 and 010 have been corrected to one decimal place.
[AC 09-25791]

C.3. VE in Lieu of Stack Test. Because the ash handling system emissions units are controlled with baghouses, the Department has waived particulate matter testing requirements and specified an alternate standard of 5% opacity. If the Department has reason to believe that the particulate emission standard applicable to each emissions unit (006, 008, 009 and 010) is not being met, it may require that compliance be demonstrated by stack testing in accordance with Chapter 62-297, F.A.C.
[Rule 62-297.620(4), F.A.C.; and, AC 09-256791]

C.4. Additional Reasonable Precautions for Control of Particulate Matter Emissions. The owner or operator shall take the following reasonable precautions to control emissions of particulate matter from transport of ash from emissions unit 008 for disposal or use. Ash for transport shall be wetted before loading into open trucks, or dry ash shall be transferred to enclosed tanker trucks.
[Rule 62-4.070(3), F.A.C.; and, AC 09-256791]

Monitoring of Operations

C.5. Annual VE Tests Required. Each emissions unit (006, 008, 009 and 010) shall be tested for visible emissions annually using EPA Method 9. Each test shall be a minimum of thirty minutes in duration from each exhaust point, while transferring fly ash from both FFSG Units 1 and 2 to the silo (emissions unit 008) at the same time. The tests shall be conducted during a period when both FFSG Units 1 and 2 are operating at 90 to 100% of full load while sootblowing. A statement of the FFSG unit loads, verifying the tests were conducted during sootblowing, shall be submitted with the test reports.
[Rule 62-4.070(3), F.A.C.; and, AC 09-256791]

{Permitting note: For those emissions points containing a baghouse, the permittee shall perform and record the results of weekly qualitative observations of visible emissions checks (e.g., Method 22) with follow-up Method 9 tests within 24 hours of any abnormal visible emissions.}

Common Conditions

C.6. These emissions units are also subject to conditions **I.1** through **I.15**, except for **I.3**, contained in **Subsection I. Common Conditions**.

Subsection D. This section addresses the following emissions unit.

E.U. ID No.	Brief Description
014	Bottom ash storage silo for FFSG Units 1 and 2, with associated vacuum blower exhausts and bin vent filter (total of three emission points).

Emissions unit 014 is a bottom ash storage silo for FFSG Units 1 and 2, with associated vacuum blower exhausts and bin vent filter (total of three emission points). This emissions unit consists of the system to collect and store bottom ash and economizer ash from both FFSG Units 1 and 2 at a total rate of 16 tons per hour (8 tons per hour from each FFSG unit) at an airflow rate of 2200 scfm from each unit. Ash is conveyed by vacuum from each FFSG unit by a separate vacuum blower, with air and ash passing through a baghouse (filter/separator) where ash is deposited in the silo and air is exhausted through the vacuum blower. Air displaced in the silo is vented through an additional bag filter (the bin vent filter) at an airflow rate of 2400 scfm. Ash stored in the silo is unloaded into trucks for sale, use or disposal at the on-site ash disposal facility. Ash will be wet via a pugmill before loading into open trucks, or dry ash will be transferred to enclosed tanker trucks.

{Permitting note(s): This emissions unit is regulated under Rule 62-296.320, F.A.C., and by applicable requirements of AC 09-235915.}

The following specific conditions apply to the emissions unit(s) listed above:

Essential Potential to Emit (PTE) Parameters

D.1. Permitted Capacity. The transfer rates shall not exceed 16 tons per hour (8 tons per hour from each FFSG unit).
[Rules 62-4.160(2) and 62-210.200(PTE), F.A.C.]

Emission Limitations and Standards

D.2. Visible Emissions (VE) Limitation. Visible emissions shall be less than 20% opacity, six minute average, established by Rule 62-296.320(4)(b)1, F.A.C. See Section II, condition 3 of this permit.
[Rule 62-296.320(4)(b)1, F.A.C.]

D.3. Additional Reasonable Precautions for Control of Particulate Matter Emissions. The owner or operator shall take the following reasonable precautions to control emissions of particulate matter from transport of ash from emissions unit 014 for disposal or use. Ash for transport shall be wet via a pugmill before loading into open trucks, or dry ash shall be transferred to enclosed tanker trucks.
[Rule 62-4.070(3), F.A.C.; and, AC 09-235915]

Monitoring of Operations

D.4. Annual VE Tests Required. Each emission point of emissions unit 014 shall be tested for visible emissions annually using EPA Method 9. Each test shall be a minimum of thirty minutes in duration from each exhaust point, while transferring bottom ash and economizer ash from both FFSG Units 1 and 2 to the silo at the same time at 90-100% of design throughput rate of 8 TPH.
[Rules 62-4.070(3) and 62-296.320(4)(b)4, F.A.C.; AC 09-235915; and, AO 09-248541]

{Permitting note: For those emissions points containing a baghouse, the permittee shall perform and record the results of weekly qualitative observations of visible emissions checks (e.g., Method 22) with follow-up Method 9 tests within 24 hours of any abnormal visible emissions.}

Common Conditions

D.5. This emissions unit is also subject to conditions **I.1** through **I.15**, except for **I.3**, contained in **Subsection I. Common Conditions**.

Subsection E. This section addresses the following emissions unit.

Facility ID No.	E. U. ID No.	Brief Description
7775047	-001	Relocatable diesel generator(s) will have a maximum (combined) heat input of 25.74 MMBtu/hour while being fueled by 186.3 gallons of new No. 2 fuel oil per hour with a maximum (combined) rating of 2460 kilowatts. Emissions from the generator(s) are uncontrolled.

The generators may be relocated to any of the following facilities:

1. Crystal River Plant, Powerline Road, Red Level, Citrus County.
2. Bartow Plant, Weedon Island, St. Petersburg, Pinellas County.
3. Higgins Plant, Shore Drive, Oldsmar, Pinellas County.
4. Bayboro Plant, 13th Ave. & 2nd St. South, St. Petersburg, Pinellas County.
5. Wildwood Reclamation Facility, State Road 462, 1 mi. east of U.S. 301, Wildwood, Sumter County.
6. Hines Energy Complex, County Road 555, 1 mi. southwest of Homeland, Polk County.
7. Anclote Power Plant, 1729 Baileys Road, Holiday, Pasco County

{Permitting notes: These emissions units are regulated under Rule 62-210.300, F.A.C., Permits Required. Each generator has its own stack. This section of the permit is only applicable when the generator(s) is(are) located at the Crystal River Plant. }

The following specific conditions apply to the emissions units listed above regardless of location:

Essential Potential to Emit (PTE) Parameters

E.1. Permitted Capacity. The maximum (combined) heat input rate shall not exceed 25.74 million Btu per hour. [Rules 62-4.160(2) and 62-210.200(PTE), F.A.C.]

E.2. Emissions Unit Operating Rate Limitation After Testing. See specific condition **E.9.** [Rule 62-297.310(2), F.A.C.]

E.3. Methods of Operation - Fuels. Only new No. 2 fuel oil with a maximum sulfur content of 0.5%, by weight, shall be fired in the diesel generator(s). [Rule 62-213.410, F.A.C.; and, AC 09-202080.]

E.4. Hours of Operation. The hours of operation expressed as "engine-hours" shall not exceed 2970 hours in any consecutive 12 month period. The total hours of operation expressed as "engine-hours" shall be the summation of the individual hours of operation of each generator. [Rules 62-4.160(2) and 62-210.200(PTE), F.A.C.; and, AC 09-202080.]

Emission Limitations and Standards

E.5. Visible Emissions. Visible emissions from each generator shall not be equal to or greater than 20 percent opacity, six minute average. [Rule 62-296.320(4)(b)1., F.A.C.; and, AC 09-202080.]

Monitoring of Operations

E.6. Fuel Sulfur Analysis. The permittee shall demonstrate compliance with the liquid fuel sulfur limit by means of a fuel analysis provided by the vendor or permittee upon each fuel delivery. See specific condition **E.3.** and **E.8.** [Rule 62-213.440, F.A.C.]

Test Methods and Procedures

E.7. The test method for visible emissions shall be EPA Method 9, incorporated and adopted by reference in Chapter 62-297, F.A.C.
[Rules 62-296.320(4)(b)4.a. and 62-297.401, F.A.C.]

E.8. The fuel sulfur content, percent by weight, for liquid fuels shall be evaluated using either ASTM D2622-94, ASTM D4294-90, both ASTM D4057-88 and ASTM D129-95, or the latest edition(s).
[Rules 62-213.440 and 62-297.440, F.A.C.]

E.9. Operating Rate During Testing. Testing of emissions shall be conducted with the generator(s) operating at 90 to 100 percent of the maximum fuel firing rate for each generator. If it is impracticable to test at permitted capacity, an emissions unit may be tested at less than the minimum permitted capacity (i.e., at less than 90 percent of the maximum operation rate allowed by the permit); in this case, subsequent emissions unit operations may be limited to 110 percent of the test load until a new test is conducted, provided however, operations do not exceed 100 percent of the maximum operation rate allowed by the permit. Once the emissions unit is so limited, operation at higher capacities is allowed for no more than 15 consecutive days for the purpose of additional compliance testing to regain the authority to operate at the permitted capacity. Failure to submit the actual operating rate may invalidate the test.
[Rule 62-297.310(2), F.A.C.; and, AC 09-202080]

E.10. Visible Emissions Testing - Annual. By this permit, annual emissions compliance testing for visible emissions is not required for these emissions units while burning liquid fuels for less than 400 hours per year.
[Rules 62-297.310(7)(a)4. & 8., F.A.C.]

E.11. After each relocation, each generator shall be tested within 30 days of startup for opacity and the fuel shall be analyzed for the sulfur content. See specific conditions **E.3.**, **E.5.**, and **E.6.**
[Rules 62-4.070(3) and 62-297.310(7)(b), F.A.C.; and, AO 09-205952.]

Record Keeping and Reporting Requirements

E.12. To demonstrate compliance with specific condition **E.4.**, records shall indicate the daily hours of operation for each of the generators, the daily hours of operation expressed as "engine- hours" and the cumulative total hours of operation expressed as "engine-hours" for each month. The records shall be maintained for a minimum of 5 years and made available to the Southwest District Office upon request.
[Rules 62-213.440 and 62-297.310(8), F.A.C.; and, AO 09-205952.]

E.13. To demonstrate compliance with specific condition **E.3.**, records of the sulfur content, in percent by weight, of all the fuel burned shall be kept based on either vendor provided as-delivered or as-received fuel sample analysis. The records shall be maintained for a minimum of 5 years and made available to the Southwest District Office upon request.
[Rule 62-297.310(8), F.A.C.; and, AC 09-202080.]

Source Obligation

E.14. Specific conditions in construction permit AC 09-202080, limiting the “engine hours”, were accepted by the applicant to escape Prevention of Significant Deterioration review. If Progress Energy Florida requests a relaxation of any of the federally enforceable emission limits in this permit, the relaxation of limits may be subject to the preconstruction review requirements of Rule 62-212.400(5), F.A.C., as though construction had not yet begun. [Rule 62-212.400(2)(g), F.A.C.; and, AC 09-202080.]

E.15. Progress Energy Florida shall notify the Department’s Southwest District Office, in writing, at least 15 days prior to the date on which any diesel generator is to be relocated. The notification shall specify the following;

- a. which generator, by serial number, is being relocated,
- b. which location the generator is being relocated from and which location it is being relocated to, and
- c. the approximate startup date at the new location.

If a diesel generator is to be relocated within Pinellas County, then Progress Energy Florida shall provide the same notification to the Air Quality Division of the Pinellas County Department of Environmental Management.

[Rule 62-4.070(3), F.A.C.; and, AC 09-202080]

Common Conditions

E.16. This emissions unit is also subject to conditions **I.1** through **I.15**, except for **I.3** and **I.8**, contained in **Subsection I. Common Conditions**.

Subsection F. This section addresses the following emissions unit.

E.U. ID No.	Brief Description
013	Cooling towers for FFSG Units 1, 2 and nuclear Unit 3, used to reduce plant discharge water temperature.

Emissions unit 013 is cooling towers for FFSG Units 1, 2 and nuclear Unit 3, used to reduce plant discharge water temperature. (This emission unit may be referred to as "helper cooling towers.") This emissions unit consists of four towers with nine cells per tower, with high efficiency drift eliminators, operating at a maximum seawater flow rate of 735,000 gallons per minute for all cells combined, with a design airflow rate of 1.46×10^6 acfm from each cell. Seawater is sprayed through the towers where fan induced air flow causes evaporative cooling. Water vapor, saltwater droplets (drift) and salt particles are emitted. Drift emissions are controlled by high efficiency drift eliminators.

{Permitting note(s): This emissions unit is regulated under Prevention of Significant Deterioration (PSD) (PSD permit AC 09-162037/PSD-FL-139 issued 8/29/90) and Best Available Control Technology (BACT), Determination dated 8/29/90, which set a drift emission rate of 0.004%.}

The following specific conditions apply to the emissions unit(s) listed above:

Essential Potential to Emit (PTE) Parameters

F.1. Hours of Operation. The operating hours for each cooling tower pump shall not exceed 4320 hours per year (12-month rolling total).
[Rule 62-210.200(PTE), F.A.C.; and, AC 09-162037 (PSD-FL-139)]

Emission Limitations and Standards

F.2. Cooling Tower Emission Limit. Emissions of particulate matter from each cooling tower cell shall not exceed 11.9 pounds per hour.
{Note: The emission limit is based on a BACT Determination setting the maximum drift emissions at 0.004%. Equivalent maximum emissions are 428 lb/hr and 925 tons per year total for all cells. PM₁₀ emissions are estimated to be approximately 50% of the particulate matter emission rate.}
[Rule 62-213.440, F.A.C.; and, AC 09-162037 (PSD-FL-139)]

F.3. Drift Eliminators. Drift eliminators shall be installed and maintained so that minimum bypass occurs. Regular maintenance shall be scheduled to ensure proper operation of the drift eliminators.
[Rule 62-213.440, F.A.C.; and, AC 09-162037 (PSD-FL-139)]

{Note: This emissions unit is not subject to a visible emissions limitation. Emissions from this emissions unit include water droplets so visible emissions testing is not possible.}

Test Methods and Procedures

F.4. Emission Test Method. The drift elimination system on the helper cooling towers shall be maintained so as to minimize pluggage and to insure timely repair of broken sections of the drift eliminators. During the warm months when the helper cooling towers are used, the following work practice shall be implemented, in lieu of EPA Method 5, to demonstrate compliance with the originally designed removal efficiency (no more than 0.004% drift rate):

- (a) Daily “walkdown” inspection of each operational cell visually checking for problems with the drift eliminators such as pluggage, algae build-up, and mechanical components (fans and pumps).
- (b) Daily visual inspection of the cells which are in operation to ascertain the presence of higher than expected visible emissions when atmospheric conditions allow, and follow-up inspections and correction of problems when the daily visual inspection of the cells indicates a problem.
- (c) Weekly visual inspection of the inlet water screens and prompt correction when broken sections or pluggage is discovered.

[Rule 62-213.440, F.A.C.; and, AC 09-162037 (PSD-FL-139); and, ASP No. 00-E-01 dated June 7, 2000]

Monitoring of Operations

F.5. Any problems detected during the work practice inspections identified in Specific Condition **F.4.** shall be documented in a log identifying the cell (or water screen), the inspector, the time (when discovered and the hours operated before the problem was corrected), and a description of the problem and the corrective actions taken. This log shall be maintained onsite and shall be made available to DEP upon request. The log shall be maintained so as to provide an indication as to whether routine inspections have been conducted as required even when there are no problems to record.

[Rules 62-213.440 and 62-297.310(7), F.A.C.; AC 09-162037 (PSD-FL-139); and, ASP No. 00-E-01 dated June 7, 2000]

Record Keeping and Reporting Requirements

F.6. Pump Run Time Meters Required. Equip each cooling tower seawater pump with a run-hour meter and maintain records of run time for each pump based on run-hour meters for each calendar month.

[Rule 62-213.440, F.A.C.; and, AC 09-162037 (PSD-FL-139)]

Common Conditions

F.7. This emissions unit is also subject to conditions **I.1** through **I.15**, except for **I.3**, **I.7** and **I.8**, contained in Subsection **I. Common Conditions**.

Subsection G. This section addresses the following emissions unit.

E.U. ID No.	Brief Description
015	Cooling towers for FFSG Units 4 and 5 used to reduce plant discharge water temperature.

Emissions unit 015 is cooling towers for FFSG Units 4 and 5 used to reduce plant discharge water temperature. (These towers are hyperbolic cooling towers.) Seawater is sprayed through the towers where induced air flow causes evaporative cooling. Water vapor, saltwater droplets (drift) and salt particles are emitted. Drift emissions controlled by high efficiency drift eliminators. Seawater flow rate is 331,000 gallons per minute.

{Permitting note(s): This emissions unit is regulated under Prevention of Significant Deterioration (PSD) (PSD permit PSD-FL-007 issued by EPA as modified by EPA on 11/30/88.)}

The following specific conditions apply to the emissions unit(s) listed above:

Essential Potential to Emit (PTE) Parameters

G.1. Permitted Capacity. The maximum seawater flow rate shall not exceed 331,000 gallons per minute per cooling tower.

[Rules 62-4.160(2) and 62-210.200(PTE), F.A.C.]

{Permitting note: The seawater flow rate limitations have been placed in each permit to identify the capacity of each unit for the purposes of confirming that emissions testing is conducted within 90 to 100 percent of the unit's rated capacity (or to limit future operation to 110 percent of the test load) and to aid in determining future rule applicability. Regular record keeping is not required for seawater flow rates. Instead the owner or operator is expected to determine the seawater flow rate whenever emission testing is required, to demonstrate at what percentage of the rated capacity that the unit was tested. Rule 62-297.310(5), F.A.C., included in the permit, requires measurement of the process variables for emission tests. Such seawater flow rate determination may be based on measurements of flow by various methods including but not limited to flow metering or the use of pump curves supplied by the manufacturer to calculate an average hourly seawater flow rate during the test.}

Emission Limitations and Standards

G.2. Cooling Tower Emission Limit. Emissions of particulate matter shall not exceed 175 lb/hr from each cooling tower.

{Note: The emission limit is based on a BACT Determination requiring control of drift emissions with drift eliminators. The modified PSD permit removed a limitation on drift rate, substituting an emissions limit in pounds per hour. PM emissions are assumed to be all PM₁₀.}

[Rule 62-213.440, F.A.C.; and, Modified PSD permit, PSD-FL-007, issued by EPA 11/30/88]

{Note: This emissions unit is not subject to a visible emissions limitation. Emissions from this emissions unit include water droplets so visible emissions testing is not possible.}

Test Methods and Procedures

G.3. Emission Test Method. Testing shall be in accordance with following requirements:

- a. Particulate matter emissions shall be measured by the sensitive paper method.
- b. Testing shall be conducted either at the drift eliminator level within the tower or at the tower exit plane. (The sampling locations at the drift eliminator level and apparatus are shown in diagrams attached as Appendix P.)
- c. No less than three test runs shall be conducted for each test and all valid data from each of these test runs shall be averaged to demonstrate compliance. No individual test run result shall determine compliance or noncompliance. The emission rate reported as a percent of the circulating water, as well as lb/hr., and total dissolved solids in the cooling tower basin and intake water, shall be reported for each test run.

[Rule 62-213.440, F.A.C.; and, Modified PSD permit, PSD-FL-007, issued by EPA 11/30/88]

Monitoring of Operations

G.4. Test Every Five Years. The FFSG Unit 4 cooling tower shall be tested every five years from 1988 (the next required year from the effective date of this permit is 2003). The FFSG Unit 5 cooling tower shall be tested every five years from 1992 (the next required year from the effective date of this permit is 2002).

[Rule 62-213.440, F.A.C.; and, Modified PSD permit, PSD-FL-007, issued by EPA 11/30/88, request of applicant]

G.5. Inspection. The drift eliminators of both towers shall be inspected from the concrete walkways not less than every three months by Progress Energy Florida staff or representatives to assure that the drift eliminators are clean and in good working order. Not less than annually, a complete inspection of the towers shall be conducted by a qualified inspector with recognized expertise in the field.

Certification that the drift eliminators are properly installed and in good working order shall be provided in the record keeping and reporting requirements noted below.

[Rule 62-213.440, F.A.C.; and, Modified PSD permit, PSD-FL-007, issued by EPA 11/30/88]

Record Keeping and Reporting Requirements

G.6. Reporting. Reports on tower testing and inspection shall be handled as follows:

- a. Maintained within onsite files within 30 days after all visual inspections of the drift eliminators.
- b. Agency Submittal within 45 days after the compliance testing of either tower.

[Rule 62-213.440, F.A.C.; and, Modified PSD permit, PSD-FL-007, issued by EPA 11/30/88]

G.7. Excess Emissions. Should either tower emission rate exceed 175 lb/hr, the permittee shall:

- a. Notify EPA and the Department within 10 days of becoming aware of the exceedence.
- b. Provide an assessment of necessary corrective actions and a proposed schedule of implementation within an additional 20 days.
- c. Expeditiously complete corrective actions.
- d. Retest the tower within three months after the correction is completed.
- e. Submit the testing report within 45 days after completion of said tests.

[Rule 62-213.440, F.A.C.; and, Modified PSD permit, PSD-FL-007, issued by EPA 11/30/88]

Common Conditions

G.8. This emissions unit is also subject to conditions **I.1** through **I.15**, except for **I.3**, **I.7** and **I.8**, contained in Subsection **I. Common Conditions**.

Subsection H. This section addresses the following emissions unit.

E.U. ID No.	Brief Description
016	Material handling activities for coal-fired steam units.

Emissions Unit 016 is material handling activities for coal-fired steam units. This emissions unit consists of a crane-operated clam-shell bucket mounted on a traveling gantry, enclosed conveyor belts, coal crushers and storage bunkers used for the storage and transport of coal, for FFSG Units 1, 2, 4 and 5. This unit also encompasses fly ash and bottom ash handling equipment associated with Units 4 and 5 which are ~~and~~ not addressed by other emissions units. Emissions are particulate matter and PM₁₀ from these activities.

{Permitting note(s): This emissions unit is regulated partially under Power Plant Siting Certification PA 77-09 (Units 4 and 5 only). The material handling activities are also regulated by PSD permit AC 09-162037 / PSD-FL-139; and, are subject to NSPS 40 CFR 60 Subpart Y. This emissions unit is also regulated under permit number 0170004-014-AC (issued concurrently with this revised permit number 0170004-015-AV), which authorized the replacement of the barge unloading equipment to decrease the time required to unload coal barges, and the increase in conveying and crushing speeds of the equipment feeding coal to units 1 and 2.}

The following specific conditions apply to the emissions unit(s) listed above:

Emission Limitations and Standards

H.1. Pursuant to 40 CFR 60.252 Standards for Particulate Matter.

(c) The owner or operator shall not cause to be discharged into the atmosphere from any coal processing and conveying equipment, coal storage system, or coal transfer and loading system processing coal, gases which exhibit 20 percent opacity or greater.

[40 CFR 60.252 (coal facilities associated with Units 1, 2, 4 and 5)]

H.2. Visible Emissions. The owner or operator shall not cause to be discharged into the atmosphere from any coal processing and conveying equipment, coal storage system, or coal transfer and loading system processing coal, gases which exhibit 20 percent opacity or greater, six minute average. To the extent possible, the equipment that comprises the coal processing equipment at this facility (crushers, conveyors, drop points, and storage bunkers) shall be covered or enclosed at all times the equipment is in operation. Except for the barge load-out and the stacker reclaimer sections of the conveying system that are required by design to be open, and which are not specifically subject to regulation under 40 CFR 60, Subpart Y, any other open section of the coal processing equipment shall be required to have an annual visible emission test conducted upon it, as outlined in Condition H.4.

[PPSC PA 77-09 (coal facilities associated with Units 1, 2, 4 and 5); and, 0170004-014-AC]

H.3. PM Control -- BMPs. The owner or operator shall control particulate emissions (PM and PM₁₀) through the practices described in the Best Management Plan authored by KBN, November 1990, and distributed to FPC staff November 21, 1990, by Mr. W. Jeffrey Pardue.

[AC 09-162037, PSD-FL-139 (for construction of helper cooling towers) specific condition 3]

Test Methods and Procedures

H.4. Visible Emissions. (This condition applies to coal facilities associated with emissions units 001, 002, 004 and 003 -- FFSG Units 1, 2, 4 and 5.) When required by the Department, or annually as specified in Condition 3, EPA Method 9 and the procedures in 40 CFR 60.11 shall be used to determine opacity (see Appendix A - 40 CFR 60, Subpart A Standard Conditions, attached).

[40 CFR 60.254(2); and, 0170004-014-AC]

{Permitting Note: Except as specified in Specific Condition H.2., annual testing is not being required because the regulated emissions points are either enclosed or confined within a building.}

{Permitting note: For those emissions points containing a baghouse (ash silos), the permittee shall perform and record the results of weekly qualitative observations of visible emissions checks (e.g., Method 22) with follow-up Method 9 tests within 24 hours of any abnormal visible emissions.}

Common Conditions

H.5. This emissions unit is also subject to conditions **I.1**, **I.4**, **I.5**, and **I.14** contained in **Subsection I. Common Conditions**. This emissions unit is also subject to conditions **I.6.(a)9 & (b)**, **I.12(a)2** and **I.15.(a) & (b)**; the other provisions of conditions **I.6**, **I.12** and **I.15** are not applicable to this emissions unit.

H.6. These emissions units are also subject to conditions **J.1**, **J.2**, **J.3(b)**, **(c) and (d)** and **J.4** contained in **Subsection J. NSPS Common Conditions**.

H.7. This emissions unit is also subject to the applicable terms and conditions contained in the attached Appendix A, 40 CFR 60, Subpart A Standard Conditions, and the attached Appendix Y, 40 CFR 60, Subpart Y Standard Conditions.

[0170004-014-AC]

Subsection I. Common Conditions.

E.U. ID No.	Brief Description
001	Fossil Fuel Steam Generator (FFSG), Unit 1
002	FFSG, Unit 2
004	FFSG, Unit 4
003	FFSG, Unit 5
006	Fly ash transfer (Source 1) from FFSG Unit 1
008	Fly ash storage silo (Source 3) for FFSG Units 1 and 2
009	Fly ash transfer (Source 4) from FFSG Unit 2
010	Fly ash transfer (Source 5) from FFSG Unit 2
014	Bottom ash storage silo for FFSG Units 1 and 2, with associated vacuum blower exhausts and bin vent filter (total of three emission points)
7775047, 001	Three relocatable diesel fired generators, rated at 0.82 MW, 8.58 MMBtu/hr
013	Cooling towers for FFSG Units 1, 2, and 3, used to reduce plant discharge water temperature
015	Cooling towers for FFSG Units 4 and 5 used to reduce plant discharge water temperature
016	Material handling activities for coal-fired steam units

Except as otherwise specified under Subsections A. through H., the following conditions apply to the emissions units listed above:

Essential Potential to Emit (PTE) Parameters

I.1. Hours of Operation. The emissions units may operate continuously, i.e., 8,760 hours/year.
[Rule 62-210.200(PTE), F.A.C.]

Emission Limitations and Standards

{Permitting Notes: Table 1-1, Summary of Air Pollutant Standards and Terms, summarizes information for convenience purposes only. This table does not supersede any of the terms or conditions of this permit.}

Excess Emissions

{Permitting Note: The Excess Emissions Rule at Rule 62-210.700, F.A.C., cannot vary any requirement of an NSPS, NESHAP, or Acid Rain program provision.}

I.2. Excess emissions resulting from startup, shutdown or malfunction shall be permitted provided that best operational practices to minimize emissions are adhered to and the duration of excess emissions shall be minimized but in no case exceed two hours in any 24 hour period unless specifically authorized by the Department for longer duration.
[Rule 62-210.700(1), F.A.C.]

I.3. Excess emissions resulting from startup or shutdown shall be permitted provided that best operational practices to minimize emissions are adhered to and the duration of excess emissions shall be minimized.
[Rule 62-210.700(2), F.A.C.]

I.4. Excess emissions which are caused entirely or in part by poor maintenance, poor operation, or any other equipment or process failure which may reasonably be prevented during startup, shutdown or malfunction shall be prohibited.

[Rule 62-210.700(4), F.A.C.]

Monitoring of Operations

I.5. Determination of Process Variables.

(a) **Required Equipment.** The owner or operator of an emissions unit for which compliance tests are required shall install, operate, and maintain equipment or instruments necessary to determine process variables, such as process weight input or heat input, when such data are needed in conjunction with emissions data to determine the compliance of the emissions unit with applicable emission limiting standards.

(b) **Accuracy of Equipment.** Equipment or instruments used to directly or indirectly determine process variables, including devices such as belt scales, weight hoppers, flow meters, and tank scales, shall be calibrated and adjusted to indicate the true value of the parameter being measured with sufficient accuracy to allow the applicable process variable to be determined within 10% of its true value.

[Rule 62-297.310(5), F.A.C.]

I.6. Frequency of Compliance Tests. The following provisions apply only to those emissions units that are subject to an emissions limiting standard for which compliance testing is required.

(a) General Compliance Testing.

2. For excess emission limitations for particulate matter specified in Rule 62-210.700, F.A.C., a compliance test shall be conducted annually while the emissions unit is operating under soot blowing conditions in each federal fiscal year during which soot blowing is part of normal emissions unit operation, except that such test shall not be required in any federal fiscal year in which a fossil fuel steam generator does not burn liquid and/or solid fuel for more than 400 hours other than during startup.

3. The owner or operator of an emissions unit that is subject to any emission limiting standard shall conduct a compliance test that demonstrates compliance with the applicable emission limiting standard prior to obtaining a renewed operation permit. Emissions units that are required to conduct an annual compliance test may submit the most recent annual compliance test to satisfy the requirements of this provision. In renewing an air operation permit pursuant to Rule 62-210.300(2)(a)3.b., c., or d., F.A.C., the Department shall not require submission of emission compliance test results for any emissions unit that, during the year prior to renewal:

a. Did not operate; or

b. In the case of a fuel burning emissions unit, burned liquid fuel for a total of no more than 400 hours.

4. During each federal fiscal year (October 1 -- September 30), unless otherwise specified by rule, order, or permit, the owner or operator of each emissions unit shall have a formal compliance test conducted for:

a. Visible emissions, if there is an applicable standard;

b. Each of the following pollutants, if there is an applicable standard, and if the emissions unit emits or has the potential to emit: 5 tons per year or more of lead or lead compounds measured as elemental lead; or 100 tons per year or more of any other regulated air pollutant; and

c. Any NESHAP pollutant.

5. An annual compliance test for particulate matter emissions shall not be required for any fuel burning emissions unit that, in a federal fiscal year, does not burn liquid and/or solid fuel, other than during startup, for a total of more than 400 hours.

9. The owner or operator shall notify the Department, at least 15 days prior to the date on which each formal compliance test is to begin, of the date, time, and place of each such test, and the test contact person who will be responsible for coordinating and having such test conducted for the owner or operator.

(b) **Special Compliance Tests.** When the Department, after investigation, has good reason (such as complaints, increased visible emissions or questionable maintenance of control equipment) to believe that any applicable emission standard contained in a Department rule or in a permit issued pursuant to those rules is being violated, it may require the owner or operator of the emissions unit to conduct compliance tests which identify the nature and

quantity of pollutant emissions from the emissions unit and to provide a report on the results of said tests to the Department.

(c) Waiver of Compliance Test Requirements. If the owner or operator of an emissions unit that is subject to a compliance test requirement demonstrates to the Department, pursuant to the procedure established in Rule 62-297.620, F.A.C., that the compliance of the emissions unit with an applicable weight emission limiting standard can be adequately determined by means other than the designated test procedure, such as specifying a surrogate standard of no visible emissions for particulate matter sources equipped with a bag house or specifying a fuel analysis for sulfur dioxide emissions, the Department shall waive the compliance test requirements for such emissions units and order that the alternate means of determining compliance be used, provided, however, the provisions of Rule 62-297.310(7)(b), F.A.C., shall apply.

[Rule 62-297.310(7), F.A.C.; SIP approved]

I.7. When PM Tests Not Required. Annual and permit renewal compliance testing for particulate matter emissions is not required for these emissions units while burning:

- a. only gaseous fuel(s); or
- b. gaseous fuel(s) in combination with any amount of liquid fuel(s) for less than 400 hours per year; or
- c. only liquid fuel(s) for less than 400 hours per year.

[Rules 62-297.310(7)(a)3. & 5., F.A.C.; and, ASP Number 97-B-01.]

Test Methods and Procedures

{Permitting Notes: The attached Table 2-1, Summary of Compliance Requirements, summarizes information for convenience purposes only. This table does not supersede any of the terms or conditions of this permit.}

I.8. (This conditions applies to emissions units 001, 002, 003, 004, 006, 008, 009, 010, & 014.) Visible Emissions. The test method for visible emissions shall be EPA Method 9, adopted and incorporated by reference in Rule 62-204.800, F.A.C., and referenced in Chapter 62-297, F.A.C.

[Rules 62-204.800 and 62-297.401, F.A.C.]

I.9. Required Number of Test Runs. For mass emission limitations, a compliance test shall consist of three complete and separate determinations of the total air pollutant emission rate through the test section of the stack or duct and three complete and separate determinations of any applicable process variables corresponding to the three distinct time periods during which the stack emission rate was measured provided, however, that three complete and separate determinations shall not be required if the process variables are not subject to variation during a compliance test, or if three determinations are not necessary in order to calculate the unit's emission rate. The three required test runs shall be completed within one consecutive five day period. In the event that a sample is lost or one of the three runs must be discontinued because of circumstances beyond the control of the owner or operator, and a valid third run cannot be obtained within the five day period allowed for the test, the Secretary or his or her designee may accept the results of the two complete runs as proof of compliance, provided that the arithmetic mean of the results of the two complete runs is at least 20 percent below the allowable emission limiting standards.

[Rule 62-297.310(1), F.A.C.]

I.10. Calculation of Emission Rate. The indicated emission rate or concentration shall be the arithmetic average of the emission rate or concentration determined by each of the separate test runs unless otherwise specified in a particular test method or applicable rule.

[Rule 62-297.310(3), F.A.C.]

I.11. Operating Rate During Testing. Testing of emissions shall be conducted with each emissions unit operation at permitted capacity, which is defined as 90 to 100 percent of the maximum operation rate allowed by the permit. If it is impracticable to test at permitted capacity, an emissions unit may be tested at less than the minimum permitted capacity; in this case, subsequent emissions unit operation is limited to 110 percent of the test load until a new test is conducted. Once the emissions unit is so limited, operation at higher capacities is allowed for no more than 15

consecutive days for the purpose of additional compliance testing to regain the authority to operate at the permitted capacity.

[Rules 62-297.310(2) & (2)(b), F.A.C.]

I.12. Applicable Test Procedures.

(a) Required Sampling Time.

1. Unless otherwise specified in the applicable rule, the required sampling time for each test run shall be no less than one hour and no greater than four hours, and the sampling time at each sampling point shall be of equal intervals of at least two minutes.

2. Opacity Compliance Tests. When either EPA Method 9 or DEP Method 9 is specified as the applicable opacity test method, the required minimum period of observation for a compliance test shall be sixty (60) minutes for emissions units which emit or have the potential to emit 100 tons per year or more of particulate matter, and thirty (30) minutes for emissions units which have potential emissions less than 100 tons per year of particulate matter and are not subject to a multiple-valued opacity standard. The opacity test observation period shall include the period during which the highest opacity emissions can reasonably be expected to occur.

Exceptions to these requirements are as follows:

c. The minimum observation period for opacity tests conducted by employees or agents of the Department to verify the day-to-day continuing compliance of a unit or activity with an applicable opacity standard shall be twelve minutes.

(b) Minimum Sample Volume. Unless otherwise specified in the applicable rule, the minimum sample volume per run shall be 25 dry standard cubic feet.

(c) Required Flow Rate Range. For EPA Method 5 particulate sampling, acid mist/sulfur dioxide, and fluoride sampling which uses Greenburg Smith type impingers, the sampling nozzle and sampling time shall be selected such that the average sampling rate will be between 0.5 and 1.0 actual cubic feet per minute, and the required minimum sampling volume will be obtained.

(d) Calibration of Sampling Equipment. Calibration of the sampling train equipment shall be conducted in accordance with the schedule shown in Table 297.310-1.

(e) Allowed Modification to EPA Method 5. When EPA Method 5 is required, the following modification is allowed: the heated filter may be separated from the impingers by a flexible tube.

[Rule 62-297.310(4), F.A.C.]

I.13. Required Stack Sampling Facilities. When a mass emissions stack test is required, the permittee shall comply with the requirements contained in Appendix SS-1, Stack Sampling Facilities, attached to this permit.

[Rule 62-297.310(6), F.A.C.]

Record Keeping and Reporting Requirements

I.14. Malfunctions - Notification. In the case of excess emissions resulting from malfunctions, each owner or operator shall notify the Southwest District Air Section in accordance with Rule 62-4.130, F.A.C. A full written report on the malfunctions shall be submitted in a quarterly report, if requested by the Southwest District Air Section.

[Rule 62-210.700(6), F.A.C.]

I.15. Test Reports.

(a) The owner or operator of an emissions unit for which a compliance test is required shall file a report with the Southwest District Air Section on the results of each such test.

(b) The required test report shall be filed with the Southwest District Air Section as soon as practical but no later than 45 days after the last sampling run of each test is completed.

(c) The test report shall provide sufficient detail on the emissions unit tested and the test procedures used to allow the Southwest District Air Section to determine if the test was properly conducted and the test results properly computed. As a minimum, the test report, other than for an EPA or DEP Method 9 test, shall provide the following information:

1. The type, location, and designation of the emissions unit tested.
2. The facility at which the emissions unit is located.

3. The owner or operator of the emissions unit.
4. The normal type and amount of fuels used and materials processed, and the types and amounts of fuels used and material processed during each test run.
5. The means, raw data and computations used to determine the amount of fuels used and materials processed, if necessary to determine compliance with an applicable emission limiting standard.
6. The type of air pollution control devices installed on the emissions unit, their general condition, their normal operating parameters (pressure drops, total operating current and GPM scrubber water), and their operating parameters during each test run.
7. A sketch of the duct within 8 stack diameters upstream and 2 stack diameters downstream of the sampling ports, including the distance to any upstream and downstream bends or other flow disturbances.
8. The date, starting time and duration of each sampling run.
9. The test procedures used, including any alternative procedures authorized pursuant to Rule 62-297.620, F.A.C. Where optional procedures are authorized in this chapter, indicate which option was used.
10. The number of points sampled and configuration and location of the sampling plane.
11. For each sampling point for each run, the dry gas meter reading, velocity head, pressure drop across the stack, temperatures, average meter temperatures and sample time per point.
12. The type, manufacturer and configuration of the sampling equipment used.
13. Data related to the required calibration of the test equipment.
14. Data on the identification, processing and weights of all filters used.
15. Data on the types and amounts of any chemical solutions used.
16. Data on the amount of pollutant collected from each sampling probe, the filters, and the impingers, are reported separately for the compliance test.
17. The names of individuals who furnished the process variable data, conducted the test, analyzed the samples and prepared the report.
18. All measured and calculated data required to be determined by each applicable test procedure for each run.
19. The detailed calculations for one run that relate the collected data to the calculated emission rate.
20. The applicable emission standard, and the resulting maximum allowable emission rate for the emissions unit, plus the test result in the same form and unit of measure.
21. A certification that, to the knowledge of the owner or his authorized agent, all data submitted are true and correct. When a compliance test is conducted for the Department or its agent, the person who conducts the test shall provide the certification with respect to the test procedures used. The owner or his authorized agent shall certify that all data required and provided to the person conducting the test are true and correct to his knowledge.

[Rules 62-213.440 and 62-297.310(8), F.A.C.]

Subsection J. NSPS Common Conditions.

E.U. ID No.	Brief Description
004	Fossil Fuel Steam Generator, Unit 4, rated at 760 MW, 6665 MMBtu/hr, capable of burning bituminous coal, with number 2 fuel oil as a startup fuel, with emissions exhausted through a 600 ft. stack.
003	Fossil Fuel Steam Generator, Unit 5, rated at 760 MW, 6665 MMBtu/hr, capable of burning bituminous coal, with number 2 fuel oil as a startup fuel, with emissions exhausted through a 600 ft. stack.
016	Material handling activities for coal-fired steam units subject to NSPS (i.e., activities at Fossil Fuel Fired Steam Generators Units 4 and 5.

{Permitting Notes: The emissions units above are subject to the following conditions from 40 CFR 60 Subpart A, General Provisions. The affected facilities to which this subpart applies are fossil fuel steam generators Unit 4 and Unit 5. To the extent allowed by law, the "Administrator" shall mean the "Department."}

The following conditions apply to the NSPS emissions units listed above:

J.1. Pursuant to 40 CFR 60.7, Notification And Record Keeping.

(a) Any owner or operator subject to the provisions of 40 CFR 60 shall furnish the Administrator written notification as follows:

(4) A notification of any physical or operational change to an existing facility which may increase the emission rate of any air pollutant to which a standard applies, unless that change is specifically exempted under an applicable subpart or in 40 CFR 60.14(e). This notice shall be postmarked 60 days or as soon as practicable before the change is commenced and shall include information describing the precise nature of the change, present and proposed emission control systems, productive capacity of the facility before and after the change, and the expected completion date of the change. The Administrator may request additional relevant information subsequent to this notice.

(b) The owner or operator subject to the provisions of 40 CFR 60 shall maintain records of the occurrence and duration of any startup, shutdown, or malfunction in the operation of an affected facility; any malfunction of the air pollution control equipment; or any periods during which a continuous monitoring system or monitoring device is inoperative.

(c) The owner or operator required to install a continuous monitoring system (CMS) or monitoring device shall submit an excess emissions and monitoring systems performance report (excess emissions are defined in applicable subparts) and/or a summary report form (see 40 CFR 60.7(d)) to the Administrator semiannually, except when: more frequent reporting is specifically required by an applicable subpart; or the CMS data are to be used directly for compliance determination, in which case quarterly reports shall be submitted; or the Administrator, on a case-by-case basis, determines that more frequent reporting is necessary to accurately assess the compliance status of the source. All reports shall be postmarked by the 30th day following the end of each calendar half (or quarter, as appropriate). Written reports of excess emissions shall include the following information:

(1) The magnitude of excess emissions computed in accordance with 40 CFR 60.13(h), any conversion factor(s) used, and the date and time of commencement and completion of each time period of excess emissions. The process operating time during the reporting period.

(2) Specific identification of each period of excess emissions that occurs during startups, shutdowns, and malfunctions of the affected facility. The nature and cause of any malfunction (if known), the corrective action taken or preventative measures adopted.

(3) The date and time identifying each period during which the continuous monitoring system was inoperative except for zero and span checks and the nature of the system repairs or adjustments.

(4) When no excess emissions have occurred or the continuous monitoring system(s) have not been inoperative, repaired, or adjusted, such information shall be stated in the report.

(d) The summary report form shall contain the information and be in the format shown in Figure 1 unless otherwise specified by the Administrator. One summary report form shall be submitted for each pollutant monitored at each affected facility.

(1) If the total duration of excess emissions for the reporting period is less than 1 percent of the total operating time for the reporting period and CMS downtime for the reporting period is less than 5 percent of the total operating time for the reporting period, only the summary report form shall be submitted and the excess emission report described in 40 CFR 60.7(c) need not be submitted unless requested by the Administrator.

(2) If the total duration of excess emissions for the reporting period is 1 percent or greater of the total operating time for the reporting period or the total CMS downtime for the reporting period is 5 percent or greater of the total operating time for the reporting period, the summary report form and the excess emission report described in 40 CFR 60.7(c) shall both be submitted.

[See Attached Figure 1-Summary Report-Gaseous and Opacity Excess Emission and Monitoring System Performance]

(e)(1) Notwithstanding the frequency of reporting requirements specified in paragraph (c) of this section, an owner or operator who is required by an applicable subpart to submit excess emissions and monitoring systems performance reports (and summary reports) on a quarterly (or more frequent) basis may reduce the frequency of reporting for that standard to semiannual if the following conditions are met:

(i) For one full year (e.g., four quarterly or twelve monthly reporting periods) the affected facility's excess emissions and monitoring systems reports submitted to comply with a standard under 40 CFR 60 continually demonstrate that the facility is in compliance with the applicable standard;

(ii) The owner or operator continues to comply with all record keeping and monitoring requirements specified in this subpart and the applicable standard; and

(iii) The Administrator does not object to reduced frequency of reporting for the affected facility, as provided in paragraph (e)(2) of this section.

(2) The frequency of reporting of excess emissions and monitoring systems performance (and summary) reports may be reduced only after the owner or operator notifies the Administrator in writing of his or her intention to make such a change and the Administrator does not object to the intended change. In deciding whether to approve a reduced frequency of reporting, the Administrator may review information concerning the source's entire previous performance history during the required record keeping period prior to the intended change, including performance test results, monitoring data, and evaluations of an owner or operator's conformance with operation and maintenance requirements. Such information may be used by the Administrator to make a judgment about the source's potential for noncompliance in the future. If the Administrator disapproves the owner or operator's request to reduce the frequency of reporting, the Administrator will notify the owner or operator in writing within 45 days after receiving notice of the owner or operator's intention. The notification from the Administrator to the owner or operator will specify the grounds on which the disapproval is based. In the absence of a notice of disapproval within 45 days, approval is automatically granted.

(3) As soon as monitoring data indicate that the affected facility is not in compliance with any emission limitation or operating parameter specified in the applicable standard, the frequency of reporting shall revert to the frequency specified in the applicable standard, and the owner or operator shall submit an excess emissions and monitoring systems performance report (and summary report, if required) at the next appropriate reporting period following the noncomplying event. After demonstrating compliance with the applicable standard for another full year, the owner or operator may again request approval from the Administrator to reduce the frequency of reporting for that standard as provided for in paragraphs (e)(1) and (e)(2) of this section.

(f) The owner or operator subject to the provisions of 40 CFR 60 shall maintain a file of all measurements, including continuous monitoring system, monitoring device, and performance testing measurements; all continuous monitoring system performance evaluations; all continuous monitoring system or monitoring device calibration checks; adjustments and maintenance performed on these systems or devices; and all other information required by 40 CFR 60 recorded in a permanent form suitable for inspection. The file shall be retained for at least five years following the date of such measurements, maintenance, reports, and records.

[40 CFR 60.7 and Rule 62-213.440(1)(b)2.b., F.A.C.]

J.2. Pursuant to 40 CFR 60.8 Performance Tests.

(b) Performance tests shall be conducted and data reduced in accordance with the test methods and procedures contained in each applicable subpart.

(c) Performance tests shall be conducted under such conditions as the Administrator shall specify to the plant operator based on representative performance of the affected facility. The owner or operator shall make available to the Administrator such records as may be necessary to determine the conditions of the performance tests. Operations during periods of startup, shutdown, and malfunction shall not constitute representative conditions for the purpose of a performance test nor shall emissions in excess of the level of the applicable emission limit during periods of startup, shutdown, and malfunction be considered a violation of the applicable emission limit unless otherwise specified in the applicable standard.

(f) Unless otherwise specified in the applicable subpart, each performance test shall consist of three separate runs using the applicable test method. Each run shall be conducted for the time and under the conditions specified in the applicable standard. For the purpose of determining compliance with an applicable standard, the arithmetic means of results of the three runs shall apply. In the event that a sample is accidentally lost or conditions occur in which one of the three runs must be discontinued because of forced shutdown, failure of an irreplaceable portion of the sample train, extreme meteorological conditions, or other circumstances, beyond the owner or operator's control, compliance may, upon the Administrator's approval, be determined using the arithmetic mean of the results of the two other runs. [40 CFR 60.8]

J.3. Pursuant to 40 CFR 60.11, Compliance With Standards And Maintenance Requirements.

(a) Compliance with standards in 40 CFR 60, other than opacity standards, shall be determined only by performance tests established by 40 CFR 60.8, unless otherwise specified in the applicable standard.

(b) Compliance with opacity standards in 40 CFR 60.11 shall be determined by conducting observations in accordance with Reference Method 9 in appendix A of 40 CFR 60.11, any alternative method that is approved by the Administrator, or as provided in 40 CFR 60.11(e)(5).

(c) The opacity standards set forth in 40 CFR 60.11 shall apply at all times except during periods of startup, shutdown, malfunction, and as otherwise provided in the applicable standard.

(d) At all times, including periods of startup, shutdown, and malfunction, owners and operators shall, to the extent practicable, maintain and operate any affected facility including associated air pollution control equipment in a manner consistent with good air pollution control practice for minimizing emissions. Determination of whether acceptable operating and maintenance procedures are being used will be based on information available to the Administrator which may include, but is not limited to, monitoring results, opacity observations, review of operating and maintenance procedures, and inspection of the source.

(e)(5) The owner or operator of an affected facility subject to an opacity standard may submit, for compliance purposes, continuous opacity monitoring system (COMS) data results produced during any performance test required under 40 CFR 60.8 in lieu of Method 9 observation data. If an owner or operator elects to submit COMS data for compliance with the opacity standard, he shall notify the Administrator of that decision, in writing, at least 30 days before any performance test required under 40 CFR 60.8 is conducted. Once the owner or operator of an affected facility has notified the Administrator to that effect, the COMS data results will be used to determine opacity compliance during subsequent tests required under 40 CFR 60.8 until the owner or operator notifies the Administrator, in writing, to the contrary. For the purpose of determining compliance with the opacity standard during a performance test required under 40 CFR 60.8 using COMS data, the minimum total time of COMS data collection shall be averages of all 6-minute continuous periods within the duration of the mass emission performance test. Results of the COMS opacity determinations shall be submitted along with the results of the performance test required under 60.8. The owner or operator of an affected facility using a COMS for compliance purposes is responsible for demonstrating that the COMS meets the requirements specified in 40 CFR 60.13(c), that the COMS has been properly maintained and operated, and that the resulting data have not been altered in any way. If COMS data results are submitted for compliance with the opacity standard for a period of time during which Method 9 data indicates noncompliance, the Method 9 data will be used to determine opacity compliance.

[40 CFR 60.11]

J.4. Pursuant to 40 CFR 60.12, Circumvention.

No owner or operator subject to the provisions of 40 CFR 60.12 shall build, erect, install, or use any article, machine, equipment or process, the use of which conceals an emission which would otherwise constitute a violation of an applicable standard. Such concealment includes, but is not limited to, the use of gaseous diluents to achieve compliance with an opacity standard or with a standard which is based on the concentration of a pollutant in the gases discharged to the atmosphere.

[40 CFR 60.12]

J.5. Pursuant to 40 CFR 60.13 Monitoring Requirements.

(a) For the purposes of this section, all continuous monitoring systems required under applicable subparts shall be subject to the provisions of this section upon promulgation of performance specifications for continuous monitoring systems under appendix B of 40 CFR 60 and, if the continuous monitoring system is used to demonstrate compliance with emission limits on a continuous basis, appendix F to 40 CFR 60, unless otherwise specified in an applicable subpart or by the Administrator. Appendix F is applicable December 4, 1987.

(c) If the owner or operator of an affected facility elects to submit continuous opacity monitoring system (COMS) data for compliance with the opacity standard as provided under 40 CFR 60.11(e)(5), he/she shall conduct a performance evaluation of the COMS as specified in Performance Specification 1, appendix B, of 40 CFR 60 before the performance test required under 40 CFR 60.8 is conducted. Otherwise, the owner or operator of an affected facility shall conduct a performance evaluation of the COMS or continuous emission monitoring system (CEMS) during any performance test required under 40 CFR 60.8 or within 30 days thereafter in accordance with the applicable performance specification in appendix B of 40 CFR 60. The owner or operator of an affected facility shall conduct COMS or CEMS performance evaluations at such other times as may be required by the Administrator under section 114 of the Act.

(1) The owner or operator of an affected facility using a COMS to determine opacity compliance during any performance test required under 40 CFR 60.8 and as described in 40 CFR 60.11(e)(5), shall furnish the Administrator two or, upon request, more copies of a written report of the results of the COMS performance evaluation described in 40 CFR 60.13(c) at least 10 days before the performance test required under 40 CFR 60.8 is conducted.

(2) Except as provided in 40 CFR 60.13(c)(1), the owner or operator of an affected facility shall furnish the Administrator within 60 days of completion two or, upon request, more copies of a written report of the results of the performance evaluation.

(d)(1) Owners and operators of all continuous emission monitoring systems installed in accordance with the provisions of 40 CFR 60.13 shall check the zero (or low-level value between 0 and 20 percent of span value) and span (50 to 100 percent of span value) calibration drifts at least once daily in accordance with a written procedure. The zero and span shall, as a minimum, be adjusted whenever the 24-hour zero drift or 24-hour span drift exceeds two times the limits of the applicable performance specifications in appendix B. The system must allow the amount of excess zero and span drift measured at the 24-hour interval checks to be recorded and quantified, whenever specified. For continuous monitoring systems measuring opacity of emissions, the optical surfaces exposed to the effluent gases shall be cleaned prior to performing the zero and span drift adjustments except that for systems using automatic zero adjustments. The optical surfaces shall be cleaned when the cumulative automatic zero compensation exceeds 4 percent opacity.

(2) Unless otherwise approved by the Administrator, the following procedures shall be followed for continuous monitoring systems measuring opacity of emissions. Minimum procedures shall include a method for producing a simulated zero opacity condition and an upscale (span) opacity condition using a certified neutral density filter or other related technique to produce a known obscuration of the light beam. Such procedures shall provide a system check of the analyzer internal optical surfaces and all electronic circuitry including the lamp and photo detector assembly.

(e) Except for system breakdowns, repairs, calibration checks, and zero and span adjustments required under 40 CFR 60.13(d), all continuous monitoring systems shall be in continuous operation and shall meet minimum frequency of operation requirements as follows:

(1) All continuous monitoring systems referenced by 40 CFR 60.13(c) for measuring opacity of emissions shall complete a minimum of one cycle of sampling and analyzing for each successive 10-second period and one cycle of data recording for each successive 6-minute period.

(2) All continuous monitoring systems referenced by 40 CFR 60.13(c) for measuring emissions, except opacity, shall complete a minimum of one cycle of operation (sampling, analyzing, and data recording) for each successive 15-minute period.

(f) All continuous monitoring systems or monitoring devices shall be installed such that representative measurements of emissions or process parameters from the affected facility are obtained. Additional procedures for location of continuous monitoring systems contained in the applicable Performance Specifications of appendix B of 40 CFR 60 shall be used.

(g) When the effluents from a single affected facility or two or more affected facilities subject to the same emission standards are combined before being released to the atmosphere, the owner or operator may install applicable continuous monitoring systems on each effluent or on the combined effluent. When the affected facilities are not subject to the same emission standards, separate continuous monitoring systems shall be installed on each effluent. When the effluent from one affected facility is released to the atmosphere through more than one point, the owner or operator shall install an applicable continuous monitoring system on each separate effluent unless the installation of fewer systems is approved by the Administrator. When more than one continuous monitoring system is used to measure the emissions from one affected facility (e.g., multiple breechings, multiple outlets), the owner or operator shall report the results as required from each continuous monitoring system.

(h) Owners or operators of all continuous monitoring systems for measurement of opacity shall reduce all data to 6-minute averages and for continuous monitoring systems other than opacity to 1-hour averages for time periods as defined in 40 CFR 60.2. Six-minute opacity averages shall be calculated from 36 or more data points equally spaced over each 6-minute period. For continuous monitoring systems other than opacity, 1-hour averages shall be computed from four or more data points equally spaced over each 1-hour period. Data recorder during periods of continuous monitoring system breakdowns, repairs, calibration checks, and zero and span adjustments shall not be included in the data averages computed under this paragraph. An arithmetic or integrated average of all data may be used. The data may be recorded in reduced or non reduced form (e.g., ppm pollutant and percent O₂ or ng/J of pollutant). All excess emissions shall be converted into units of the standard using the applicable conversion procedures specified in subparts. After conversion into units of the standard, the data may be rounded to the same number of significant digits as used in the applicable subparts to specify the emission limit (e.g., rounded to the nearest 1 percent opacity).

[40 CFR 60.13]

Subsection K. Used Oil Common Condition.

E.U. ID No.	Brief Description
001	Fossil Fuel Steam Generator, Unit 1
002	Fossil Fuel Steam Generator, Unit 2
004	Fossil Fuel Steam Generator, Unit 4
003	Fossil Fuel Steam Generator, Unit 5

{Permitting Notes: The emissions units above are subject to the following condition which allows the burning of on-specification used oil pursuant to the requirements of this permit and this subsection.}

The following condition applies to the emissions units listed above:

K.1. Used Oil. Burning of on-specification used oil is allowed in emissions units 001, 002, 004 and 003 in accordance with all other conditions of this permit and the following conditions:

- a. On-specification Used Oil Allowed as Fuel: This permit allows the burning of used oil fuel meeting EPA “on-specification” used oil specifications, with a PCB concentration of less than 50 ppm. Used oil that does not meet the specifications for on-specification used oil shall not be burned at this facility.

On-specification used oil shall meet the following specifications: [40 CFR 279, Subpart B.]

Arsenic shall not exceed 5.0 ppm;
Cadmium shall not exceed 2.0 ppm;
Chromium shall not exceed 10.0 ppm;
Lead shall not exceed 100.0 ppm;
Total halogens shall not exceed 1000 ppm;
Flash point shall not be less than 100 degrees F.

- b. Quantity Limited: The maximum quantity of on-specification used oil that may be burned in all four emissions units combined is 10 million gallons in any consecutive 12-month period.
- c. Used Oil Containing PCBs Not Allowed: Used oil containing a PCB concentration of 50 or more ppm shall not be burned at this facility. Used oil shall not be blended to meet this requirement.
- d. PCB Concentration of 2 to less than 50 ppm: On-specification used oil with a PCB concentration of 2 to less than 50 ppm shall be burned only at normal source operating temperatures. On-specification used oil with a PCB concentration of 2 to less than 50 ppm shall not be burned during periods of startup or shutdown.

Before accepting from each marketer the first shipment of on-specification used oil with a PCB concentration of 2 to 49 ppm, the owner or operator shall provide each marketer with a one-time written and signed notice certifying that the owner or operator will burn the used oil in a qualified combustion device and must identify the class of combustion device. The notice must state that EPA or a RCRA-delegated state agency has been given a description of the used oil management activities at the facility and that an industrial boiler or furnace will be used to burn the used oil with a PCB concentration of 2 to 49 ppm. The description of the used oil management activities shall be submitted to the EPA or may be submitted to the Administrator, Hazardous Waste Regulation Section, Florida Department of Environmental Protection, 2600 Blair Stone Road, Tallahassee, FL 32399-2400. A copy of the notice provided to each marketer shall be maintained at the facility. [40 CFR 279.61 and 761.20(e)]

- e. **Certification Required:** The owner or operator shall receive from the marketer, for each load of used oil received, a certification that the used oil meets the specifications for on-specification used oil and contains a PCB concentration of less than 50 ppm. This certification shall also describe the basis for the certification, such as analytical results.

Used oil to be burned for energy recovery is presumed to contain quantifiable levels (2 ppm) of PCB unless the marketer obtains analyses (testing) or other information that the used oil fuel does not contain quantifiable levels of PCBs. Note that a claim that used oil does not contain quantifiable levels of PCBs (that is, that the used oil contains less than 2 ppm of PCBs) must be documented by analysis or other information. The first person making the claim that the used oil does not contain PCBs is responsible for furnishing the documentation. The documentation can be tests, personal or special knowledge of the source and composition of the used oil, or a certification from the person generating the used oil claiming that the used oil contains no detectable PCBs.

- f. **Testing Required:** The owner or operator shall sample and analyze each batch of used oil to be burned for the following parameters:

Arsenic, cadmium, chromium, lead, total halogens, flash point, PCBs*,
and specific gravity.

Testing (sampling, extraction and analysis) shall be performed using approved methods specified in EPA Publication SW-846 (Test Methods for Evaluating Solid Waste, Physical/Chemical Methods), latest edition.

* Analysis for PCBs is not required if a claim is made that the used oil does not contain quantifiable levels of PCBs.

- g. **Record Keeping Required:** The owner or operator shall obtain, make, and keep the following records related to the use of used oil in a form suitable for inspection at the facility by the Department: [40 CFR 279.61 and 761.20(e)]

- (1) The gallons of on-specification used oil accepted and burned each month in each unit. (This record shall be completed no later than the fifteenth day of the succeeding month.)
- (2) The total gallons of on-specification used oil burned in the preceding consecutive 12-month period in each unit. (This record shall be completed no later than the fifteenth day of the succeeding month.)
- (3) Results of the analyses required above, including documentation if a claim is made that the used oil does not contain quantifiable levels of PCBs.
- (4) The source and quantity of each batch of used oil received each month, including the name, address and EPA identification number (if applicable) of all marketers that delivered used oil to the facility, and the quantity delivered.
- (5) Records of the operating rate of each unit while burning used oil and the dates and time periods each unit burns used oil.

- h. **Reporting Required:** The owner or operator shall submit to the Department's Southwest District office, with the Annual Operation Report form, an attachment showing the total amount of on-specification used oil burned during the previous calendar year. The quantity of used oil shall be individually reported and shall not be combined with other fuels.

[Rules 62-4.070(3) and 62-213.440, F.A.C., 40 CFR 279 and 40 CFR 761, and 0170004-002-AO, unless otherwise noted]

Subsection L. This section addresses the following emissions unit.

E.U. ID No.	Brief Description
020	Cooling towers for FFSG Units 1 and 2 used to reduce plant discharge water temperature.

Emissions unit 020 is cooling towers for FFSG Units 1 and 2, used to reduce plant discharge water temperature. (This emission unit may be referred to as "portable cooling towers.") This emissions unit consists of 71 or 72 cells (dependent upon manufacturer), is 12' wide and 11' high, includes drift eliminators, operates at a maximum seawater flow rate of 180,000 gallons per minute for all cells combined, and a design airflow rate of 25,000 acfm from each cell. Seawater is sprayed through the towers where fan induced air flow causes evaporative cooling. Water vapor, saltwater droplets (drift) and salt particles are emitted. Drift emissions are controlled by drift eliminators.

{Permitting note(s): This emissions unit is regulated under Prevention of Significant Deterioration (PSD) (permit 0170004-010-AC) and includes a Best Available Control Technology (BACT) Determination, which allows for a drift emission rate of 0.0015% with limited usage.}

The following specific conditions apply to the emissions unit(s) listed above:

Essential Potential to Emit (PTE) Parameters

L.1. Hours of Operation. The operating hours for the portable cooling towers shall not exceed an equivalent of 2920 hours per year of operation (12-month rolling total). This condition shall be complied with by limiting the circulating water flow usage through the portable cooling towers to 31.5E9 gallons per calendar year. [Rule 62-210.200(PTE), F.A.C.; and 0170004-010-AC)]

Emission Limitations and Standards

L.2. Cooling Tower Design: The portable cooling towers shall be designed, operated and maintained to achieve a drift rate of no more than 0.0015% of the circulating water flow. This equates to an estimated emission rate of particulate matter (PM) from the cooling tower at 35.1 pounds per hour. Within 60 days of commencing operation, the permittee shall certify that the cooling tower was constructed and installed so as to achieve the specified drift rate of no more than 0.0015 percent of the circulating water flow rate.

{Note: The emission limit is based on a BACT Determination setting the maximum drift emissions at 0.0015%. PM₁₀ emissions are estimated to be approximately 6% of the particulate matter emission rate.}
[Rule 62-213.440, F.A.C., 0170004-010-AC) and Rule 62-212.400 (BACT)]

L.3. Drift Eliminators. Drift eliminators shall be installed and maintained as per the manufacturer's specifications. Regular maintenance shall be scheduled to ensure proper operation of the drift eliminators. [Rule 62-213.440, F.A.C.; and 0170004-010-AC)]

{Note: This emissions unit is not subject to a visible emissions limitation. Emissions from this emissions unit include water droplets, so visible emission testing is not possible.}

Test Methods and Procedures

L.4. Emission Test Method. The drift elimination system on the helper cooling towers shall be maintained so as to minimize pluggage and to insure timely repair of broken sections of the drift eliminators. During those calendar days when the portable cooling towers are used, the following work practice shall be implemented, in lieu of EPA Method 5, to demonstrate compliance with the originally designed removal efficiency (no more than 0.0015% drift rate):

- (a) Daily "walkdown" inspection of each operational cell visually checking for problems with the drift eliminators such as pluggage, algae build-up, and mechanical components (fans and pumps).
- (b) Daily visual inspection of the cells which are in operation to ascertain the presence of higher than expected visible emissions when atmospheric conditions allow, and follow-up inspections and correction of problems when the daily visual inspection of the cells indicates a problem.
- (c) Weekly visual inspections of the inlet water screens and prompt correction when broken sections or pluggage is discovered.

[Rule 62-213.440, F.A.C., 0170004-010-AC; and ASP No. 00-E-01 dated June 7, 2000]

Monitoring of Operations

L.5. Inspection Log: Any problems detected during the work practice inspections identified in Specific Condition L.4. shall be documented in a log identifying the cell (or water screen), the inspector, the time (when discovered and the hours operated before the problem was corrected), and a description of the problem and the corrective actions taken. This log shall be maintained onsite and shall be made available to DEP upon request. The log shall be maintained so as to provide an indication as to whether routine inspections have been conducted as required even when there are no problems to record.

[Rules 62-213.440 and 62-297.310(7), F.A.C., 0170004-010-AC and ASP No. 00-E-01 dated June 7, 2000]

Record Keeping and Reporting Requirements

L.6. Circulating Water Flow-meters Required. Circulating water flow will be measured by monitoring the hours of each circulating water pump. For each hour of operation, each north pump will flow 15 kgpm (900 kgph) and each south pump will flow 4 kgpm (240 khph). The fans in bank C1 through C15 will be monitored for operation. If any of the fans are operating in those cells, the circulating water flow will be 39 kgpm (2,340 kgph). Partial hours of operation shall be prorated. Records of circulating water flow shall be maintained for each calendar month..

[Rule 62-213.440, F.A.C.; and 0170004-10-AC]

Common Conditions

L.7. This emissions unit is also subject to conditions **L.2, L.4, L.5, L.6, L.14 and L.15** contained in **Subsection I. Common Conditions.**

Section IV. This section is the Acid Rain Part.

Operated by: Progress Energy Florida/Crystal River Plant
ORIS code: 628

This subsection addresses Acid Rain, Phase II.

The emissions units listed below are regulated under Acid Rain, Phase II.

E.U. ID No.	Brief Description
001	Fossil Fuel Steam Generator, Unit 1
002	Fossil Fuel Steam Generator, Unit 2
004	Fossil Fuel Steam Generator, Unit 4
003	Fossil Fuel Steam Generator, Unit 5

A.1. The Phase II permit applications, the Phase II NO_x compliance plans and the Phase II NO_x averaging plans submitted for this facility, as approved by the Department, are a part of this permit (included as Attachments). The owners and operators of these Phase II acid rain units must comply with the standard requirements and special provisions set forth in the applications listed below:

- a. DEP Form No. 62-210.900(1)(a), F.A.C., Signed 6/29/04.
- b. DEP Form No. 62-210.900(1)(a)4., F.A.C., Signed 6/29/04.
- c. DEP Form No. 62-210.900(1)(a)5., F.A.C., Signed 06/29/04.

[Chapter 62-213 and Rule 62-214.320, F.A.C.]

A.2. Sulfur dioxide (SO₂) allowance allocations for each Acid Rain unit are as follows:

E.U. ID No.	EPA ID	Year	2005	2006	2007	2008	2009
001	1	SO ₂ allowances, under Table 2 or 3 of 40 CFR Part 73	12425*	12425*	12425*	12425*	12425*
002	2	SO ₂ allowances, under Table 2 or 3 of 40 CFR Part 73	14291*	14291*	14291*	14291*	14291*
004	4	SO ₂ allowances, under Table 2 or 3 of 40 CFR Part 73	23651*	23651*	23651*	23651*	23651*
003	5	SO ₂ allowances, under Table 2 or 3 of 40 CFR Part 73	25248*	25248*	25248*	25248*	25248*

* The number of allowances held by an Acid Rain source in a unit account may differ from the number allocated by the USEPA under Table 2 or 3 of 40 CFR 73.

E.U. ID No.	EPA ID	NO_x limit	Pursuant to 40 CFR 76.11, the Florida Department of Environmental Protection approves five (5) NO _x emissions averaging plans for this unit. Each plan is effective for one calendar year for the 2005, 2006, 2007, 2008 and 2009. Under each plan, the unit's NO _x emissions shall not exceed the annual average alternative contemporaneous emission limitation of:
001	1		0.45 lb/MMBtu with an annual heat input of 36,312,329 MMBtu .
002	2		0.45 lb/MMBtu with an annual heat input of 41,934,711 MMBtu .
004	4		0.52 lb/MMBtu with an annual heat input of 70,658,210 MMBtu .
003	5		0.52 lb/MMBtu with an annual heat input of 70,208,037 MMBtu .
Also, see Additional Requirements 1, 2 and 3, below.			

{Permitting note: See Specific Condition B.7. for unit specific state-only annual NO_x emission limits related to E.U. 003 and 004}

Additional Requirements

- Under the plan (NO_x Phase II averaging plan), the actual Btu-weighted annual average NO_x emission rate for the units in the plan shall be less than or equal to the Btu-weighted annual average NO_x emission rate for the same units had they each been operated, during the same period of time, in compliance with the applicable emission limitations under 40 CFR 76.5, 76.6, or 76.7, except that for any early election units, the applicable emission limitations shall be under 40 CFR 76.7. If the designated representative demonstrates that the requirement of the prior sentence (as set forth in 40 CFR 76.11(d)(1)(ii)(A)) is met for a year under the plan, then this unit shall be deemed to be in compliance for that year with its alternative contemporaneous annual emission limitation and annual heat input limit.
- In accordance with 40 CFR 72.40(b)(2), approval of the averaging plan shall be final only after the North Carolina Department of Environment and Natural Resources Division of Air Quality and the South Carolina Department of Health and Environmental Control Bureau of Air Quality have also approved this averaging plan.
- In addition to the described NO_x compliance plan, this unit shall comply with all other applicable requirements of 40 CFR part 76, including the duty to reapply for a NO_x compliance plan and requirements covering excess emissions.

A.3. Emission Allowances. Emissions from sources subject to the Federal Acid Rain Program (Title IV) shall not exceed any allowances that the source lawfully holds under the Federal Acid Rain Program. Allowances shall not be used to demonstrate compliance with a non-Title IV applicable requirement of the Act.

- No permit revision shall be required for increases in emissions that are authorized by allowances acquired pursuant to the Federal Acid Rain Program, provided that such increases do not require a permit revision pursuant to Rule 62-213.400(3), F.A.C.
- No limit shall be placed on the number of allowances held by the source under the Federal Acid Rain Program.
- Allowances shall be accounted for under the Federal Acid Rain Program.

[Rule 62-213.440(1)(c)1., 2. & 3., F.A.C.]

A.4. Fast-Track Revisions of Acid Rain Parts. Those Acid Rain sources making a change described at Rule 62-214.370(4), F.A.C., may request such change as provided in Rule 62-213.413, F.A.C.
[Rules 62-213.413 and 62-214.370(4), F.A.C.]

A.5. Where an applicable requirement of the Act is more stringent than applicable regulations promulgated under Title IV of the Act, both provisions shall be incorporated into the permit and shall be enforceable by the Administrator.

[40 CFR 70.6(a)(1)(ii); and, Rule 62-210.200, F.A.C., Definitions – Applicable Requirements.]

Reporting Requirements

A.6. Statement of Compliance. The annual statement of compliance pursuant to Rule 62-213.440(3), F.A.C., shall be submitted within 60 (sixty) days after the end of the calendar year. {See condition 51., APPENDIX TV-6 TITLE V CONDITIONS}
[Rule 62-214.420(11), F.A.C.]

A.7. Demonstration of Compliance with the Phase II NO_x Averaging Plan. The Designated Representative shall provide a copy of the demonstration of compliance, prepared in accordance with 40 CFR 76.11(d), to the Department within 60 (sixty) days after the end of the calendar year.
[Rule 62-213.440, F.A.C.]

Appendix Y - 40 CFR 60, Subpart Y Standard Conditions

Subpart Y- Standards of Performance for Coal Preparation Plants

§ 60.250 Applicability and designation of affected facility.

(a) The provisions of this subpart are applicable to any of the following affected facilities in coal preparation plants which process more than 181 Mg (200 tons) per day: Thermal dryers, pneumatic coal-cleaning equipment (air tables), coal processing and conveying equipment (including breakers and crushers), coal storage systems, and coal transfer and loading systems.

(b) Any facility under paragraph (a) of this section that commences construction or modification after October 24, 1974, is subject to the requirements of this subpart.

§ 60.251 Definitions.

As used in this subpart, all terms not defined herein have the meaning given them in the Act and in subpart A of this part.

(a) *Coal preparation plant* means any facility (excluding underground mining operations) which prepares coal by one or more of the following processes: breaking, crushing, screening, wet or dry cleaning, and thermal drying.

(b) *Bituminous coal* means solid fossil fuel classified as bituminous coal by ASTM Designation D388-77, 90, 91, 95, or 98a (incorporated by reference -- see § 60.17).

(c) *Coal* means all solid fossil fuels classified as anthracite, bituminous, subbituminous, or lignite by ASTM Designation D388-77, 90, 91, 95, or 98a (incorporated by reference -- see § 60.17).

(d) *Cyclonic flow* means a spiraling movement of exhaust gases within a duct or stack.

(e) *Thermal dryer* means any facility in which the moisture content of bituminous coal is reduced by contact with a heated gas stream which is exhausted to the atmosphere.

(f) *Pneumatic coal-cleaning equipment* means any facility which classifies bituminous coal by size or separates bituminous coal from refuse by application of air stream(s).

(g) *Coal processing and conveying equipment* means any machinery used to reduce the size of coal or to separate coal from refuse, and the equipment used to convey coal to or remove coal and refuse from the machinery. This includes, but is not limited to, breakers, crushers, screens, and conveyor belts.

(h) *Coal storage system* means any facility used to store coal except for open storage piles.

(i) *Transfer and loading system* means any facility used to transfer and load coal for shipment.

§ 60.252 Standards for particulate matter.

(a) On and after the date on which the performance test required to be conducted by § 60.8 is completed, an owner or operator subject to the provisions of this subpart shall not cause to be discharged into the atmosphere from any thermal dryer gases which:

- (1) Contain particulate matter in excess of 0.070 g/dscm (0.031 gr/dscf).
- (2) Exhibit 20 percent opacity or greater.

(b) On and after the date on which the performance test required to be conducted by § 60.8 is completed, an owner or operator subject to the provisions of this subpart shall not cause to be discharged into the atmosphere from any pneumatic coal cleaning equipment, gases which:

- (1) Contain particulate matter in excess of 0.040 g/dscm (0.017 gr/dscf).
- (2) Exhibit 10 percent opacity or greater.

(c) On and after the date on which the performance test required to be conducted by § 60.8 is completed, an owner or operator subject to the provisions of this subpart shall not cause to be discharged into the atmosphere from any coal processing and conveying equipment, coal storage system, or coal transfer and loading system processing coal, gases which exhibit 20 percent opacity or greater.

§ 60.253 Monitoring of operations.

(a) The owner or operator of any thermal dryer shall install, calibrate, maintain, and continuously operate monitoring devices as follows:

(1) A monitoring device for the measurement of the temperature of the gas stream at the exit of the thermal dryer on a continuous basis. The monitoring device is to be certified by the manufacturer to be accurate within $\pm 1.7^{\circ}\text{C}$ ($\pm 3^{\circ}\text{F}$).

(2) For affected facilities that use venturi scrubber emission control equipment:

(i) A monitoring device for the continuous measurement of the pressure loss through the venturi constriction of the control equipment. The monitoring device is to be certified by the manufacturer to be accurate within ± 1 inch water gauge.

(ii) A monitoring device for the continuous measurement of the water supply pressure to the control equipment. The monitoring device is to be certified by the manufacturer to be accurate within ± 5 percent of design water supply pressure. The pressure sensor or tap must be located close to the water discharge point. The Administrator may be consulted for approval of alternative locations.

(b) All monitoring devices under paragraph (a) of this section are to be recalibrated annually in accordance with procedures under § 60.13(b).

§ 60.254 Test methods and procedures.

(a) In conducting the performance tests required in § 60.8, the owner or operator shall use as reference methods and procedures the test methods in appendix A of this part or other methods and procedures as specified in this section, except as provided in § 60.8(b).

(b) The owner or operator shall determine compliance with the particulate matter standards in § 60.252 as follows:

(1) Method 5 shall be used to determine the particulate matter concentration. The sampling time and sample volume for each run shall be at least 60 minutes and 0.85 dscm (30 dscf). Sampling shall begin no less than 30 minutes after startup and shall terminate before shutdown procedures begin.

(2) Method 9 and the procedures in § 60.11 shall be used to determine opacity.

APPENDIX TV-6, TITLE V CONDITIONS (version dated 06/23/06)

[Note: This attachment includes "canned conditions" developed from the "Title V Core List."]

{Permitting note: APPENDIX TV-6, TITLE V CONDITIONS, is distributed to the permittee only. Other persons requesting copies of these conditions shall be provided one copy when requested or otherwise appropriate.}

Chapter 62-4, F.A.C.

1. **Not federally enforceable. General Prohibition.** Any stationary installation which will reasonably be expected to be a source of pollution shall not be operated, maintained, constructed, expanded, or modified without the appropriate and valid permits issued by the Department, unless the source is exempted by Department rule. The Department may issue a permit only after it receives reasonable assurance that the installation will not cause pollution in violation of any of the provisions of Chapter 403, F.S., or the rules promulgated thereunder. A permitted installation may only be operated, maintained, constructed, expanded or modified in a manner that is consistent with the terms of the permit.

[Rule 62-4.030, Florida Administrative Code (F.A.C.); and, Section 403.087, Florida Statute (F.S.)]

2. **Not federally enforceable. Procedures to Obtain Permits and Other Authorizations; Applications.**

(1) Any person desiring to obtain a permit from the Department shall apply on forms prescribed by the Department and shall submit such additional information as the Department by law may require.

(2) All applications and supporting documents shall be filed in quadruplicate with the Department.

(3) To ensure protection of public health, safety, and welfare, any construction, modification, or operation of an installation which may be a source of pollution, shall be in accordance with sound professional engineering practices pursuant to Chapter 471, F.S. All applications for a Department permit shall be certified by a professional engineer registered in the State of Florida except, when the application is for renewal of an air pollution operation permit at a non-Title V source as defined in Rule 62-210.200, F.A.C., or where professional engineering is not required by Chapter 471, F.S. Where required by Chapter 471 or 492, F.S., applicable portions of permit applications and supporting documents which are submitted to the Department for public record shall be signed and sealed by the professional(s) who prepared or approved them.

(4) Processing fees for air construction permits shall be in accordance with Rule 62-4.050(4), F.A.C.

(5)(a) To be considered by the Department, each application must be accompanied by the proper processing fee. The fee shall be paid by check, payable to the Department of Environmental Protection. The fee is non-refundable except as provided in Section 120.60, F.S., and in this section.

(b) When an application is received without the required fee, the Department shall acknowledge receipt of the application and shall immediately notify the applicant by certified mail that the required fee was not received and advise the applicant of the correct fee. The Department shall take no further action until the correct fee is received. If a fee was received by the Department which is less than the amount required, the Department shall return the fee along with the written notification.

(c) Upon receipt of the proper application fee, the permit processing time requirements of Sections 120.60(2) and 403.0876, F.S., shall begin.

(d) If the applicant does not submit the required fee within ten days of receipt of written notification, the Department shall either return the unprocessed application or arrange with the applicant for the pick up of the application.

(e) If an applicant submits an application fee in excess of the required fee, the permit processing time requirements of Sections 120.60(2) and 403.0876, F.S., shall begin upon receipt, and the Department shall refund to the applicant the amount received in excess of the required fee.

(6) Any substantial modification to a complete application shall require an additional processing fee determined pursuant to the schedule set forth in Rule 62-4.050, F.A.C., and shall restart the time requirements of Sections 120.60 and 403.0876, F.S. For purposes of this subsection, the term "substantial modification" shall mean a modification which is reasonably expected to lead to substantially different environmental impacts which require a detailed review.

(7) Modifications to existing permits proposed by the permittee which require substantial changes in the existing permit or require substantial evaluation by the Department of potential impacts of the proposed modifications shall require the same fee as a new application for the same time duration except for modification under Chapter 62-45, F.A.C.

[Rule 62-4.050, F.A.C.]

3. Standards for Issuing or Denying Permits. Except as provided at Rule 62-213.460, F.A.C., the issuance of a permit does not relieve any person from complying with the requirements of Chapter 403, F.S., or Department rules.

[Rule 62-4.070(7), F.A.C.]

4. Modification of Permit Conditions.

(1) For good cause and after notice and an administrative hearing, if requested, the Department may require the permittee to conform to new or additional conditions. The Department shall allow the permittee a reasonable time to conform to the new or additional conditions and on application of the permittee the Department may grant additional time. For the purpose of this section, good cause shall include, but not be limited to, any of the following: (also, see **Condition No. 38.**)

(a) A showing that an improvement in effluent or emission quality or quantity can be accomplished because of technological advances without unreasonable hardship.

(b) A showing that a higher degree of treatment is necessary to effect the intent and purpose of Chapter 403, F.S.

(c) A showing of any change in the environment or surrounding conditions that requires a modification to conform to applicable air or water quality standards.

(e) Adoption or revision of Florida Statutes, rules, or standards which require the modification of a permit condition for compliance.

(2) A permittee may request a modification of a permit by applying to the Department.

(3) A permittee may request that a permit be extended as a modification of the permit. Such a request must be submitted to the Department in writing before the expiration of the permit. Upon timely submittal of a request for extension, unless the permit automatically expires by statute or rule, the permit will remain in effect until final agency action is taken on the request. For construction permits, an extension shall be granted if the applicant can demonstrate reasonable assurances that, upon completion, the extended permit will comply with the standards and conditions required by applicable regulation. For all other permits, an extension shall be granted if the applicant can demonstrate reasonable assurances that the extended permit will comply with the standards and conditions applicable to the original permit. A permit for which the permit application fee was prorated in accordance with Rule 62-4.050(4)(v), F.A.C., shall not be extended. In no event shall a permit be extended or remain in effect longer than the time limits established by statute or rule.

[Rule 62-4.080, F.A.C.]

5. Renewals. Prior to 180 days before the expiration of a permit issued pursuant to Chapter 62-213, F.A.C., the permittee shall apply for a renewal of a permit using forms incorporated by reference in the specific rule chapter for that kind of permit. A renewal application shall be timely and sufficient. If the application is submitted prior to 180 days before expiration of the permit, it will be considered timely and sufficient. If the renewal application is submitted at a later date, it will not be considered timely and sufficient unless it is submitted and made complete prior to the expiration of the operation permit. When the application for renewal is timely and sufficient, the existing permit shall remain in effect until the renewal application has been finally acted upon by the Department or, if there is court review of the Department's final agency action, until a later date is required by Section 120.60, F.S., provided that, for renewal of a permit issued pursuant to Chapter 62-213, F.A.C., the applicant complies with the requirements of Rules 62-213.420(1)(b)3. and 4., F.A.C.

[Rule 62-4.090, F.A.C.]

6. Suspension and Revocation.

(1) Permits shall be effective until suspended, revoked, surrendered, or expired and shall be subject to the provisions of Chapter 403, F.S., and rules of the Department.

(2) Failure to comply with pollution control laws and rules shall be grounds for suspension or revocation.

(3) A permit issued pursuant to Chapter 62-4, F.A.C., shall not become a vested property right in the permittee. The Department may revoke any permit issued by it if it finds that the permit holder or his agent:

(a) Submitted false or inaccurate information in his application or operational reports.

(b) Has violated law, Department orders, rules or permit conditions.

(c) Has failed to submit operational reports or other information required by Department rules.

(d) Has refused lawful inspection under Section 403.091, F.S.

(4) No revocation shall become effective except after notice is served by personal services, certified mail, or newspaper notice pursuant to Section 120.60(7), F.S., upon the person or persons named therein and a hearing held if requested within the time specified in the notice. The notice shall specify the provision of the law, or rule alleged to be violated, or the permit condition or Department order alleged to be violated, and the facts alleged to constitute a violation thereof.

[Rule 62-4.100, F.A.C.]

7. **Not federally enforceable. Financial Responsibility.** The Department may require an applicant to submit proof of financial responsibility and may require the applicant to post an appropriate bond to guarantee compliance with the law and Department rules. [Rule 62-4.110, F.A.C.]

8. **Transfer of Permits.**

(1) Within 30 days after the sale or legal transfer of a permitted facility, an "Application for Transfer of Permit" (DEP Form 62-1.201(1)) must be submitted to the Department. This form must be completed with the notarized signatures of both the permittee and the proposed new permittee. For air permits, an "Application for Transfer of Air Permit" (DEP Form 62-210.900(7)) shall be submitted.

(2) The Department shall approve the transfer of a permit unless it determines that the proposed new permittee cannot provide reasonable assurances that conditions of the permit will be met. The determination shall be limited solely to the ability of the new permittee to comply with the conditions of the existing permit, and it shall not concern the adequacy of these permit conditions. If the Department proposes to deny the transfer, it shall provide both the permittee and the proposed new permittee a written objection to such transfer together with notice of a right to request a Chapter 120, F.S., proceeding on such determination.

(3) Within 30 days of receiving a properly completed Application for Transfer of Permit form, the Department shall issue a final determination. The Department may toll the time for making a determination on the transfer by notifying both the permittee and the proposed new permittee that additional information is required to adequately review the transfer request. Such notification shall be served within 30 days of receipt of an Application for Transfer of Permit form, completed pursuant to Rule 62-4.120(1), F.A.C. If the Department fails to take action to approve or deny the transfer within 30 days of receipt of the completed Application for Transfer of Permit form, or within 30 days of receipt of the last item of timely requested additional information, the transfer shall be deemed approved.

(4) The permittee is encouraged to apply for a permit transfer prior to the sale or legal transfer of a permitted facility. However, the transfer shall not be effective prior to the sale or legal transfer.

(5) Until this transfer is approved by the Department, the permittee and any other person constructing, operating, or maintaining the permitted facility shall be liable for compliance with the terms of the permit. The permittee transferring the permit shall remain liable for corrective actions that may be required as a result of any violations occurring prior to the sale or legal transfer of the facility.

[Rule 62-4.120, F.A.C.]

9. **Plant Operation-Problems.** If the permittee is temporarily unable to comply with any of the conditions of the permit due to breakdown of equipment or destruction by hazard of fire, wind or by other cause, the permittee shall immediately notify the Department. Notification shall include pertinent information as to the cause of the problem, and what steps are being taken to correct the problem and to prevent its recurrence, and where applicable, the owner's intent toward reconstruction of destroyed facilities. Such notification does not release the permittee from any liability for failure to comply with Department rules. (also, see Condition No. 10.)

[Rule 62-4.130, F.A.C.]

10. For purposes of notification to the Department pursuant to Condition No. 9., Condition No. 12.(8), and Rule 62-4.130, F.A.C., Plant Operation-Problems, "immediately" shall mean the same day, if during a workday (i.e., 8:00 a.m. - 5:00 p.m.), or the first business day after the incident, excluding weekends and holidays; and, for purposes of 40 CFR 70.6(a)(3)(iii)(B), "prompt" shall have the same meaning as "immediately". [also, see Conditions Nos. 9. and 12.(8).]

[40 CFR 70.6(a)(3)(iii)(B)]

11. **Not federally enforceable. Review.** Failure to request a hearing within 14 days of receipt of notice of proposed or final agency action on a permit application or as otherwise required in Chapter 62-103, F.A.C., shall be deemed a waiver of the right to an administrative hearing.

[Rule 62-4.150, F.A.C.]

12. **Permit Conditions.** All permits issued by the Department shall include the following general conditions:

(1) The terms, conditions, requirements, limitations and restrictions set forth in this permit, are "permit conditions" and are binding and enforceable pursuant to Sections 403.141, 403.727, or 403.859 through 403.861, F.S. The permittee is placed on notice that the Department will review this permit periodically and may initiate enforcement action for any violation of these conditions.

- (2) This permit is valid only for the specific processes and operations applied for and indicated in the approved drawings or exhibits. Any unauthorized deviation from the approved drawings, exhibits, specifications, or conditions of this permit may constitute grounds for revocation and enforcement action by the Department.
- (3) As provided in Subsections 403.987(6) and 403.722(5), F.S., the issuance of this permit does not convey any vested rights or any exclusive privileges. Neither does it authorize any injury to public or private property or any invasion of personal rights, nor any infringement of federal, state, or local laws or regulations. This permit is not a waiver of or approval of any other Department permit that may be required for other aspects of the total project which are not addressed in this permit.
- (4) This permit conveys no title to land or water, does not constitute State recognition or acknowledgment of title, and does not constitute authority for the use of submerged lands unless herein provided and the necessary title or leasehold interests have been obtained from the State. Only the Trustees of the Internal Improvement Trust Fund may express State opinion as to title.
- (5) This permit does not relieve the permittee from liability for harm or injury to human health or welfare, animal, or plant life, or property caused by the construction or operation of this permitted source, or from penalties therefore; nor does it allow the permittee to cause pollution in contravention of F.S. and Department rules, unless specifically authorized by an order from the Department.
- (6) The permittee shall properly operate and maintain the facility and systems of treatment and control (and related appurtenances) that are installed and used by the permittee to achieve compliance with the conditions of this permit, as required by Department rules. This provision includes the operation of backup or auxiliary facilities or similar systems when necessary to achieve compliance with the conditions of the permit and when required by Department rules.
- (7) The permittee, by accepting this permit, specifically agrees to allow authorized Department personnel, upon presentation of credentials or other documents as may be required by law and at reasonable times, access to the premises where the permitted activity is located or conducted to:
- (a) Have access to and copy any records that must be kept under conditions of the permit;
 - (b) Inspect the facility, equipment, practices, or operations regulated or required under this permit; and
 - (c) Sample or monitor any substances or parameters at any location reasonably necessary to assure compliance with this permit or Department rules. Reasonable time may depend on the nature of the concern being investigated.
- (8) If, for any reason, the permittee does not comply with or will be unable to comply with any condition or limitation specified in this permit, the permittee shall immediately provide the Department with the following information: **(also, see Condition No. 10.)**
- (a) A description of and cause of noncompliance; and
 - (b) The period of noncompliance, including dates and times; or, if not corrected, the anticipated time the noncompliance is expected to continue, and steps being taken to reduce, eliminate, and prevent recurrence of the noncompliance. The permittee shall be responsible for any and all damages which may result and may be subject to enforcement action by the Department for penalties or for revocation of this permit.
- (9) In accepting this permit, the permittee understands and agrees that all records, notes, monitoring data and other information relating to the construction or operation of this permitted source which are submitted to the Department may be used by the Department as evidence in any enforcement case involving the permitted source arising under the Florida Statutes or Department rules, except where such use is prescribed by Sections 403.111 and 403.73, F.S. Such evidence shall only be used to the extent it is consistent with the Florida Rules of Civil Procedure and appropriate evidentiary rules.
- (10) The permittee agrees to comply with changes in Department rules and Florida Statutes after a reasonable time for compliance; provided, however, the permittee does not waive any other rights granted by Florida Statutes or Department rules.
- (11) This permit is transferable only upon Department approval in accordance with Rule 62-4.120, F.A.C., as applicable. The permittee shall be liable for any non-compliance of the permitted activity until the transfer is approved by the Department.
- (12) This permit or a copy thereof shall be kept at the work site of the permitted activity.
- (14) The permittee shall comply with the following:
- (a) Upon request, the permittee shall furnish all records and plans required under Department rules. During enforcement actions, the retention period for all records will be extended automatically unless otherwise stipulated by the Department.
 - (b) The permittee shall hold at the facility or other location designated by this permit records of all monitoring information (including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation) required by the permit, copies of all reports required by this permit, and records of all data used to complete the application for this permit. These materials shall be retained at least five (5) years from the date of the sample, measurement, report, or application unless otherwise specified by Department rule.
 - (c) Records of monitoring information shall include:
 - 1. The date, exact place, and time of sampling or measurements;
 - 2. The person responsible for performing the sampling or measurements;
 - 3. The dates analyses were performed;
 - 4. The person responsible for performing the analyses;

5. The analytical techniques or methods used;

6. The results of such analyses.

(15) When requested by the Department, the permittee shall within a reasonable time furnish any information required by law which is needed to determine compliance with the permit. If the permittee becomes aware the relevant facts were not submitted or were incorrect in the permit application or in any report to the Department, such facts or information shall be corrected promptly.

[Rules 62-4.160 and 62-213.440(1)(b), F.A.C.]

13. Construction Permits.

(1) No person shall construct any installation or facility which will reasonably be expected to be a source of air or water pollution without first applying for and receiving a construction permit from the Department unless exempted by statute or Department rule. In addition to the requirements of Chapter 62-4, F.A.C., applicants for a Department Construction Permit shall submit the following as applicable:

(a) A completed application on forms furnished by the Department.

(b) An engineering report covering:

1. Plant description and operations,
2. Types and quantities of all waste material to be generated whether liquid, gaseous or solid,
3. Proposed waste control facilities,
4. The treatment objectives,
5. The design criteria on which the control facilities are based, and
6. Other information deemed relevant.

Design criteria submitted pursuant to Rule 62-4.210(1)(b)5., F.A.C., shall be based on the results of laboratory and pilot-plant scale studies whenever such studies are warranted. The design efficiencies of the proposed waste treatment facilities and the quantities and types of pollutants in the treated effluents or emissions shall be indicated. Work of this nature shall be subject to the requirements of Chapter 471, F.S. Where confidential records are involved, certain information may be kept confidential pursuant to Section 403.111, F.S.

(c) The owners' written guarantee to meet the design criteria as accepted by the Department and to abide by Chapter 403, F.S., and the rules of the Department as to the quantities and types of materials to be discharged from the installation. The owner may be required to post an appropriate bond or other equivalent evidence of financial responsibility to guarantee compliance with such conditions in instances where the owner's financial resources are inadequate or proposed control facilities are experimental in nature.

(2) The construction permit may contain conditions and an expiration date as determined by the Secretary or the Secretary's designee.

(3) When the Department issues a permit to construct, the permittee shall be allowed a period of time, specified in the permit, to construct, and to operate and test to determine compliance with Chapter 403, F.S., and the rules of the Department and, where applicable, to apply for and receive an operation permit. The Department may require tests and evaluations of the treatment facilities by the permittee at his/her expense.

[Rule 62-4.210, F.A.C.]

14. **Not federally enforceable.** Operation Permit for New Sources. To properly apply for an operation permit for new sources the applicant shall submit the appropriate fee and certification that construction was completed, noting any deviations from the conditions in the construction permit and test results where appropriate.

[Rule 62-4.220, F.A.C.]

Chapters 28-106 and 62-110, F.A.C.

15. Public Notice, Public Participation, and Proposed Agency Action. The permittee shall comply with all of the requirements for public notice, public participation, and proposed agency action pursuant to Rules 62-110.106 and 62-210.350, F.A.C.

[Rules 62-110.106, 62-210.350 and 62-213.430(1)(b), F.A.C.]

16. Administrative Hearing. The permittee shall comply with all of the requirements for a petition for administrative hearing or waiver of right to administrative proceeding pursuant to Rules 28-106.201, 28-106.301 and 62-110.106, F.A.C.

[Rules 28-106.201, 28-106.301 and 62-110.106, F.A.C.]

Chapter 62-204, F.A.C.

17. Asbestos. This permit does not authorize any demolition or renovation of the facility or its parts or components which involves asbestos removal. This permit does not constitute a waiver of any of the requirements of Chapter 62-257, F.A.C., and 40 CFR 61, Subpart M, National Emission Standard for Asbestos, adopted and incorporated by reference in Rule 62-204.800, F.A.C. Compliance with Chapter 62-257, F.A.C., and 40 CFR 61, Subpart M, Section 61.145, is required for any asbestos demolition or renovation at the source.

[40 CFR 61; Rule 62-204.800, F.A.C.; and, Chapter 62-257, F.A.C.]

Chapter 62-210, F.A.C.

18. Permits Required. Unless exempted from permitting pursuant to Rule 62-210.300(3)(a) or (b), F.A.C., or Rule 62-4.040, F.A.C., or unless specifically authorized by provision of Rule 62-210.300(4), F.A.C., or Rule 62-213.300, F.A.C., the owner or operator of any facility or emissions unit which emits or can reasonably be expected to emit any air pollutant shall obtain an appropriate permit from the Department prior to beginning construction, reconstruction pursuant to 40 CFR 60.15 or 63.2, modification, or the addition of pollution control equipment; or to authorize initial or continued operation of the emissions unit; or to establish a PAL or Air Emissions Bubble. All emissions limitations, controls, and other requirements imposed by such permits shall be at least as stringent as any applicable limitations and requirements contained in or enforceable under the State Implementation Plan (SIP) or that are otherwise federally enforceable. Except as provided at Rule 62-213.460, F.A.C., issuance of a permit does not relieve the owner or operator of a facility or an emissions unit from complying with any applicable requirements, any emission limiting standards or other requirements of the air pollution rules of the Department or any other such requirements under federal, state, or local law.

(1) Air Construction Permits.

(a) Unless exempt from permitting pursuant to Rule 62-210.300(3)(a) or (b), F.A.C., or Rule 62-4.040, F.A.C., an air construction permit shall be obtained by the owner or operator of any proposed new, reconstructed, or modified facility or emissions unit, or any new pollution control equipment prior to the beginning of construction, reconstruction pursuant to 40 CFR 60.15 or 63.2, or modification of the facility or emissions unit or addition of the pollution control equipment; or to establish a PAL; in accordance with all applicable provisions of Chapter 62-210, F.A.C., Chapter 62-212, F.A.C., and Chapter 62-4, F.A.C. Except as provided under Rule 62-213.415, F.A.C., the owner or operator of any facility seeking to create or change an air emissions bubble shall obtain an air construction permit in accordance with all the applicable provisions of Chapter 62-210, F.A.C., Chapters 62-212 and 62-4, F.A.C. The construction permit shall be issued for a period of time sufficient to allow construction, reconstruction or modification of the facility or emissions unit or addition of the air pollution control equipment; and operation while the owner or operator of the new, reconstructed or modified facility or emissions unit or the new pollution control equipment is conducting tests or otherwise demonstrating initial compliance with the conditions of the construction permit.

(b) Notwithstanding the expiration of an air construction permit, all limitations and requirements of such permit that are applicable to the design and operation of the permitted facility or emissions unit shall remain in effect until the facility or emissions unit is permanently shut down, except for any such limitation or requirement that is obsolete by its nature (such as a requirement for initial compliance testing) or any such limitation or requirement that is changed in accordance with the provisions of Rule 62-210.300(1)(b)1., F.A.C. Either the applicant or the Department can propose that certain conditions be considered obsolete. Any conditions or language in an air construction permit that are included for informational purposes only, if they are transferred to the air operation permit, shall be transferred for informational purposes only and shall not become enforceable conditions unless voluntarily agreed to by the permittee or otherwise required under Department rules.

1. Except for those limitations or requirements that are obsolete, all limitations and requirements of an air construction permit shall be included and identified in any air operation permit for the facility or emissions unit. The limitations and requirements included in the air operation permit can be changed, and thereby superseded, through the issuance of an air construction permit, federally enforceable state air operation permit, federally enforceable air general permit, or Title V air operation permit; provided, however, that:

- a. Any change that would constitute an administrative correction may be made pursuant to Rule 62-210.360, F.A.C.;
- b. Any change that would constitute a modification, as defined at Rule 62-210.200, F.A.C., shall be accomplished only through the issuance of an air construction permit; and
- c. Any change in a permit limitation or requirement that originates from a permit issued pursuant to 40 CFR 52.21, Rule 62-204.800(11)(d)2., F.A.C., Rule 62-212.400, F.A.C., Rule 62-212.500, F.A.C., or any former codification of Rule 62-212.400 or Rule 62-212.500, F.A.C., shall be accomplished only through the issuance of a new or revised air construction permit under Rule 62-204.800(11)(d)2., Rule 62-212.400 or Rule 62-212.500, F.A.C., as appropriate.

2. The force and effect of any change in a permit limitation or requirement made in accordance with the provisions of Rule 62-210.300(1)(b)1., F.A.C., shall be the same as if such change were made to the original air construction permit.

3. Nothing in Rule 62-210.300(1)(b), F.A.C., shall be construed as to allow operation of a facility or emissions unit without a valid air operation permit.

(2) **Air Operation Permits.** Upon expiration of the air operation permit for any existing facility or emissions unit, subsequent to construction or modification, or subsequent to the creation of or change to a bubble, and demonstration of compliance with the conditions of the construction permit for any new or modified facility or emissions unit, any air emissions bubble, or as otherwise provided in Chapter 62-210, F.A.C., or Chapter 62-213, F.A.C., the owner or operator of such facility or emissions unit shall obtain a renewal air operation permit, an initial air operation permit or air general permit, or an administrative correction or revision of an existing air operation permit, whichever is appropriate, in accordance with all applicable provisions of Chapter 62-210, F.A.C., Chapter 62-213, F.A.C., and Chapter 62-4, F.A.C.

(a) **Minimum Requirements for All Air Operation Permits.** At a minimum, a permit issued pursuant to this subsection shall:

1. Specify the manner, nature, volume and frequency of the emissions permitted, and the applicable emission limiting standards or performance standards, if any;
2. Require proper operation and maintenance of any pollution control equipment by qualified personnel, where applicable in accordance with the provisions of any operation and maintenance plan required by the air pollution rules of the Department.
3. Contain an effective date stated in the permit which shall not be earlier than the date final action is taken on the application and be issued for a period, beginning on the effective date, as provided below.
 - a. The operation permit for an emissions unit which is in compliance with all applicable rules and in operational condition, and which the owner or operator intends to continue operating, shall be issued or renewed for a five-year period, except that, for Title V sources subject to Rule 62-213.420(1)(a)1., F.A.C., operation permits shall be extended until 60 days after the due date for submittal of the facility's Title V permit application as specified in Rule 62-213.420(1)(a)1., F.A.C.
 - b. Except as provided in Rule 62-210.300(2)(a)3.d., F.A.C., the operation permit for an emissions unit which has been shut down for six months or more prior to the expiration date of the current operation permit, shall be renewed for a period not to exceed five years from the date of shutdown, even if the emissions unit is not maintained in operational condition, provided:
 - (i) the owner or operator of the emissions unit demonstrates to the Department that the emissions unit may need to be reactivated and used, or that it is the owner's or operator's intent to apply to the Department for a permit to construct a new emissions unit at the facility before the end of the extension period; and
 - (ii) the owner or operator of the emissions unit agrees to and is legally prohibited from providing the allowable emission permitted by the renewed permit as an emissions offset to any other person under Rule 62-212.500, F.A.C.; and
 - (iii) the emissions unit was operating in compliance with all applicable rules as of the time the source was shut down.
 - c. Except as provided in Rule 62-210.300(2)(a)3.d., F.A.C., the operation permit for an emissions unit which has been shut down for five years or more prior to the expiration date of the current operation permit shall be renewed for a maximum period not to exceed ten years from the date of shutdown, even if the emissions unit is not maintained in operational condition, provided the conditions given in Rule 62-210.300(2)(a)3.b., F.A.C., are met and the owner or operator demonstrates to the Department that failure to renew the permit would constitute a hardship, which may include economic hardship.
 - d. The operation permit for an electric utility generating unit on cold standby or long-term reserve shutdown shall be renewed for a five-year period, and additional five-year periods, even if the unit is not maintained in operational condition, provided the conditions given in Rules 62-210.300(2)(a)3.b.(i) through (iii), F.A.C., are met.
4. In the case of an emissions unit permitted pursuant to Rules 62-210.300(2)(a)3.b., c., and d., F.A.C., include reasonable notification and compliance testing requirements for reactivation of such emissions unit and provide that the owner or operator demonstrate to the Department prior to reactivation that such reactivation would not constitute reconstruction pursuant to Rule 62-204.800(8), F.A.C.

[Rules 62-210.300(1) & (2), F.A.C.]

19. **Not federally enforceable. Notification of Startup.** The owners or operator of any emissions unit or facility which has a valid air operation permit which has been shut down more than one year, shall notify the Department in writing of the intent to start up such emissions unit or facility, a minimum of 60 days prior to the intended startup date.

(a) The notification shall include information as to the startup date, anticipated emission rates or pollutants released, changes to processes or control devices which will result in changes to emission rates, and any other conditions which may differ from the valid outstanding operation permit.

(b) If, due to an emergency, a startup date is not known 60 days prior thereto, the owner shall notify the Department as soon as possible after the date of such startup is ascertained.

[Rule 62-210.300(5), F.A.C.]

20. Emissions Unit Reclassification.

(a) Any emissions unit whose operation permit has been revoked as provided for in Chapter 62-4, F.A.C., shall be deemed permanently shut down for purposes of Rule 62-212.500, F.A.C. Any emissions unit whose permit to operate has expired without timely renewal or transfer may be deemed permanently shut down, provided, however, that no such emissions unit shall be deemed permanently shut down if, within 20 days after receipt of written notice from the Department, the emissions unit owner or operator demonstrates that the permit expiration resulted from inadvertent failure to comply with the requirements of Rule 62-4.090, F.A.C., and that the owner or operator intends to continue the emissions unit in operation, and either submits an application for an air operation permit or complies with permit transfer requirements, if applicable.

(b) If the owner or operator of an emissions unit which is so permanently shut down, applies to the Department for a permit to reactivate or operate such emissions unit, the emissions unit will be reviewed and permitted as a new emissions unit.

[Rule 62-210.300(6), F.A.C.]

21. Transfer of Air Permits.

(a) An air permit is transferable only after submission of an Application for Transfer of Air Permit (DEP Form 62-210.900(7)) and Department approval in accordance with Rule 62-4.120, F.A.C. For Title V permit transfers only, a complete application for transfer of air permit shall include the requirements of 40 CFR 70.7(d)(1)(iv), adopted and incorporated by reference at Rule 62-204.800, F.A.C. Within 30 days after approval of the transfer of permit, the Department shall update the permit by an administrative permit correction pursuant to Rule 62-210.360, F.A.C.

(b) For an air general permit, the provision of Rules 62-210.300(7)(a) and 62-4.120, F.A.C., do not apply. Thirty (30) days before using an air general permit, the new owner must submit an air general permit notification to the Department in accordance with Rule 62-210.300(4), F.A.C., or Rule 62-213.300(2)(b), F.A.C.

[Rule 62-210.300(7), F.A.C.]

22. Public Notice and Comment.

(1) Public Notice of Proposed Agency Action.

(a) A notice of proposed agency action on permit application, where the proposed agency action is to issue the permit, shall be published by any applicant for:

1. An air construction permit;
2. An air operation permit, permit renewal or permit revision subject to Rule 62-210.300(2)(b), F.A.C., (i.e., a FESOP), except as provided in Rule 62-210.300(2)(b)1.b., F.A.C.; or
3. An air operation permit, permit renewal, or permit revision subject to Chapter 62-213, F.A.C., except Title V air general permits or those permit revisions meeting the requirements of Rule 62-213.412(1), F.A.C.

(b) The notice required by Rule 62-210.350(1)(a), F.A.C., shall be published in accordance with all otherwise applicable provisions of Rule 62-110.106, F.A.C. A public notice under Rule 62-210.350(1)(a)1., F.A.C., for an air construction permit may be combined with any required public notice under Rule 62-210.350(1)(a)2. or 3., F.A.C., for air operation permits. If such notices are combined, the public notice must comply with the requirements for both notices.

(c) Except as otherwise provided at Rules 62-210.350(2), (5), and (6), F.A.C., each notice of intent to issue an air construction permit shall provide a 14-day period for submittal of public comments.

(2) Additional Public Notice Requirements for Emissions Units Subject to Prevention of Significant Deterioration or Nonattainment - Area Preconstruction Review.

(a) Before taking final agency action on a construction permit application for any proposed new or modified facility or emissions unit subject to the preconstruction review requirements of Rule 62-212.400 or 62-212.500, F.A.C., the Department shall comply with all applicable provisions of Rule 62-110.106, F.A.C., and provide an opportunity for public comment which shall include as a minimum the following:

1. A complete file available for public inspection in at least one location in the district affected which includes the information submitted by the owner or operator, exclusive of confidential records under Section 403.111, F.S., and the Department's analysis of the effect of the proposed construction or modification on ambient air quality, including the Department's preliminary determination of whether the permit should be approved or disapproved;
2. A 30-day period for submittal of public comments; and

3. A notice, by advertisement in a newspaper of general circulation in the county affected, specifying the nature and location of the proposed facility or emissions unit, whether BACT or LAER has been determined, the degree of PSD increment consumption expected, if applicable, and the location of the information specified in paragraph 1. above; and notifying the public of the opportunity for submitting comments and requesting a public hearing.
- (b) The notice provided for in Rule 62-210.350(2)(a)3., F.A.C., shall be prepared by the Department and published by the applicant in accordance with all applicable provisions of Rule 62-110.106, F.A.C., except that the applicant shall cause the notice to be published no later than thirty (30) days prior to final agency action.
- (c) A copy of the notice provided for in Rule 62-210.350(2)(a)3., F.A.C., shall also be sent by the Department to the Regional Office of the U. S. Environmental Protection Agency and to all other state and local officials or agencies having cognizance over the location of such new or modified facility or emissions unit, including local air pollution control agencies, chief executives of city or county government, regional land use planning agencies, and any other state, Federal Land Manager, or Indian Governing Body whose lands may be affected by emissions from the new or modified facility or emissions unit.
- (d) A copy of the notice provided for in Rule 62-210.350(2)(a)3., F.A.C., shall be displayed in the appropriate district, branch and local program offices.
- (e) An opportunity for public hearing shall be provided in accordance with Chapter 120, F.S., and Rule 62-110.106, F.A.C.
- (f) Any public comments received shall be made available for public inspection in the location where the information specified in Rule 62-210.350(2)(a)1., F.A.C., is available and shall be considered by the Department in making a final determination to approve or deny the permit.
- (g) The final determination shall be made available for public inspection at the same location where the information specified in Rule 62-210.350(2)(a)1., F.A.C., was made available.
- (h) For a proposed new or modified emissions unit which would be located within 100 kilometers of any Federal Class I area or whose emissions may affect any Federal Class I area, and which would be subject to the preconstruction review requirements of Rule 62-212.400 or 62-212.500, F.A.C.:
1. The Department shall mail or transmit to the Administrator a copy of the initial application for an air construction permit and notice of every action related to the consideration of the permit application.
 2. The Department shall mail or transmit to the Federal Land Manager of each affected Class I area a copy of any written notice of intent to apply for an air construction permit; the initial application for an air construction permit, including all required analyses and demonstrations; any subsequently submitted information related to the application; the preliminary determination and notice of proposed agency action on the permit application; and any petition for an administrative hearing regarding the application or the Department's proposed action. Each such document shall be mailed or transmitted to the Federal Land Manager within fourteen (14) days after its receipt by the Department.
- (3) Additional Public Notice Requirements for Facilities Subject to Operation Permits for Title V Sources.
- (a) Before taking final agency action to issue a new, renewed, or revised air operation permit subject to Chapter 62-213, F.A.C., the Department shall comply with all applicable provisions of Rule 62-110.106, F.A.C., and provide an opportunity for public comment which shall include as a minimum the following:
1. A complete file available for public inspection in at least one location in the district affected which includes the information submitted by the owner or operator, exclusive of confidential records under Section 403.111, F.S.; and
 2. A 30-day period for submittal of public comments.
- (b) The notice provided for in Rule 62-210.350(3)(a), F.A.C., shall be prepared by the Department and published by the applicant in accordance with all applicable provisions of Rule 62-110.106, F.A.C., except that the applicant shall cause the notice to be published no later than thirty (30) days prior to final agency action. If written comments received during the 30-day comment period on a draft permit result in the Department's issuance of a revised draft permit in accordance with Rule 62-213.430(1), F.A.C., the Department shall require the applicant to publish another public notice in accordance with Rule 62-210.350(1)(a), F.A.C.
- (c) The notice shall identify:
1. The facility;
 2. The name and address of the office at which processing of the permit occurs;
 3. The activity or activities involved in the permit action;
 4. The emissions change involved in any permit revision;
 5. The name, address, and telephone number of a Department representative from whom interested persons may obtain additional information, including copies of the permit draft, the application, and all relevant supporting materials, including any permit application, compliance plan, permit, monitoring report, and compliance statement required pursuant to Chapter 62-213, F.A.C. (except for information entitled to confidential treatment pursuant to Section 403.111, F.S.), and all other materials available to the Department that are relevant to the permit decision;

6. A brief description of the comment procedures required by Rule 62-210.350(3), F.A.C.;
7. The time and place of any hearing that may be held, including a statement of procedure to request a hearing (unless a hearing has already been scheduled); and
8. The procedures by which persons may petition the Administrator to object to the issuance of the proposed permit after expiration of the Administrator's 45-day review period.

[Rules 62-210.350(1) thru (3), F.A.C.]

23. Administrative Permit Corrections.

- (1) A facility owner shall notify the Department by letter of minor corrections to information contained in a permit. Such notifications shall include:
 - (a) Typographical errors noted in the permit;
 - (b) Name, address or phone number change from that in the permit;
 - (c) A change requiring more frequent monitoring or reporting by the permittee;
 - (d) A change in ownership or operational control of a facility, subject to the following provisions:
 1. The Department determines that no other change in the permit is necessary;
 2. The permittee and proposed new permittee have submitted an Application for Transfer of Air Permit, and the Department has approved the transfer pursuant to Rule 62-210.300(7), F.A.C.; and
 3. The new permittee has notified the Department of the effective date of sale or legal transfer.
 - (e) Changes listed at 40 CFR 72.83(a)(1), (2), (6), (9) and (10), adopted and incorporated by reference at Rule 62-204.800, F.A.C., and changes made pursuant to Rules 62-214.340(1) and (2), F.A.C., to Title V sources subject to emissions limitations or reductions pursuant to 42 USC ss. 7651-7651o;
 - (f) Changes listed at 40 CFR 72.83(a)(11) and (12), adopted and incorporated by reference at Rule 62-204.800, F.A.C., to Title V sources subject to emissions limitations or reductions pursuant to 42 USC ss. 7651-7651o, provided the notification is accompanied by a copy of any EPA determination concerning the similarity of the change to those listed at Rule 62-210.360(1)(e), F.A.C.; and
 - (g) Any other similar minor administrative change at the source.
- (2) Upon receipt of any such notification, the Department shall within 60 days correct the permit and provide a corrected copy to the owner.
- (3) After first notifying the owner, the Department shall correct any permit in which it discovers errors of the types listed at Rules 62-210.360(1)(a) and (b), F.A.C., and provide a corrected copy to the owner.
- (4) For Title V source permits, other than general permits, a copy of the corrected permit shall be provided to EPA and any approved local air program in the county where the facility or any part of the facility is located.

[Rule 62-210.360, F.A.C.]

24. Emissions Computation and Reporting.

- (1) Applicability. This rule sets forth required methodologies to be used by the owner or operator of a facility for computing actual emissions, baseline actual emissions, and net emissions increase, as defined at Rule 62-210.200, F.A.C., and for computing emissions for purposes of the reporting requirements of subsection 62-210.370(3) and paragraph 62-212.300(1)(e), F.A.C., or of any permit condition that requires emissions be computed in accordance with this rule. This rule is not intended to establish methodologies for determining compliance with the emission limitations of any air permit.
- (2) Computation of Emissions. For any of the purposes set forth in subsection 62-210.370(1), F.A.C., the owner or operator of a facility shall compute emissions in accordance with the requirements set forth in this subsection.
 - (a) Basic Approach. The owner or operator shall employ, on a pollutant-specific basis, the most accurate of the approaches set forth below to compute the emissions of a pollutant from an emissions unit; provided, however, that nothing in this rule shall be construed to require installation and operation of any continuous emissions monitoring system (CEMS), continuous parameter monitoring system (CPMS), or predictive emissions monitoring system (PEMS) not otherwise required by rule or permit, nor shall anything in this rule be construed to require performance of any stack testing not otherwise required by rule or permit.
 1. If the emissions unit is equipped with a CEMS meeting the requirements of paragraph 62-210.370(2)(b), F.A.C., the owner or operator shall use such CEMS to compute the emissions of the pollutant, unless the owner or operator demonstrates to the department that an alternative approach is more accurate because the CEMS represents still-emerging technology.
 2. If a CEMS is not available or does not meet the requirements of paragraph 62-210.370(2)(b), F.A.C., but emissions of the pollutant can be computed pursuant to the mass balance methodology of paragraph 62-210.370(2)(c), F.A.C., the owner or operator shall use such methodology, unless the owner or operator demonstrates to the department that an alternative approach is more accurate.
 3. If a CEMS is not available or does not meet the requirements of paragraph 62-210.370(2)(b), F.A.C., and emissions cannot be computed pursuant to the mass balance methodology, the owner or operator shall use an emission factor meeting the requirements of paragraph 62-210.370(2)(d), F.A.C., unless the owner or operator demonstrates to the department that an alternative approach is more accurate.
 - (b) Continuous Emissions Monitoring System (CEMS).
 1. An owner or operator may use a CEMS to compute emissions of a pollutant for purposes of this rule provided:
 - a. The CEMS complies with the applicable certification and quality assurance requirements of 40 CFR Part 60, Appendices B and F, or, for an acid rain unit, the certification and quality assurance requirements of 40 CFR Part 75, all adopted by reference at Rule 62-204.800, F.A.C.; or

- b. The owner or operator demonstrates that the CEMS otherwise represents the most accurate means of computing emissions for purposes of this rule.
 - 2. Stack gas volumetric flow rates used with the CEMS to compute emissions shall be obtained by the most accurate of the following methods as demonstrated by the owner or operator:
 - a. A calibrated flowmeter that records data on a continuous basis, if available; or
 - b. The average flow rate of all valid stack tests conducted during a five-year period encompassing the period over which the emissions are being computed, provided all stack tests used shall represent the same operational and physical configuration of the unit.
 - 3. The owner or operator may use CEMS data in combination with an appropriate f-factor, heat input data, and any other necessary parameters to compute emissions if such method is demonstrated by the owner or operator to be more accurate than using a stack gas volumetric flow rate as set forth at subparagraph 62-210.370(2)(b)2., F.A.C., above.
 - (c) Mass Balance Calculations.
 - 1. An owner or operator may use mass balance calculations to compute emissions of a pollutant for purposes of this rule provided the owner or operator:
 - a. Demonstrates a means of validating the content of the pollutant that is contained in or created by all materials or fuels used in or at the emissions unit; and
 - b. Assumes that the emissions unit emits all of the pollutant that is contained in or created by any material or fuel used in or at the emissions unit if it cannot otherwise be accounted for in the process or in the capture and destruction of the pollutant by the unit's air pollution control equipment.
 - 2. Where the vendor of a raw material or fuel which is used in or at the emissions unit publishes a range of pollutant content from such material or fuel, the owner or operator shall use the highest value of the range to compute the emissions, unless the owner or operator demonstrates using site-specific data that another content within the range is more accurate.
 - 3. In the case of an emissions unit using coatings or solvents, the owner or operator shall document, through purchase receipts, records and sales receipts, the beginning and ending VOC inventories, the amount of VOC purchased during the computational period, and the amount of VOC disposed of in the liquid phase during such period.
 - (d) Emission Factors.
 - 1. An owner or operator may use an emission factor to compute emissions of a pollutant for purposes of this rule provided the emission factor is based on site-specific data such as stack test data, where available, unless the owner or operator demonstrates to the department that an alternative emission factor is more accurate. An owner or operator using site-specific data to derive an emission factor, or set of factors, shall meet the following requirements.
 - a. If stack test data are used, the emission factor shall be based on the average emissions per unit of input, output, or gas volume, whichever is appropriate, of all valid stack tests conducted during at least a five-year period encompassing the period over which the emissions are being computed, provided all stack tests used shall represent the same operational and physical configuration of the unit.
 - b. Multiple emission factors shall be used as necessary to account for variations in emission rate associated with variations in the emissions unit's operating rate or operating conditions during the period over which emissions are computed.
 - c. The owner or operator shall compute emissions by multiplying the appropriate emission factor by the appropriate input, output or gas volume value for the period over which the emissions are computed. The owner or operator shall not compute emissions by converting an emission factor to pounds per hour and then multiplying by hours of operation, unless the owner or operator demonstrates that such computation is the most accurate method available.
 - 2. If site-specific data are not available to derive an emission factor, the owner or operator may use a published emission factor directly applicable to the process for which emissions are computed. If no directly-applicable emission factor is available, the owner or operator may use a factor based on a similar, but different, process.
 - (e) Accounting for Emissions During Periods of Missing Data from CEMS, PEMS, or CPMS. In computing the emissions of a pollutant, the owner or operator shall account for the emissions during periods of missing data from CEMS, PEMS, or CPMS using other site-specific data to generate a reasonable estimate of such emissions.
 - (f) Accounting for Emissions During Periods of Startup and Shutdown. In computing the emissions of a pollutant, the owner or operator shall account for the emissions during periods of startup and shutdown of the emissions unit.
 - (g) Fugitive Emissions. In computing the emissions of a pollutant from a facility or emissions unit, the owner or operator shall account for the fugitive emissions of the pollutant, to the extent quantifiable, associated with such facility or emissions unit.
 - (h) Recordkeeping. The owner or operator shall retain a copy of all records used to compute emissions pursuant to this rule for a period of five years from the date on which such emissions information is submitted to the department for any regulatory purpose.
- (3) Annual Operating Report for Air Pollutant Emitting Facility.
- (a) The Annual Operating Report for Air Pollutant Emitting Facility (DEP Form No. 62-210.900(5)) shall be completed each year.
 - (c) The annual operating report shall be submitted to the appropriate Department of Environmental Protection (DEP) division, district or DEP-approved local air pollution control program office by March 1 of the following year.
 - (d) Beginning with 2007 annual emissions, emissions shall be computed in accordance with the provisions of Rule 62-210.370(2), F.A.C., for purposes of the annual operating report.
- [Rules 62-210.370(1), (2) and (3)(a), (c) & (d), F.A.C.]

25. Circumvention. No person shall circumvent any air pollution control device, or allow the emission of air pollutants without the applicable air pollution control device operating properly.

[Rule 62-210.650, F.A.C.]

26. Forms and Instructions. The forms used by the Department in the stationary source control program are adopted and incorporated by reference in this section. The forms are listed by rule number, which is also the form number, with the subject, title and effective date. Copies of forms may be obtained by writing to the Department of Environmental Protection, Division of Air Resource Management, 2600 Blair Stone Road, Tallahassee, Florida 32399-2400, or by accessing the Division's website at www.dep.state.fl.us/air. The requirement of Rule 62-4.050(2), F.A.C., to file application forms in quadruplicate is waived if an air permit application is submitted using the Department's electronic application form.

(1) Application for Air Permit - Long Form, Form and Instructions (Effective 02-02-2006).

(a) Acid Rain Part, Form and Instructions (Effective 06-16-2003).

1. Repowering Extension Plan, Form and Instructions (Effective 07/01/1995).

2. New Unit Exemption, Form and Instructions (Effective 04/16/2001).

3. Retired Unit Exemption, Form and Instructions (Effective 04/16/2001).

4. Phase II NOx Compliance Plan, Form and Instructions (Effective 01/06/1998).

5. Phase II NOx Averaging Plan, Form (Effective 01/06/1998).

(b) Reserved.

(5) Annual Operating Report for Air Pollutant Emitting Facility, Form and Instructions (Effective 02/11/1999).

(7) Application for Transfer of Air Permit - Title V Source, (Effective 04/16/2001).

[Rule 62-210.900, F.A.C.]

Chapter 62-213, F.A.C.

27. Responsible Official.

(1) Each Title V source must identify a responsible official on each application for Title V permit, permit revision, and permit renewal. For sources with only one responsible official, this is how the Title V source designates the responsible official.

(2) Each Title V source may designate more than one responsible official, provided a primary responsible official is designated as responsible for the certifications of all other designated responsible officials. Any action taken by the primary responsible official shall take precedence over any action taken by any other designated responsible official.

(3) Any facility initially designating more than one responsible official or changing the list of responsible officials must submit a Responsible Official Notification Form (DEP Form No. 62-213.900(8)) designating all responsible officials for a Title V source, stating which responsible official is the primary responsible official, and providing an effective date for any changes to the list of responsible officials. Each individual listed on the Responsible Official Notification Form must meet the definition of responsible official given at Rule 62-210.200, F.A.C.

(4) A Title V source with only one responsible official shall submit DEP Form No. 62-213.900(8) for a change in responsible official.

(5) No person shall take any action as a responsible official at a Title V source unless designated a responsible official as required by this rule, except that the existing responsible official of any Title V source which has a change in responsible official during the term of the permit and before the effective date of this rule may continue to act as a responsible official until the first submittal of DEP Form No. 62-213.900(8) or the next application for Title V permit, permit revision or permit renewal, whichever comes first.

[Rules 62-213.202(1) thru (5), F.A.C.]

28. Annual Emissions Fee. Each Title V source permitted to operate in Florida must pay between January 15 and March 1 of each year, upon written notice from the Department, an annual emissions fee in an amount determined as set forth in Rule 62-213.205(1), F.A.C.

(1)(g) If the Department has not received the fee by February 15 of the year following the calendar year for which the fee is calculated, the Department will send the primary responsible official of the Title V source a written warning of the consequences for failing to pay the fee by March 1. If the fee is not postmarked by March 1 of the year due, the Department shall impose, in addition to the fee, a penalty of 50 percent of the amount of the fee unpaid plus interest on such amount computed in accordance with Section 220.807, F.S. If the Department determines that a submitted fee was inaccurately calculated, the Department shall either refund to the permittee any amount overpaid or notify the permittee of any amount underpaid. The Department shall not impose a penalty or interest on any amount underpaid, provided that the permittee has timely remitted payment of at least 90 percent of the amount determined to be due and remits full payment within 60 days after receipt of notice of the amount underpaid. The Department shall waive the collection of underpayment and shall not refund overpayment of the fee, if the amount is less than 1 percent of the fee due, up to \$50.00. The Department shall make every effort to provide a timely assessment of the adequacy of the submitted fee. Failure to

APPENDIX TV-6, TITLE V CONDITIONS (version dated 06/23/06) (continued)

pay timely any required annual emissions fee, penalty, or interest constitutes grounds for permit revocation pursuant to Rule 62-4.100, F.A.C.

(1)(i) Any documentation of actual hours of operation, actual material or heat input, actual production amount, or actual emissions used to calculate the annual emissions fee shall be retained by the owner for a minimum of five (5) years and shall be made available to the Department upon request.

(1)(j) A completed DEP Form 62-213.900(1), "Major Air Pollution Source Annual Emissions Fee Form", must be submitted by a responsible official with the annual emissions fee.

[Rules 62-213.205, (1)(g), (1)(i) & (1)(j), F.A.C.]

29. Reserved.

30. Reserved.

31. Air Operation Permit Fees. No permit application processing fee, renewal fee, modification fee or amendment fee is required for an operation permit for a Title V source.

[Rule 62-213.205(4), F.A.C.]

32. Permits and Permit Revisions Required. All Title V sources are subject to the permit requirements of Chapter 62-213, F.A.C., except those Title V sources permissible pursuant to Rule 62-213.300, F.A.C., Title V Air General Permits.

(1) No Title V source may operate except in compliance with Chapter 62-213, F.A.C.

(2) Except as provided in Rule 62-213.410, F.A.C., no source with a permit issued under the provisions of Chapter 62-213, F.A.C., shall make any changes in its operation without first applying for and receiving a permit revision if the change meets any of the following:

- (a) Constitutes a modification;
- (b) Violates any applicable requirement;
- (c) Exceeds the allowable emissions of any air pollutant from any unit within the source;
- (d) Contravenes any permit term or condition for monitoring, testing, recordkeeping, reporting or of a compliance certification requirement;
- (e) Requires a case-by-case determination of an emission limitation or other standard or a source specific determination of ambient impacts, or a visibility or increment analysis under the provisions of Chapter 62-212 or 62-296, F.A.C.;
- (f) Violates a permit term or condition which the source has assumed for which there is no corresponding underlying applicable requirement to which the source would otherwise be subject;
- (g) Results in the trading of emissions among units within a source except as specifically authorized pursuant to Rule 62-213.415, F.A.C.;
- (h) Results in the change of location of any relocatable facility identified as a Title V source pursuant to paragraph (a)-(e), (g) or (h) of the definition of "major source of air pollution" at Rule 62-210.200, F.A.C.;
- (i) Constitutes a change at an Acid Rain Source under the provisions of 40 CFR 72.81(a)(1), (2), or (3), (b)(1) or (b)(3), hereby incorporated by reference;
- (j) Constitutes a change in a repowering plan, nitrogen oxides averaging plan, or nitrogen oxides compliance deadline extension at an Acid Rain Source;

[Rules 62-213.400(1) & (2), F.A.C.]

33. Changes Without Permit Revision. Title V sources having a valid permit issued pursuant to Chapter 62-213, F.A.C., may make the following changes without permit revision, provided that sources shall maintain source logs or records to verify periods of operation:

(1) Permitted sources may change among those alternative methods of operation;

(2) A permitted source may implement operating changes, as defined in Rule 62-210.200, F.A.C., after the source submits any forms required by any applicable requirement and provides the Department and EPA with at least 7 days written notice prior to implementation. The source and the Department shall attach each notice to the relevant permit;

(a) The written notice shall include the date on which the change will occur, and a description of the change within the permitted source, the pollutants emitted and any change in emissions, and any term or condition becoming applicable or no longer applicable as a result of the change;

(b) The permit shield described in Rule 62-213.460, F.A.C., shall not apply to such changes;

(3) Permitted sources may implement changes involving modes of operation only in accordance with Rule 62-213.415, F.A.C.

[Rule 62-213.410, F.A.C.]

34. Immediate Implementation Pending Revision Process.

(1) Those permitted Title V sources making any change that constitutes a modification pursuant to the definition of modification at Rule 62-210.200, F.A.C., but which would not constitute a modification pursuant to 42 USC 7412(a) or to 40 CFR 52.01, 60.2, or 61.15, adopted and incorporated by reference at Rule 62-204.800, F.A.C., may implement such change prior to final issuance of a permit revision, provided the change:

- (a) Does not violate any applicable requirement;
- (b) Does not contravene any permit term or condition for monitoring, testing, recordkeeping or reporting, or any compliance certification requirement;
- (c) Does not require or change a case-by-case determination of an emission limitation or other standard, or a source-specific determination of ambient impacts, or a visibility or increment analysis under the provisions of Chapter 62-212 or 62-296, F.A.C.;
- (d) Does not seek to establish or change a permit term or condition for which there is no corresponding underlying applicable requirement and which the source has assumed to avoid an applicable requirement to which the source would otherwise be subject including any federally enforceable emissions cap or federally enforceable alternative emissions limit.

(2) A Title V source may immediately implement such changes after they have been incorporated into the terms and conditions of a new or revised construction permit issued pursuant to Chapter 62-212, F.A.C., and after the source provides to EPA, the Department, each affected state and any approved local air program having geographic jurisdiction over the source, a copy of the source's application for operation permit revision. The Title V source may conform its application for construction permit to include all information required by Rule 62-213.420, F.A.C., in lieu of submitting separate application forms.

(3) The Department shall process the application for operation permit revision in accordance with the provisions of Chapter 62-213, F.A.C., except that the Department shall issue a draft permit revision or a determination to deny the revision within 60 days of receipt of a complete application for operation permit revision or, if the Title V source has submitted a construction permit application conforming to the requirements of Rule 62-213.420, F.A.C., the Department shall issue a draft permit or a determination to deny the revision at the same time the Department issues its determination on issuance or denial of the construction permit application. The Department shall not take final action on the operation permit revision application until all the requirements of Rules 62-213.430(1)(a), (c), (d), and (e), F.A.C., have been complied with.

(4) Pending final action on the operation permit revision application, the source shall implement the changes in accordance with the terms and conditions of the source's new or revised construction permit. If any terms and conditions of the new or revised construction permit have not been complied with prior to the issuance of the draft operation permit revision, the operation permit shall include a compliance plan in accordance with the provisions of Rule 62-213.440(2), F.A.C.

(5) The permit shield described in Rule 62-213.460, F.A.C., shall not apply to such changes until after the Department takes final action to issue the operation permit revision.

(6) If the Department denies the source's application for operation permit revision, the source shall cease implementation of the proposed changes.

[Rule 62-213.412, F.A.C.]

35. Permit Applications.

(1) Duty to Apply. For each Title V source, the owner or operator shall submit a timely and complete permit application in compliance with the requirements of Rules 62-213.420, F.A.C., and Rules 62-4.050(1) through (3), F.A.C.

(a) Timely Application.

3. For purposes of permit renewal, a timely application is one that is submitted in accordance with Rule 62-4.090, F.A.C.

(b) Complete Application.

1. Any applicant for a Title V permit, permit revision or permit renewal must submit an application on DEP Form No. 62-210.900(1), which must include all the information specified by Rule 62-213.420(3), F.A.C., except that an application for permit revision must contain only that information related to the proposed change(s) from the currently effective Title V permit and any other requirements that become applicable at the time of application. The applicant shall include information concerning fugitive emissions and stack emissions in the application. Each application for permit, permit revision or permit renewal shall be certified by a responsible official in accordance with Rule 62-213.420(4), F.A.C.

2. For those applicants submitting initial permit applications pursuant to Rule 62-213.420(1)(a)1., F.A.C., a complete application shall be an application that substantially addresses all the information required by the application form number 62-210.900(1), and such applications shall be deemed complete within sixty days of receipt of a signed and certified application unless the Department notifies the applicant of incompleteness within that time. For all other applicants, the applications shall be deemed complete sixty days after receipt, unless the Department, within sixty days after receipt of a signed application for permit, permit revision or permit renewal, requests additional documentation or information needed

to process the application. An applicant making timely and complete application for permit, or timely application for permit renewal as described by Rule 62-4.090(1), F.A.C., shall continue to operate the source under the authority and provisions of any existing valid permit or Florida Electrical Power Plant Siting Certification, and in accordance with applicable requirements of the Acid Rain Program, until the conclusion of proceedings associated with its permit application or until the new permit becomes effective, whichever is later, provided the applicant complies with all the provisions of Rules 62-213.420(1)(b)3. and 4., F.A.C. Failure of the Department to request additional information within sixty days of receipt of a properly signed application shall not impair the Department's ability to request additional information pursuant to Rules 62-213.420(1)(b)3. and 4., F.A.C.

3. For those permit applications submitted pursuant to the provisions of Rule 62-213.420(1)(a)1., F.A.C., the Department shall notify the applicant if the Department becomes aware at any time during processing of the application that the application contains incorrect or incomplete information. The applicant shall submit the corrected or supplementary information to the Department within ninety days unless the applicant has requested and been granted additional time to submit the information. Failure of an applicant to submit corrected or supplementary information requested by the Department within ninety days or such additional time as requested and granted shall render the application incomplete.

4. For all applications other than those addressed at Rule 62-213.420(1)(b)3., F.A.C., should the Department become aware, during processing of any application that the application contains incorrect information, or should the Department become aware, as a result of comment from an affected State, an approved local air program, EPA, or the public that additional information is needed to evaluate the application, the Department shall notify the applicant within 30 days. When an applicant becomes aware that an application contains incorrect or incomplete information, the applicant shall submit the corrected or supplementary information to the Department. If the Department notifies an applicant that corrected or supplementary information is necessary to process the permit, and requests a response, the applicant shall provide the information to the Department within ninety days of the Department request unless the applicant has requested and been granted additional time to submit the information or, the applicant shall, within ninety days, submit a written request that the Department process the application without the information. Failure of an applicant to submit corrected or supplementary information requested by the Department within ninety days, or such additional time as requested and granted, or to demand in writing within ninety days that the application be processed without the information shall render the application incomplete. Nothing in this section shall limit any other remedies available to the Department.

[Rules 62-213.420(1)(a)3. and 62-213.420(1)(b)1., 2., 3. & 4., F.A.C.]

36. Confidential Information. Whenever an applicant submits information under a claim of confidentiality pursuant to Section 403.111, F.S., the applicant shall also submit a copy of all such information and claim directly to EPA. (also, see Condition No. 50.) [Rule 62-213.420(2), F.A.C.]

37. Standard Application Form and Required Information. Applications shall be submitted under Chapter 62-213, F.A.C., on forms provided by the Department and adopted by reference in Rule 62-210.900(1), F.A.C. The information as described in Rule 62-210.900(1), F.A.C., shall be included for the Title V source and each emissions unit. An application must include information sufficient to determine all applicable requirements for the Title V source and each emissions unit and to evaluate a fee amount pursuant to Rule 62-213.205, F.A.C. [Rule 62-213.420(3), F.A.C.]

38. a. Permit Renewal and Expiration. Permits being renewed are subject to the same requirements that apply to permit issuance at the time of application for renewal. Permit renewal applications shall contain that information identified in Rules 62-210.900(1) and 62-213.420(3), F.A.C. Unless a Title V source submits a timely application for permit renewal in accordance with the requirements of Rule 62-4.090(1), F.A.C., the existing permit shall expire and the source's right to operate shall terminate. No Title V permit will be issued for a new term except through the renewal process.

b. Permit Revision Procedures. Permit revisions shall meet all requirements of Chapter 62-213, F.A.C., including those for content of applications, public participation, review by approved local programs and affected states, and review by EPA, as they apply to permit issuance and permit renewal, except that permit revisions for those activities implemented pursuant to Rule 62-213.412, F.A.C., need not meet the requirements of Rule 62-213.430(1)(b), F.A.C. The Department shall require permit revision in accordance with the provisions of Rule 62-4.080, F.A.C., and 40 CFR 70.7(f), whenever any source becomes subject to any condition listed at 40

APPENDIX TV-6, TITLE V CONDITIONS (version dated 06/23/06) (continued)

CFR 70.7(f)(1), hereby adopted and incorporated by reference. The below requirements from 40 CFR 70.7(f) are adopted and incorporated by reference in Rule 62-213.430(4), F.A.C.:

o 40 CFR 70.7(f): Reopening for Cause. (also, see Condition No. 4.)

(1) This section contains provisions from 40 CFR 70.7(f) that specify the conditions under which a Title V permit shall be reopened prior to the expiration of the permit. A Title V permit shall be reopened and revised under any of the following circumstances:

- (i) Additional applicable requirements under the Act become applicable to a major Part 70 source with a remaining permit term of 3 or more years. Such a reopening shall be completed not later than 18 months after promulgation of the applicable requirement. No such reopening is required if the effective date of the requirement is later than the date on which the permit is due to expire, unless the original permit or any of its terms and conditions has been extended pursuant to 40 CFR 70.4(b)(10)(i) or (ii).
- (ii) Additional requirements (including excess emissions requirements) become applicable to an affected source under the acid rain program. Upon approved by the Administrator, excess emissions offset plans shall be deemed to be incorporated into the permit.
- (iii) The permitting authority or EPA determines that the permit contains a material mistake or that inaccurate statements were made in establishing the emissions standards or other terms or conditions of the permit.
- (iv) The Administrator or the permitting authority determines that the permit must be revised or revoked to assure compliance with the applicable requirements.

(2) Proceedings to reopen and issue a permit shall follow the same procedures as apply to initial permit issuance and shall affect only those parts of the permit for which cause to reopen exists. Such reopening shall be made as expeditiously as practicable.

(3) Reopenings under 40 CFR 70.7(f)(1) shall not be initiated before a notice of such intent is provided to the Part 70 source by the permitting authority at least 30 days in advance of the date that the permit is to be reopened, except that the permitting authority may provide a shorter time period in the case of an emergency.

[Rules 62-213.430(3) & (4), F.A.C.; and, 40 CFR 70.7(f)]

39. Insignificant Emissions Units or Pollutant-Emitting Activities.

(a) All requests for determination of insignificant emissions units or activities made pursuant to Rule 62-213.420(3)(n), F.A.C., shall be processed in conjunction with the permit, permit renewal or permit revision application submitted pursuant to Chapter 62-213, F.A.C. Insignificant emissions units or activities shall be approved by the Department consistent with the provisions of Rule 62-4.040(1)(b), F.A.C. Emissions units or activities which are added to a Title V source after issuance of a permit under Chapter 62-213, F.A.C., shall be incorporated into the permit at its next renewal, provided such emissions units or activities have been exempted from the requirement to obtain an air construction permit and also qualify as insignificant pursuant to Rule 62-213.430(6), F.A.C.

(b) An emissions unit or activity shall be considered insignificant if all of the following criteria are met:

1. Such unit or activity would be subject to no unit-specific applicable requirement;
2. Such unit or activity, in combination with other units or activities proposed as insignificant, would not cause the facility to exceed any major source threshold(s) as defined in Rule 62-213.420(3)(c)1., F.A.C., unless it is acknowledged in the permit application that such units or activities would cause the facility to exceed such threshold(s);
3. Such unit or activity would not emit or have the potential to emit:
 - a. 500 pounds per year or more of lead and lead compounds expressed as lead;
 - b. 1,000 pounds per year or more of any hazardous air pollutant;
 - c. 2,500 pounds per year or more of total hazardous air pollutants; or
 - d. 5.0 tons per year or more of any other regulated pollutant.

[Rule 62-213.430(6), F.A.C.]

40. Permit Duration. Permits for sources subject to the Federal Acid Rain Program shall be issued for terms of five years, provided that the initial Acid Rain Part may be issued for a term less than five years where necessary to coordinate the term of such part with the term of a Title V permit to be issued to the source. Operation permits for Title V sources may not be extended as provided in Rule 62-4.080(3), F.A.C., if such extension will result in a permit term greater than five years.

[Rule 62-213.440(1)(a), F.A.C.]

41. Monitoring Information. All records of monitoring information shall specify the date, place, and time of sampling or measurement and the operating conditions at the time of sampling or measurement, the date(s) analyses were performed, the company or entity that performed the analyses, the analytical techniques or methods used, and the results of such analyses.

[Rule 62-213.440(1)(b)2.a., F.A.C.]

42. Retention of Records. Retention of records of all monitoring data and support information shall be for a period of at least 5 years from the date of the monitoring sample, measurement, report, or application. Support information includes all calibration and maintenance records and all original strip-chart recordings for continuous monitoring instrumentation, and copies of all reports required by the permit.

[Rule 62-213.440(1)(b)2.b., F.A.C.]

43. Monitoring Reports. The permittee shall submit reports of any required monitoring at least every six (6) months. All instances of deviations from permit requirements must be clearly identified in such reports.

[Rule 62-213.440(1)(b)3.a., F.A.C.]

44. Deviation from Permit Requirements Reports. The permittee shall report in accordance with the requirements of Rules 62-210.700(6) and 62-4.130, F.A.C., deviations from permit requirements, including those attributable to upset conditions as defined in the permit. Reports shall include the probable cause of such deviations, and any corrective actions or preventive measures taken.

[Rule 62-213.440(1)(b)3.b., F.A.C.]

45. Reports. All reports shall be accompanied by a certification by a responsible official, pursuant to Rule 62-213.420(4), F.A.C.

[Rule 62-213.440(1)(b)3.c., F.A.C.]

46. If any portion of the final permit is invalidated, the remainder of the permit shall remain in effect.

[Rule 62-213.440(1)(d)1., F.A.C.]

47. It shall not be a defense for a permittee in an enforcement action that maintaining compliance with any permit condition would necessitate halting of or reduction of the source activity.

[Rule 62-213.440(1)(d)3., F.A.C.]

48. Any Title V source shall comply with all the terms and conditions of the existing permit until the Department has taken final action on any permit renewal or any requested permit revision, except as provided at Rule 62-213.412(2), F.A.C.

[Rule 62-213.440(1)(d)4., F.A.C.]

49. A situation arising from sudden and unforeseeable events beyond the control of the source which causes an exceedance of a technology-based emissions limitation because of unavoidable increases in emissions attributable to the situation and which requires immediate corrective action to restore normal operation, shall be an affirmative defense to an enforcement action in accordance with the provisions and requirements of 40 CFR 70.6(g)(2) and (3), hereby adopted and incorporated by reference.

[Rule 62-213.440(1)(d)5., F.A.C.]

50. Confidentiality Claims. Any permittee may claim confidentiality of any data or other information by complying with Rule 62-213.420(2), F.A.C. (also, see Condition No. 36.)

[Rule 62-213.440(1)(d)6., F.A.C.]

51. Statement of Compliance. (a)2. The permittee shall submit a Statement of Compliance with all terms and conditions of the permit that includes all the provisions of 40 CFR 70.6(c)(5)(iii), incorporated by reference at Rule 62-204.800, F.A.C., using DEP Form No. 62-213.900(7). Such statement shall be accompanied by a certification in accordance with Rule 62-213.420(4), F.A.C., for Title V requirements and with Rule 62-214.350, F.A.C., for Acid Rain requirements. Such statements shall be submitted (postmarked) to the Department and EPA:

a. Annually, within 60 days after the end of each calendar year during which the Title V permit was effective, or more frequently if specified by Rule 62-213.440(2), F.A.C., or by any other applicable requirement; and

b. Within 60 days after submittal of a written agreement for transfer of responsibility as required pursuant to 40 CFR 70.7(d)(1)(iv), adopted and incorporated by reference at Rule 62-204.800, F.A.C., or within 60 days after permanent shutdown of a facility permitted under Chapter 62-213, F.A.C.; provided that, in either such case, the reporting period shall be the portion of the calendar year the permit was effective up to the date of transfer of responsibility or permanent facility shutdown, as applicable.

3. In lieu of individually identifying all applicable requirements and specifying times of compliance with, non-compliance with, and deviation from each, the responsible official may use DEP Form No. 62-213.900(7) as such statement of compliance so long as the responsible official identifies all reportable deviations from and all instances of non-compliance with any applicable requirements and includes all information required by the federal regulation relating to each reportable deviation and instance of non-compliance.

APPENDIX TV-6, TITLE V CONDITIONS (version dated 06/23/06) (continued)

(b) The responsible official may treat compliance with all other applicable requirements as a surrogate for compliance with Rule 62-296.320(2), Objectionable Odor Prohibited.

[Rules 62-213.440(3)(a)2. & 3. and (b), F.A.C.]

52. Permit Shield. Except as provided in Chapter 62-213, F.A.C., compliance with the terms and conditions of a permit issued pursuant to Chapter 62-213, F.A.C., shall, as of the effective date of the permit, be deemed compliance with any applicable requirements in effect, provided that the source included such applicable requirements in the permit application. Nothing in Rule 62-213.460, F.A.C., or in any permit shall alter or affect the ability of EPA or the Department to deal with an emergency, the liability of an owner or operator of a source for any violation of applicable requirements prior to or at the time of permit issuance, or the requirements of the Federal Acid Rain Program.

[Rule 62-213.460, F.A.C.]

53. Forms and Instructions. The forms used by the Department in the Title V source operation program are adopted and incorporated by reference in Rule 62-213.900, F.A.C. The form is listed by rule number, which is also the form number, and with the subject, title, and effective date. Copies of forms may be obtained by writing to the Department of Environmental Protection, Division of Air Resource Management, 2600 Blair Stone Road, Tallahassee, Florida 32399-2400, or by contacting the appropriate permitting authority.

(1) Major Air Pollution Source Annual Emissions Fee Form. (Effective 01/03/2001)

(7) Statement of Compliance Form. (Effective 06/02/2002)

(8) Responsible Official Notification Form. (Effective 06/02/2002)

[Rule 62-213.900, F.A.C.: Forms (1), (7) and (8)]

Chapter 62-256, F.A.C.

54. **Not federally enforceable.** Open Burning. This permit does not authorize any open burning nor does it constitute any waiver of the requirements of Chapter 62-256, F.A.C. Source shall comply with Chapter 62-256, F.A.C., for any open burning at the source.

[Chapter 62-256, F.A.C.]

Chapter 62-281, F.A.C.

55. Refrigerant Requirements. Any facility having refrigeration equipment, including air conditioning equipment, which uses a Class I or II substance (listed at 40 CFR 82, Subpart A, Appendices A and B), and any facility which maintains, services, or repairs motor vehicles using a Class I or Class II substance as refrigerant must comply with all requirements of 40 CFR 82, Subparts B and F, and with Rule 62-281.100, F.A.C. Those requirements include the following restrictions:

(1) Any facility having any refrigeration equipment normally containing 50 (fifty) pounds of refrigerant, or more, must keep servicing records documenting the date and type of all service and the quantity of any refrigerant added pursuant to 40 CFR 82.166;

(2) No person repairing or servicing a motor vehicle may perform any service on a motor vehicle air conditioner (MVAC) involving the refrigerant for such air conditioner unless the person has been properly trained and certified as provided at 40 CFR 82.34 and 40 CFR 82.40, and properly uses equipment approved pursuant to 40 CFR 82.36 and 40 CFR 82.38, and complies with 40 CFR 82.42;

(3) No person may sell or distribute, or offer for sale or distribution, any substance listed as a Class I or Class II substance at 40 CFR 82, Subpart A, Appendices A and B, except in compliance with Rule 62-281.100, F.A.C., and 40 CFR 82.34(b), 40 CFR 82.42, and/or 40 CFR 82.166;

(4) No person maintaining, servicing, repairing, or disposing of appliances may knowingly vent or otherwise release into the atmosphere any Class I or Class II substance used as a refrigerant in such equipment and no other person may open appliances (except MVACs as defined at 40 CFR 82.152) for service, maintenance or repair unless the person has been properly trained and certified pursuant to 40 CFR 82.161 and unless the person uses equipment certified for that type of appliance pursuant to 40 CFR 82.158 and unless the person observes the practices set forth at 40 CFR 82.156 and 40 CFR 82.166;

(5) No person may dispose of appliances (except small appliances, as defined at 40 CFR 82.152) without using equipment certified for that type of appliance pursuant to 40 CFR 82.158 and without observing the practices set forth at 40 CFR 82.156 and 40 CFR 82.166;

(6) No person may recover refrigerant from small appliances, MVACs and MVAC-like appliances (as defined at 40 CFR 82.152), except in compliance with the requirements of 40 CFR 82, Subpart F.

[40 CFR 82; and, Chapter 62-281, F.A.C. (**Chapter 62-281, F.A.C., is not federally enforceable**)]

Chapter 62-296, F.A.C.

56. Industrial, Commercial, and Municipal Open Burning Prohibited. Open burning in connection with industrial, commercial, or municipal operations is prohibited, except when:

- (a) Open burning is determined by the Department to be the only feasible method of operation and is authorized by an air permit issued pursuant to Chapter 62-210 or 62-213, F.A.C.; or
- (b) An emergency exists which requires immediate action to protect human health and safety; or
- (c) A county or municipality would use a portable air curtain incinerator to burn yard trash generated by a hurricane, tornado, fire or other disaster and the air curtain incinerator would otherwise be operated in accordance with the permitting exemption criteria of Rule 62-210.300(3), F.A.C.

[Rule 62-296.320(3), F.A.C.]

57. Unconfined Emissions of Particulate Matter.

(4)(c)1. No person shall cause, let, permit, suffer or allow the emissions of unconfined particulate matter from any activity, including vehicular movement; transportation of materials; construction; alteration; demolition or wrecking; or industrially related activities such as loading, unloading, storing or handling; without taking reasonable precautions to prevent such emissions.

3. Reasonable precautions include the following:

- a. Paving and maintenance of roads, parking areas and yards.
- b. Application of water or chemicals to control emissions from such activities as demolition of buildings, grading roads, construction, and land clearing.
- c. Application of asphalt, water, oil, chemicals or other dust suppressants to unpaved roads, yards, open stock piles and similar activities.
- d. Removal of particulate matter from roads and other paved areas under the control of the owner or operator of the facility to prevent reentrainment, and from buildings or work areas to prevent particulate from becoming airborne.
- e. Landscaping or planting of vegetation.
- f. Use of hoods, fans, filters, and similar equipment to contain, capture and/or vent particulate matter.
- g. Confining abrasive blasting where possible.
- h. Enclosure or covering of conveyor systems.

4. In determining what constitutes reasonable precautions for a particular facility, the Department shall consider the cost of the control technique or work practice, the environmental impacts of the technique or practice, and the degree of reduction of emissions expected from a particular technique or practice.

[Rules 62-296.320(4)(c)1., 3., & 4. F.A.C.]

[electronic file name: tv-6.doc]

APPENDIX 10.5
MONITORING PROGRAMS

APPENDIX 10.5-1

**CALIBRATION CERTIFICATES FOR NOISE MONITORING
EQUIPMENT**

Certificate of Calibration and Conformance

Certificate Number 2006-79080

Instrument Model 824, Serial Number 0366, was calibrated on 14APR2006. The instrument meets factory specifications per Procedure D0001.8046, IEC 61672-1:2002 Class 1; IEC 60651-2001, 60804-2000 and ANSI S1.4-1983 Type 1 1/3, 1/1 Oct. Filters; S1.11-1986 Type 1C; IEC61260-am1-2001 Class 1.

Instrument found to be in calibration as received: NO

Date Calibrated: 14APR2006

Calibration due: 14APR2007

Calibration Standards Used

MANUFACTURER	MODEL	SERIAL NUMBER	INTERVAL	CAL. DUE	TRACEABILITY NO.
Larson Davis	LDSigGn/2209	0248 / 0107	12 Months	12JAN2007	2006-75919

Reference Standards are traceable to the National Institute of Standards and Technology (NIST)

Calibration Environmental Conditions

Temperature: 25 ° Centigrade

Relative Humidity: 26 %

Affirmations

This Certificate attests that this instrument has been calibrated under the stated conditions with Measurement and Test Equipment (M&TE) Standards traceable to the U.S. National Institute of Standards and Technology (NIST). All of the Measurement Standards have been calibrated to their manufacturers' specified accuracy / uncertainty. Evidence of traceability and accuracy is on file at Corporate Headquarters. An acceptable accuracy ratio between the Standard(s) and the item calibrated has been maintained. This instrument meets or exceeds the manufacturer's published specification unless noted.

This calibration complies with the requirements of ISO 17025 and ANSI Z540. The collective uncertainty of the Measurement Standard used does not exceed 25% of the applicable tolerance for each characteristic calibrated unless otherwise noted.

The results documented in this certificate relate only to the item(s) calibrated or tested. A one year calibration is recommended, however calibration interval assignment and adjustment are the responsibility of the end user. This certificate may not be reproduced, except in full, without the written approval of the issuer.

See "As received" data.
Tested with PRM902 S/N 0699

Signed: 
Technician: Nick Rasmussen

Larson Davis



A PCB GROUP CO.

Larson Davis, Inc. is an ISO 9001-2000 Registered Company

1681 West 820 North • Provo, UT 84601 U.S.A. • 801.375.0177 • Fax: 801.375.0182 • www.larsondavis.com

Certificate of Calibration and Conformance

Certificate Number 2006-78969

Microphone Model 2560, Serial Number 2814, was calibrated on 12APR2006. The microphone meets current factory specifications per Test Procedure D0001.8167.

Instrument found to be in calibration as received: YES

Date Calibrated: 12APR2006

Calibration due: 12APR2007

Calibration Standards Used

MANUFACTURER	MODEL	SERIAL NUMBER	INTERVAL	CAL. DUE	TRACEABILITY NO.
Larson Davis	CAL250	0102	12 Months	26MAY2006	2005-69011
Larson Davis	2900	0575	12 Months	28JUN2006	2005-69833
Larson Davis	2559	3034LE	12 Months	31AUG2006	2005-71985
Larson Davis	PRM902	0529	12 Months	01SEP2006	2005-71766
Larson Davis	PRM902	0528	12 Months	01SEP2006	2005-71734
Larson Davis	MTS1000 / 2201	1000 / 0101	12 Months	08SEP2006	2005-0908-2
Larson Davis	PRM915	0102	12 Months	07NOV2006	2005-73818
Larson Davis	PRM902	0206	12 Months	07NOV2006	2005-73826
Larson Davis	PRM916	0102	12 Months	07NOV2006	2005-73819
Hewlett Packard	34401A	3146A62099	12 Months	10NOV2006	285335
Larson Davis	2559	3026	12 Months	08FEB2007	13866-1

Reference Standards are traceable to the National Institute of Standards and Technology (NIST)

Calibration Environmental Conditions

Environmental test conditions as printed on microphone calibration chart.

Affirmations

This Certificate attests that this instrument has been calibrated under the stated conditions with Measurement and Test Equipment (M&TE) Standards traceable to the U.S. National Institute of Standards and Technology (NIST). All of the Measurement Standards have been calibrated to their manufacturers' specified accuracy / uncertainty. Evidence of traceability and accuracy is on file at Corporate Headquarters. An acceptable accuracy ratio between the Standard(s) and the item calibrated has been maintained. This instrument meets or exceeds the manufacturer's published specification unless noted.

This calibration complies with the requirements of ISO 17025 and ANSI Z540. The collective uncertainty of the Measurement Standard used does not exceed 25% of the applicable tolerance for each characteristic calibrated unless otherwise noted.

The results documented in this certificate relate only to the item(s) calibrated or tested. A one year calibration is recommended, however calibration interval assignment and adjustment are the responsibility of the end user. This certificate may not be reproduced, except in full, without the written approval of the issuer.

"As Received" data is the same as shipped data.

Signed:

Technician: Scott Montgomery

Larson Davis



A PCB GROUP CO.

Larson Davis, Inc. is an ISO 9001-2000 Registered Company

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APPENDIX 10.6
TRAFFIC STUDY

TRAFFIC IMPACT STUDY

PROGRESS ENERGY CR 3 UPRATE PROJECT CRYSTAL RIVER ENERGY COMPLEX Citrus County, Florida



400 North Tampa Street
Suite 1140
Tampa, FL 33602
Ph: 813-386-3630
Fax: 813-386-3635

Prepared For:
Progress Energy

June 7, 2007

GOLAS00-07219

TRAFFIC IMPACT STUDY

PROGRESS ENERGY CR 3 UPRATE PROJECT CRYSTAL RIVER ENERGY COMPLEX Citrus County, Florida



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TRAFFIC IMPACT STUDY
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CR3 UPRATE PROJECT
CRYSTAL RIVER ENERGY COMPLEX
Citrus County, Florida

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INTRODUCTION

Trans Associates (TA) has completed a traffic impact study for the proposed capacity expansion of the existing Unit 3 at Crystal River Energy Complex (CREC) located on West Power Line Road approximately 3.7 miles west of US-19/US -98 in Citrus County, Florida. The CR3 Uprate project represents a modernization of the facility to allow it to produce additional electricity. The purpose of this study is to identify the potential traffic impacts from the construction and operation of the proposed expansion and to identify any necessary mitigation measures that will provide satisfactory access to the site while maintaining acceptable traffic operations within the study area.

The following sections of this report detail with the methodology, project description, data collection of existing conditions, site traffic generation and distribution, existing and projected traffic volumes, traffic analysis, and conclusions/recommendations.

METHODOLOGY

The Progress Energy CR3 Uprate Project traffic impact study is prepared consistent with the Florida Department of Transportation study requirements and the Citrus County Traffic Study Guidelines towards the proposed full build-out year of 2013. The traffic impact study encompasses the following study elements:

- Trip Generation
- Transportation Study Impact Area
- Existing Conditions
- Background/Vested Traffic Projections
- Project Traffic Assignment
- Total Traffic Volumes and Conditions
- Report Documentation

PROJECT DESCRIPTION/DATA COLLECTION/EXISTING CONDITIONS

Project Description

As shown in Figure 1, the site is located on West Power Line Street approximately 3.7 miles west of US-19/US-98 in Citrus County, Florida. The Crystal River Energy Center (CREC) site currently has 1,400 employees and 125 daily truck trips. The numbers of employees, construction crews, and truck traffic is expected to vary between 2007 and 2011. At the conclusion of the uprate project in 2011, no additional employees are anticipated.

Table 1 summarizes the anticipated variation in employment and truck traffic between 2007 – 2012. In 2009, 650 temporary employees are anticipated for the construction of the CR3 project along with 600 temporary employees required for construction of the Crystal River Clean Air Project (CRCA) for Units 4 and 5 at the site, and 800 required for construction associated with the CR3 Steam Generator Replacement Project during only the 3rd and 4th quarters. An additional 200 daily construction truck trips are also anticipated during the 2009 year. Therefore, for approximately between one-two months in 2009, the Crystal River Energy Complex (CREC) may have a combined total of 2,050 employees, 1,400 construction employees, 125 daily truck trips, and 200 daily construction truck trips.

After completion of the uprate project, the CREC will have a total of 1,400 permanent employees and 285 daily truck trips. The additional 160 truck trips are projected as part of the CR4 and 5 Operations (which is already approved). These truck trips, however, are not part of the new CR3 uprate project trips and are considered background traffic for this analysis.

Traffic analyses have been performed for both the 2009 and the 2012 scenarios. The 2009 year represents the highest volume for traffic from the CREC, and the build-out (operational) year is 2012.

PLOTTED: 5/5/2007



FILE NAME: 5/5/2007

 SCALE: N.T.S.	 Transportation Solutions for Today and Tomorrow Park Tower Suite 1140 / 400 North Tampa Street Tampa, Florida 33602 / (813) 386-3630	PROJECT NO. GOLAS00-07199	FIGURE 1 D.B. <u>N.A.S.</u> C.B. <u>N.A.S.</u> REV. _____
		PROJECT: Progress Energy Uprate	
		TITLE: Proposed Site Location	

[Home use only]

Table 1: CREC Employee Data (Permanent and Temporary)

	2007	2008	2009	2010	2011	2012
Existing project Information						
CREC	1,400	1,400	1,400	1,400	1,400	1,400
CR3 Refueling Outages ¹	800	--	800	--	800	--
CRCA Construction ²	600	600	600	--	--	--
CR 4 and 5 Operations ³	125	125	125	285	285	285
SGRP ⁴	--	--	800	--	--	--
CR3 Uprate Project Information						
Uprate Project	305	400	650	405	580	--
Uprate Project (construction trucks)	--	--	200	200	200	--

1. Employees anticipated onsite during 4Q only.
2. Construction employees associated with Crystal River Clean Air (CRCA) Project (Icon, 2006).
3. Truck trips associated with operation of the additional pollution control equipment on CR 4 and 5.
4. Construction employees associated with CR3 Steam Generator Replacement Project during 3 and 4 Q only.
5. Construction trucks do not operate/arrive during outage periods.

West Power Line Road is a two lane east-west roadway and provides the only public roadway access to the site. Thus, the traffic on West Power Line Road comes primarily to/from the CREC. Therefore, the site provides a good opportunity to obtain a trip generation rate for the existing CREC.

Data Collection

The intersection of US-19/US-98 & West Power Line Road has been studied as part of this traffic impact study in accordance with the Florida Department of Transportation requirements. Moreover, the US-19/US-98 roadway segment north and south of the US-19/US-98 & West Power Line Road intersection has also been studied for project impact.

A.M. as well as P.M. Peak Hour analysis has been conducted as part of the traffic impact study. Manual turning movement counts were performed at the existing study intersection for a three hour duration during a typical weekday between the hours of 6:00 – 9:00 A.M. and 3:00 - 6:00 P.M.

The raw turning movement counts were then multiplied by the FDOT seasonal adjustment factor. The seasonal adjustment factor as obtained from 2005 Florida Traffic Information System (FTIS) CD for the week when the count was performed. The intersection peak hour (four consecutive 15-minute periods comprising the highest volume) as determined by the traffic counts occurred between 6:15 – 7:15 in the A.M. and between 4:45 – 5:45 in the P.M. The 2007 existing peak hour traffic volumes are presented in Figure 2 for the A.M. and P.M. peak hours. The manual turning movement counts are included in Appendix A.

Existing Conditions

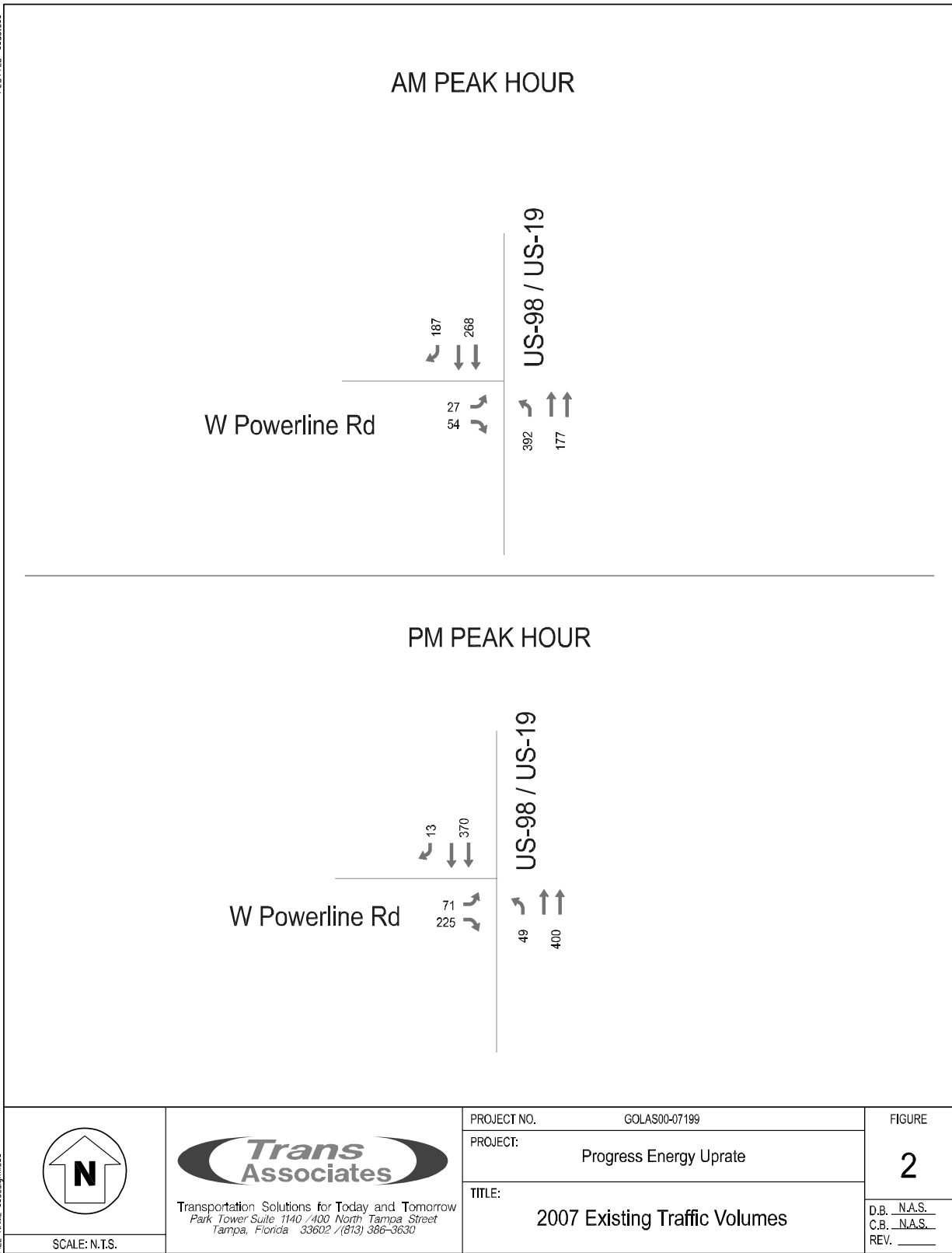
A field reconnaissance of the study area was conducted to obtain information on lane configurations, posted speed limits, traffic signal timings, and other pertinent features. The following provides a brief description of the study area roadways.

US-19 / US-98 is a state maintained, northbound-southbound principal rural arterial. Within the study area the roadway has a posted speed limit of 60 miles per hour (mph). At the intersection with West Power Line Road, the US 19/US-98 northbound approach consists of one exclusive left turn, and two through lanes. The southbound approach consists of two through lanes and one dedicated right turn lane. The traffic signal control at the intersection with West Power Line Road is actuated-uncoordinated with a variable cycle length.

West Power Line Road is an eastbound-westbound roadway and is used for access to and from the existing power plant. Within the study area West Power Line Road has a 55 mph posted speed limit. At the intersection with US-19/US-98, the West Power Line Road eastbound approach consists of one left turn and one right lane. The traffic signal control at the intersection with US-19/US-98 is actuated-uncoordinated with a variable cycle length.

It was observed during data collection that approximately half of the eastbound right turning vehicles made a right turn on red as large gaps in southbound traffic on US-19/US-98 are available. The intersection is designed as a three leg approach intersection.

PLOTTED: 5/5/07



[1]

SITE TRAFFIC GENERATION AND DISTRIBUTION

Vehicle Trip Generation

As per the *Trip Generation, 7th Edition*, published by the Institute of Transportation Engineers (ITE), none of the available land use categories accurately describe the characteristics of an energy plant. Thus, trip generation rates based on the existing traffic and number of employees were used for the current analysis. As presented in the "Progress Energy Crystal River Energy Complex: Traffic Access Analysis Clean Air Project" prepared in April 2006, the site currently has 1,400 employees. The total peak hour passenger car trips obtained from field data collection were divided by the total number of employees (1,400) to obtain the passenger car trip generation rates which were used to forecast the total number of passenger car trips resulting from the proposed expansion. In addition, the total peak hour numbers of truck trips obtained from field data collection were divided by the total number of trucks (125) to obtain the truck trip generation rates which were used to forecast the total number of truck trips resulting from the proposed increase in truck activity. A summary of the existing and future trip generation calculations are presented in Table 2 below:

Table 2: Trip Generation Summary

TIME PERIOD	Existing Passenger Car Trips (1,400 employees)		Trip Rates (trips/employee)		2009 Additional CR3 Project Generated Trips (650 additional temporary employees + 1,400 construction employees compared to existing conditions)		2012 Additional CR3 Project Generated Trips (as compared to existing conditions)	
	Entering	Exiting	Entering	Exiting	Entering	Exiting	Entering	Exiting
A.M. PEAK HOUR	569	75	0.406	0.054	832	111	0	0
P.M. PEAK HOUR	58	291	0.041	0.208	84	426	0	0
TIME PERIOD	Existing Truck Trips (125 trucks)		Trip Rates (trips/truck)		2009 Additional CR3 Project Generated Trips (200 additional construction truck trips)		2012 Additional Project Generated Background Trips for CR 4 & 5 (160 additional truck trips)*	
	Entering	Exiting	Entering	Exiting	Entering	Exiting	Entering	Exiting
A.M. PEAK HOUR	10	6	0.080	0.048	16	10	13	8
P.M. PEAK HOUR	4	5	0.032	0.040	6	8	5	6
TOTAL A.M. PEAK HOUR	579	81	--	--	848	121	13	8
TOTAL P.M. PEAK HOUR	62	296	--	--	90	434	5	6

*Note: the 160 additional truck trips for CR4 & 5 were included in the 2012 background traffic volumes. These trips are not associated with the CR3 Uprate project.

After completion of the uprate project, the CREC will have a total of 1,400 permanent employees and 285 daily truck trips. The additional 160 truck trips are projected as part of the CR4 and 5 Operations (which is already approved). These truck trips, however, are not included in the new CR3 uprate project trips and are considered background traffic for this analysis. Therefore, for the 2012 conditions, no new external site-generated trips are projected as compared to the 2007 existing conditions.

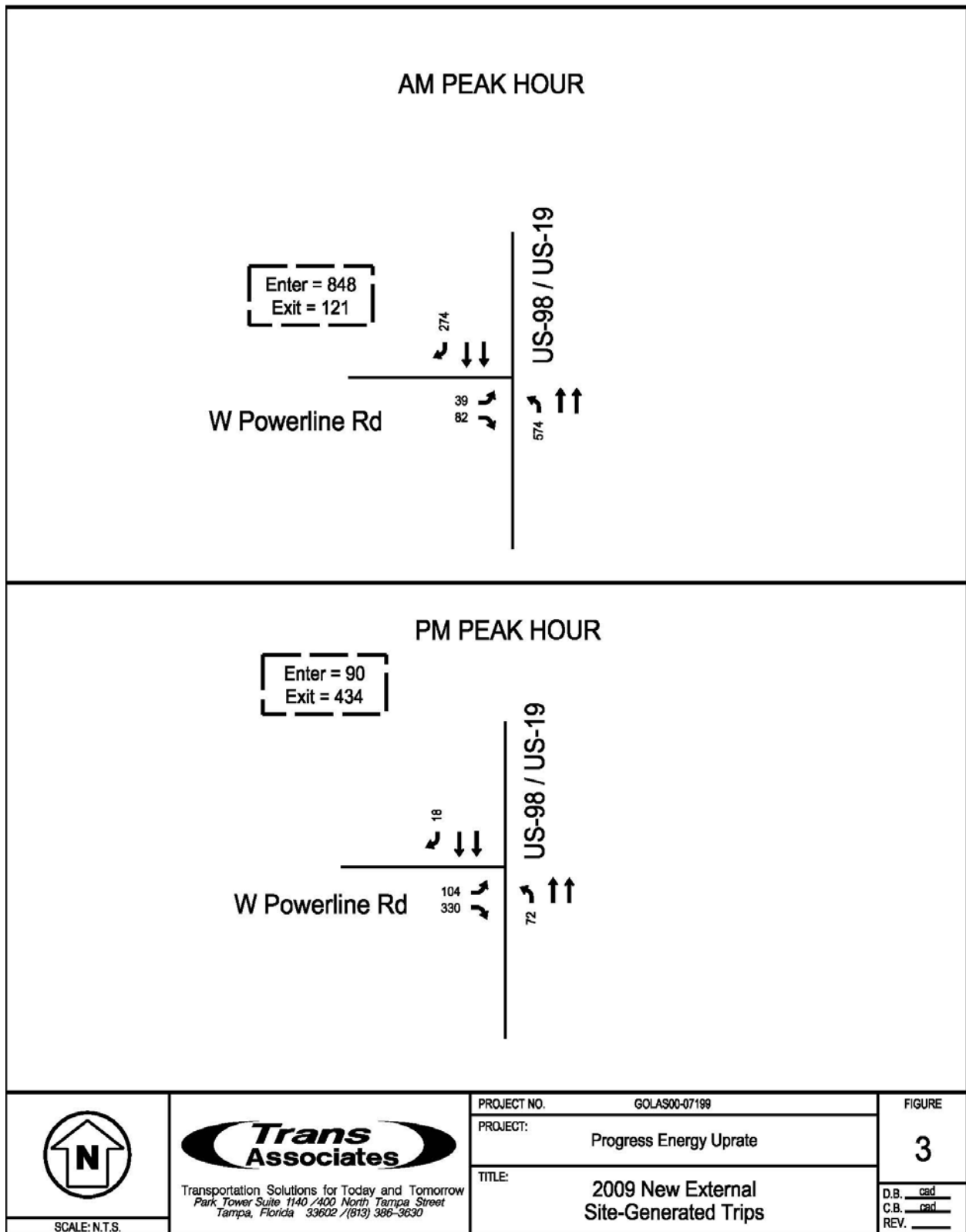
Site Traffic Distribution

The arrival/departure distribution of the project site traffic was based on the existing traffic volumes of the study area. The percentage of new project traffic arriving/departing has been distributed as presented in Table 3 below:

Table 3: Total Project Traffic Arrival / Departure Pattern

To/From	A.M. Peak Hour		P.M. Peak Hour	
	Arriving	Departing	Arriving	Departing
South on US-19/US-98	67.7%	66.7%	79.0%	76.0%
North on US-19/US-98	32.3%	33.3%	21.0%	24.0%
Total	100.0%	100.0%	100.0%	100.0%

The net external site generated trips are presented in Figure 3.



PROJECTED TRAFFIC VOLUMES

Traffic volumes were projected for the 2012 full build-out year and also during the 2009 when additional construction traffic is present. Existing 2007 traffic volumes were increased using a linear 3.1 percent annual growth rate, which was calculated based upon the previous five years (2002 – 2006) annual average daily traffic (AADT) volumes for the US-19/US-98. Data to identify the existing 2006 AADT came from the FDOT Central Office while historical AADT's were obtained from the most recent edition of the Florida DOT Florida Traffic Information (FTI) CD for counter #0250 located at SR55/US19, North of CR488/Dunnellon Rd in Citrus County. Background growth rate calculations are included in Appendix B.

2009 No Build Traffic Volumes

The 2009 no build (without project traffic) traffic volumes, shown in Figure 4, were derived by applying the aforementioned growth rate of 3.1% per year compounded to the 2007 existing traffic volumes (Figure 2).

2012 No Build Traffic Volumes

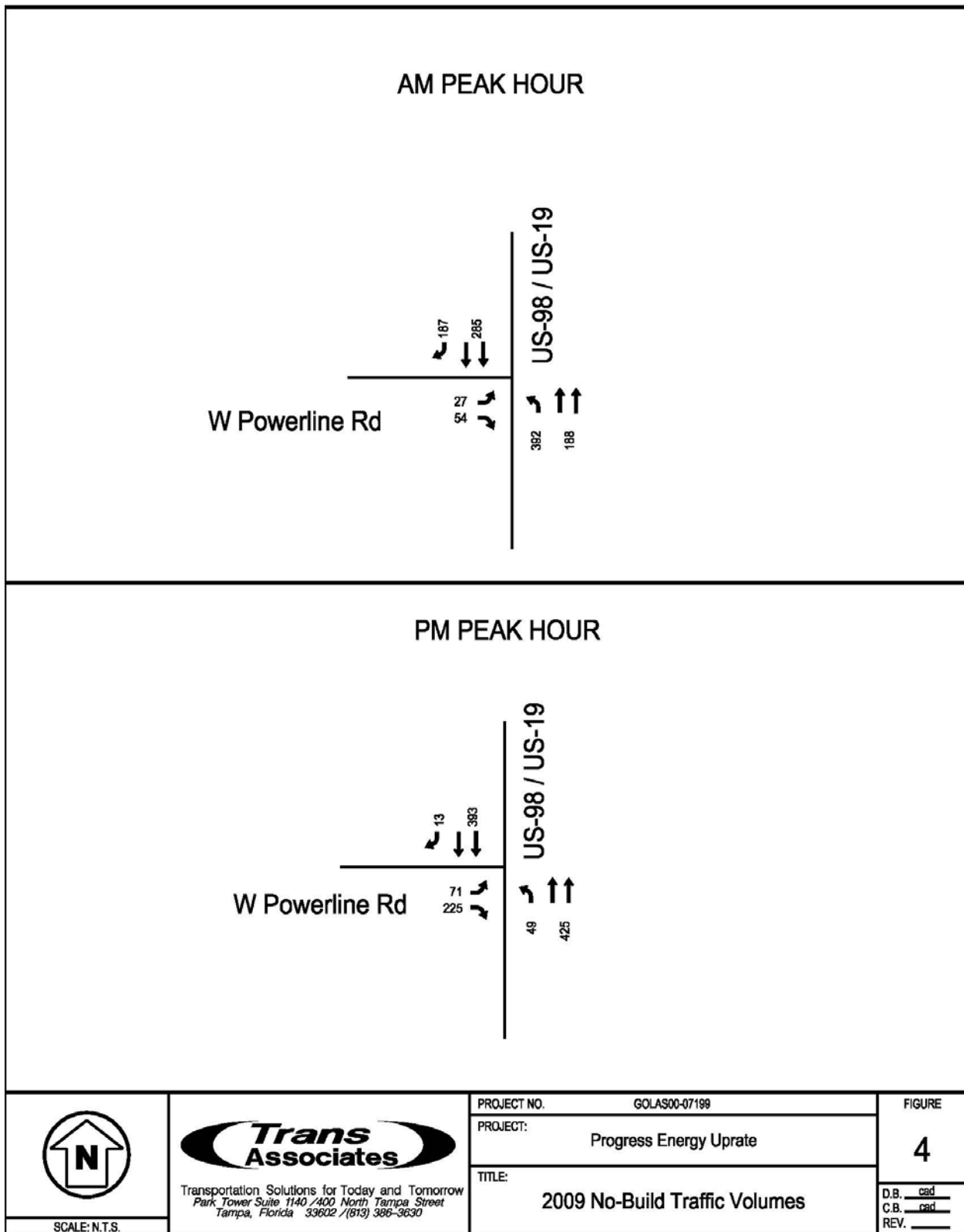
The 2012 no build (without project traffic) traffic volumes, shown in Figure 5, were derived by applying the aforementioned growth rate of 3.1% per year compounded to the 2007 existing traffic volumes (Figure 2).

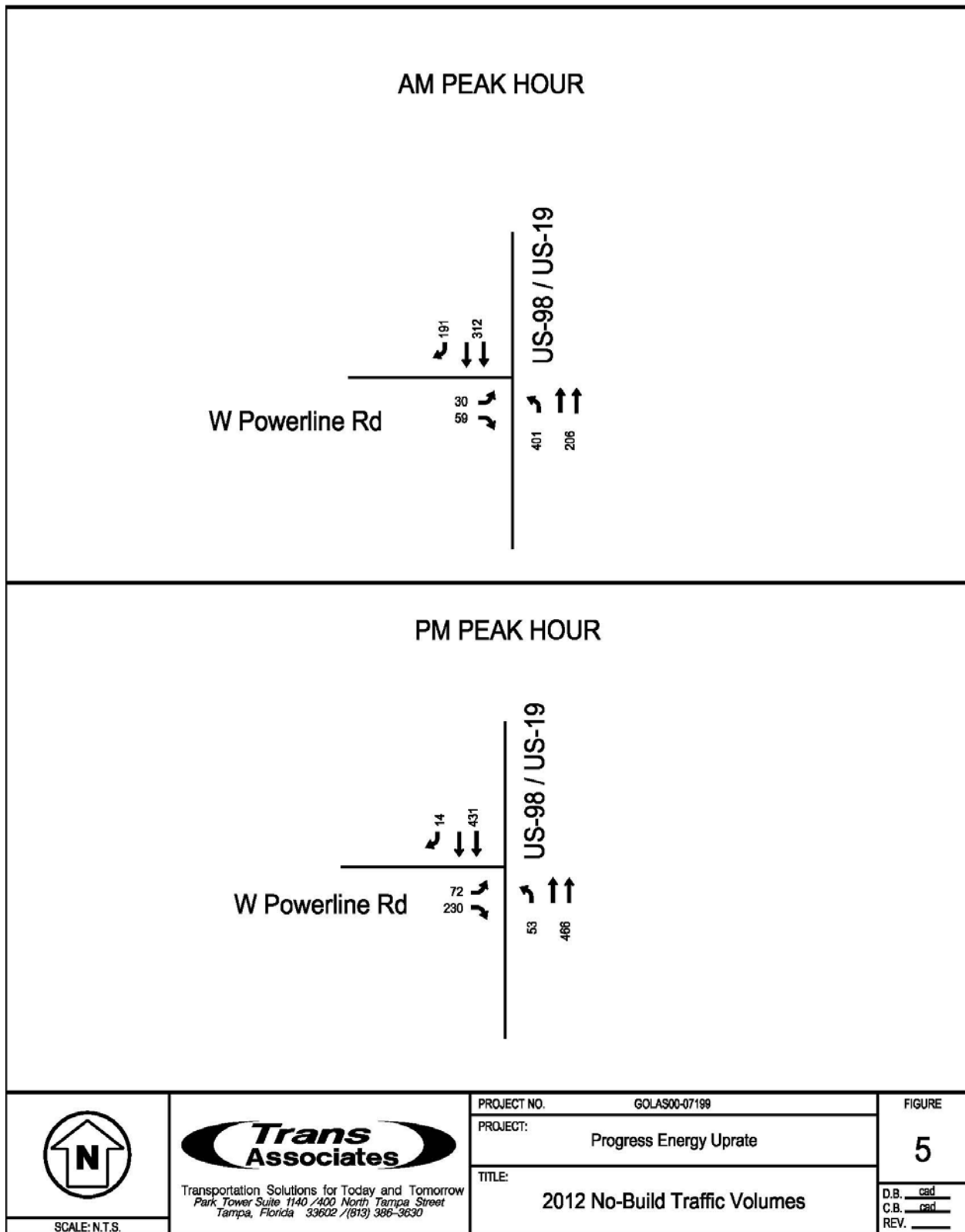
2009 Build Traffic Volumes

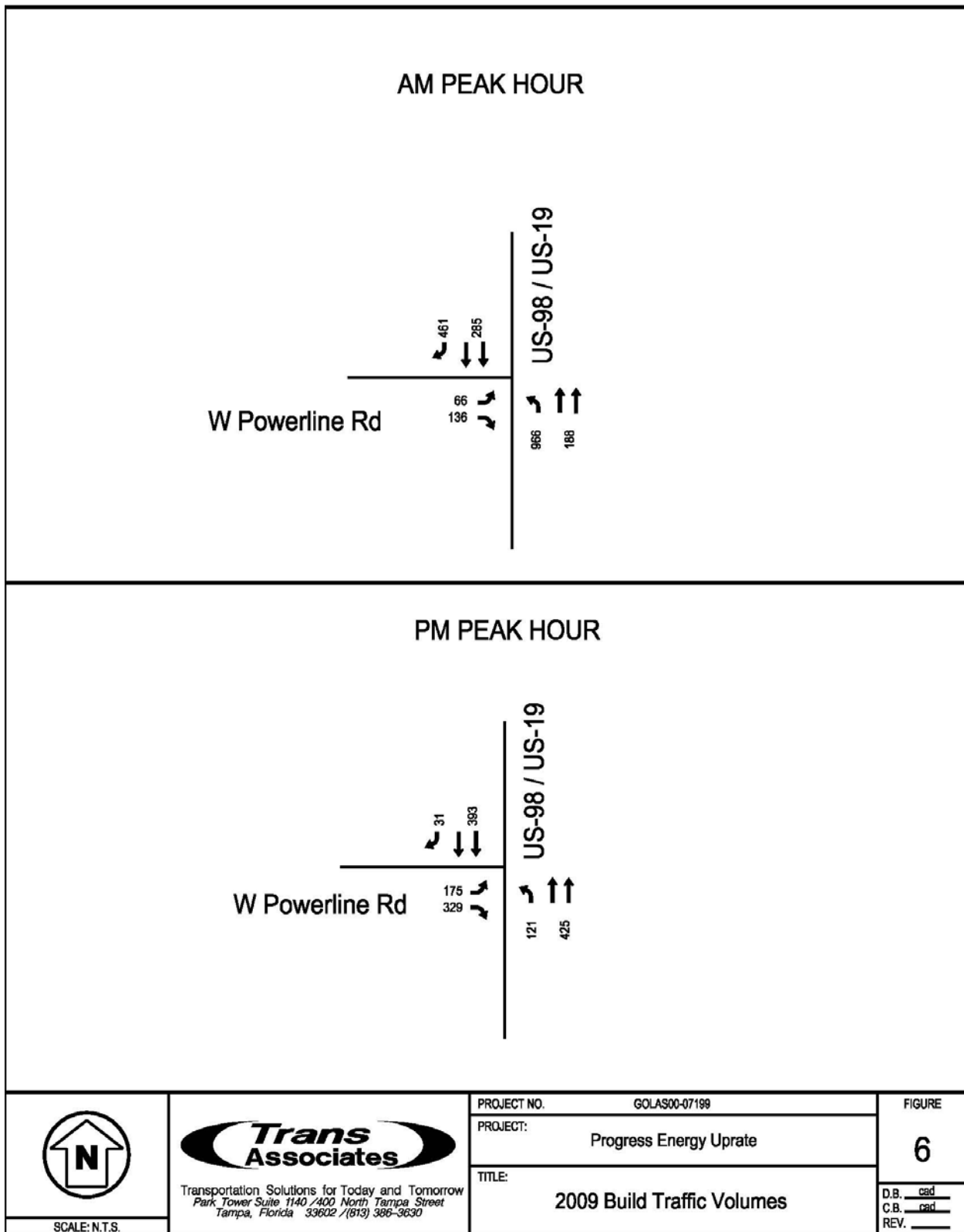
The 2009 build (with project traffic) traffic volumes, shown in Figure 6, were derived by adding the Progress Energy Uprate project generates trips (Figure 3) to the 2009 no build traffic volumes (Figure 4).

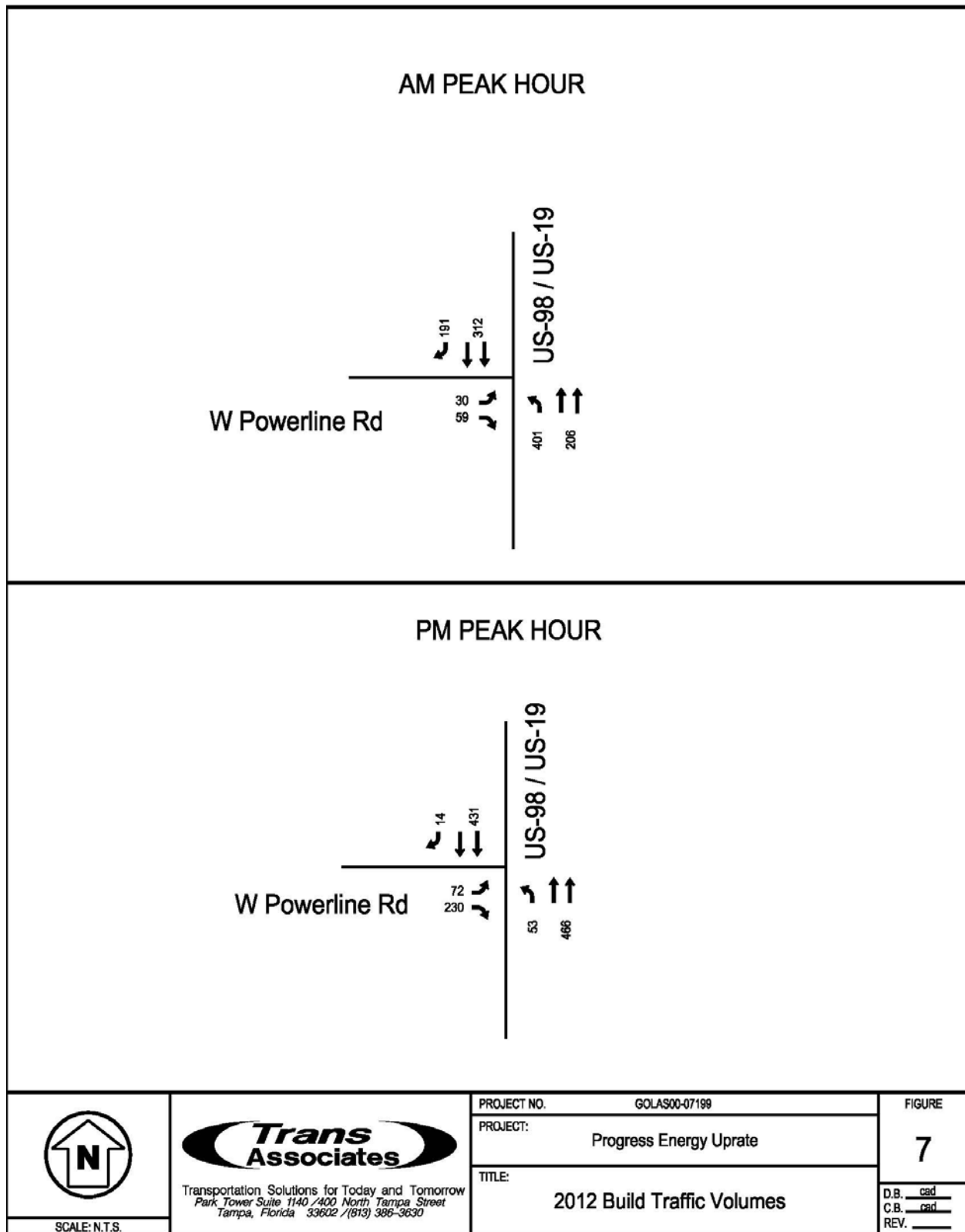
2012 Build Traffic Volumes

The 2012 build (with project traffic) traffic volumes, shown in Figure 7, result in the same traffic volumes as the 2012 No Build traffic volumes. This is due to the fact that after completion of the CR3 project, all temporary employees and construction employees will be gone, leaving only the original 1,400 permanent employees.









TRAFFIC ANALYSIS

The analyses performed included a capacity analysis of the study intersections, roadway capacity analysis, and turn lane length calculations at the US-19/US-98 & West Power Line Road intersection.

Intersection Capacity Analysis

Intersection capacity analyses were performed for the following three conditions:

- 2007 existing conditions
- 2009 no build conditions without project traffic
- 2012 no build conditions without project traffic
- 2009 build conditions with project traffic
- 2012 build conditions with project traffic

Levels of Service (LOS) were determined at the study intersections using the methodologies contained in the 2000 Highway Capacity Manual and the supporting Synchro Traffic Signal Coordination Software version 7. LOS A through F are determined as a ranking system for the operations with LOS A representing short delays and LOS F representing long delays.

Table 4 summarizes the A.M. and P.M. peak hour LOS for the study intersection for each of the study conditions.

2007 Existing Conditions - Existing intersection geometry, traffic volumes (Figure 3), and signal timings (without optimization) were used for this analysis. The intersection is found to currently operate at LOS of B during the A.M. peak hour and at LOS A during the P.M. peak hour. Moreover, all the movements are observed to operate at LOS D or better in both analysis periods. The LOS for each scenario is presented in Table 4. Capacity analysis printouts for the 2007 existing condition are included in Appendix C.

2009 No Build Conditions Without Proposed CR3 Uprate - Existing intersection geometry, optimized signal timings, and the forecasted traffic volumes from Figure 4 were used for this analysis. For this future scenario, a southbound right turn overlap phase that occurs during the eastbound phase was added to take advantage of the existing southbound exclusive right turn lane. This can allow the intersection to operate with even greater efficiency. As determined by the analyses performed, the intersection is projected to operate at LOS B during the A.M. peak hour and at LOS of A during the P.M. peak hour. Moreover, all the movements are observed to operate at LOS D or better in both analysis periods. The LOS for the 2009 no build conditions without the proposed project expansion are presented in Table 4. Capacity analysis printouts for the 2009 no build conditions are included in Appendix C.

2012 No Build Conditions Without Proposed CR3 Uprate - Existing intersection geometry, optimized signal timings, and the forecasted traffic volumes from Figure 5 were used for this analysis. The additional 160 truck trips projected as part of the CR4 and 5 Operations (which is already approved) were included in the 2012 No Build scenario traffic volumes since they are not part of the CR3 Uprate. For this future scenario, a southbound right turn overlap phase that occurs during the eastbound phase was added to take advantage of the existing southbound exclusive right turn lane. This can allow the intersection to operate with even greater efficiency. As determined by the analyses performed, the intersection is projected to operate at LOS B during the A.M. peak hour and at LOS A

during the P.M. peak hour. Moreover, all the movements are observed to operate at LOS D or better in both analysis periods. The LOS for the 2012 no build conditions without the proposed project expansion are presented in Table 4. Capacity analysis printouts for the 2012 no build conditions are included in Appendix C.

2009 Build Conditions With Proposed CR3 Uprate – This condition represents the greatest demand at the signalized intersection, but also represents a temporary condition due to construction. 600 construction employees as part of the Crystal River Clean Air Project will be finishing up their work during this year. In addition, 800 construction employees associated with the CR3 Steam Generator Replacement Project will occur only during the 3rd and 4th quarters of 2009. These conditions are expected for a one-two month duration in 2009. Existing intersection geometry, optimized signal timings, and forecasted traffic volumes from Figure 6 were used for this analysis. For this future scenario, a southbound right turn overlap phase that occurs during the eastbound phase was added to take advantage of the existing southbound exclusive right turn lane. This will allow the intersection to operate with greater efficiency. As determined by the analyses performed, the intersection is projected to operate at LOS D during the A.M. peak hour and at LOS B during the P.M. peak hour. Moreover, all the movements are observed to operate at LOS E or better during the A.M. peak hour and at LOS D or better for the P.M. peak hour. Capacity analysis results are summarized in Table 4. Detailed Synchro capacity analysis results for 2009 build conditions are provided in Appendix C.

2012 Build Conditions With Proposed CR3 Uprate – This condition represents the total build-out condition. Existing intersection geometry, optimized signal timings, and forecasted traffic volumes from Figure 7 were used for this analysis. After completion of the uprate project, the CREC will have a total of 1,400 permanent employees and 285 daily truck trips. The additional 160 truck trips are projected as part of the CR4 and 5 Operations (which is already approved). These truck trips, however, are not included in the new CR3 uprate project trips and are considered background traffic (2012 No Build) for this analysis. Therefore, for the 2012 conditions, no new external site-generated trips are projected as compared to the 2007 existing conditions. For this future scenario, a southbound right turn overlap phase that occurs during the eastbound phase was added to take advantage of the existing southbound exclusive right turn lane. This will allow the intersection to operate with greater efficiency. As determined by the analyses performed, the intersection is projected to operate at LOS C during the A.M. peak hour and at LOS B during the P.M. peak hour. Moreover, all the movements are observed to operate at LOS D or better in both analysis periods. Capacity analysis results are summarized in Table 4. Detailed Synchro capacity analysis results for 2012 build conditions are provided in Appendix C.

Table 4: Intersection Capacity Analysis Summary

Intersection	Time Period	Existing 2007		No-Build 2009		Build 2009		No-Build 2012		Build 2012	
		LOS	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)
US-19 / US-98 & West Power Line Road	A.M. Peak Hour	B	19.8	B	20.0	D	40.7	B	19.9	C	20.4
	P.M. Peak Hour	A	8.4	A	8.5	B	11.7	A	8.7	B	10.0

Roadway Capacity Analysis

The identification of the peak hour site traffic impact to the study roadway network was completed following the LOS D capacity methodologies presented in Table 4-6 of the Florida Department of Transportation 2002 Q/LOS Manual. Trips generated by the project in the A.M. peak hour are expected to be more than the P.M. Peak Hour. Thus, the roadway capacity analysis has been based on the A.M. peak hour Trips. In the future 2009 build scenario the Progress Energy CR3 Uprate project is anticipated to generate a total of 969 temporary trips to the roadway network in the A.M. peak hour. In the future 2012 full build-out scenario, the Progress Energy CR3 Uprate project is anticipated to be completed with no additional employees. Results of Progress Energy Uprate total project build-out impact on the study network is presented in Table 5.

Table 5: Roadway Capacity Analysis Summary

Road Name	From/To	Lanes	Peak Hour Service Volume LOS D	2009 Peak Hour Project Volume	Percent Impact	2012 Peak Hour Project Volume	Percent Impact
US-19/US-98	South of West Power Line Road	4D	5,140	656	12.76%	0	0.00 %
	North of West Power Line Road	4D	5,140	313	6.09%	0	0.00%
West Power Line Road	West of US-19/US-98	2U	1,190	969	81.4%	0	0.00%

(1) Level of Service D Capacity obtained from Table 4-6 of the Florida Department of Transportation 2002 Q/LOS Manual.

(2) 2009 represents a temporary condition expected to last one-two months.

According to the State of Florida Department of Transportation 2002 Quality/Level of Service Handbook, Table 4-6, a four lane divided uninterrupted flow highway for a LOS B has a peak hour two-way traffic volume of 2,800 vehicles. Table 6 presents the two way traffic volumes for US-19/US-98 within the study area. As presented in Table 6, US-19/US-98 operates below the 2,800 two-way peak hour traffic volume established by FDOT for a LOS B four lane divided uninterrupted flow highway.

Table 6: Two-Way Peak Hour Traffic Volumes Summary

US-19/US-98 at West Power Line Road									
TIME PERIOD	FLORIDA DOT GENERALIZED LOS B TWO-WAY PEAK HOUR TRAFFIC VOLUME	TWO-WAY PEAK HOUR TRAFFIC VOLUMES							
		2009 No-Build		2009 Build		2012 No-Build		2012 Build	
		NB	SB	NB	SB	NB	SB	NB	SB
A.M. Peak Hour	2,800	919	687	1,575	1,000	978	739	978	739
P.M. Peak Hour	2,800	1,092	902	1,268	1,024	1,180	983	1,180	983

(2) Volumes represent total approach volumes at the intersection.

CONCLUSIONS/RECOMMENDATIONS

The purpose of this study was to determine the traffic impacts associated with the proposed Progress Energy CR3 Uprate project and, if necessary, to develop mitigation measures providing satisfactory access to the site while maintaining acceptable traffic operations within the study area. The CR3 Uprate project represents a modernization of the existing CREC. The Progress Energy CR3 Uprate Traffic Impact Study is prepared consistent with the Florida Department of Transportation study requirements towards a proposed build-out year of 2012.

Results of the 2009 temporary construction build scenario represent the greatest demand. This is due to the expected construction activities associated with the CRCA, CR3, 4 and 5 projects, and represents a temporary condition. The 2009 capacity analyses demonstrate that the intersection is anticipated to perform at LOS D in the A.M. peak hour and at LOS B in the P.M. peak hour. The sections of US-19/US-98 north and south of West Power Line Road are expected to operate at or better than LOS B. However, due to the temporary and fluctuating conditions expected in 2009 it is suggested that Progress Energy consider Travel Demand Management techniques (such as flexible work hours, etc.) to help facilitate peak operating conditions. It is suggested that the Progress Energy also monitor the intersection at US-19/US-98 & West Power Line Road and coordinate special events at the CREC with the local public agencies, such as the Citrus County Sheriff's Department, to help ensure acceptable traffic operations.

Results of the 2012 build scenario capacity analyses demonstrate that the intersection is anticipated to perform at a LOS C in the A.M. peak hour and at LOS B in the P.M. peak hour. The sections of US-19/US-98 north and south of West Power Line Road are expected to operate at or better than LOS B for the build-out condition. The CR3 uprate project is expected to represent no additional trips upon project buildout and all roadway Level of Service conditions are expected to be maintained with the proposed project.

APPENDIX A
MANUAL TURNING MOVEMENT COUNTS

A.M. Peak Hour Total Traffic
Volumes

Trans Associates Engineering Consultants, Inc.

Transportation Solutions for Today and Tomorrow

US-19 / US-98 & W Power Line Road
Crystal River, Florida
06:00 A.M. to 09:00 A.M.

File Name : 042507 6-9 am US19-98 & power line
Site Code : 00000003
Start Date : 4/25/2007
Page No : 1

Weather: Clear

Groups Printed- Unshifted - Bank 1

Start Time	Southbound					Westbound					Northbound					Eastbound					Int. Total
	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	
Factor	1.03	1.03	1.03	1.03		1.03	1.03	1.03	1.03		1.03	1.03	1.03	1.03		1.03	1.03	1.03	1.03		
06:00 AM	0	31	13	8	52	0	0	0	0	0	54	40	1	0	95	3	0	4	6	13	160
06:15 AM	0	54	25	34	113	0	0	0	0	0	82	35	0	0	117	2	0	11	5	18	248
06:30 AM	0	40	31	32	103	0	2	2	2	6	125	35	0	0	160	8	1	1	10	20	289
06:45 AM	0	85	26	28	139	0	0	0	0	0	117	52	0	0	169	6	0	8	1	15	323
Total	0	210	95	102	407	0	2	2	2	6	378	162	1	0	541	19	1	24	22	66	1020
07:00 AM	0	89	6	5	100	0	0	1	0	1	68	55	0	0	123	11	0	12	6	29	253
07:15 AM	0	94	3	4	101	0	0	0	0	0	43	70	0	0	113	13	0	12	7	32	246
07:30 AM	0	104	15	3	122	0	0	0	0	0	24	71	0	0	95	0	0	0	1	1	218
07:45 AM	0	102	7	1	110	0	0	0	0	0	15	73	0	0	88	2	0	1	3	6	204
Total	0	389	31	13	433	0	0	1	0	1	150	269	0	0	419	26	0	25	17	68	921
08:00 AM	0	78	1	0	79	0	0	0	0	0	16	56	0	0	72	7	0	2	8	17	168
08:15 AM	0	81	1	4	86	0	0	0	0	0	10	64	0	0	74	2	0	2	5	9	169
08:30 AM	0	74	1	3	78	0	0	0	0	0	19	64	0	0	83	2	2	3	4	11	172
08:45 AM	0	112	3	0	115	0	0	0	0	0	15	74	0	0	89	3	0	0	7	10	214
Total	0	345	6	7	358	0	0	0	0	0	60	258	0	0	318	14	2	7	24	47	723
Grand Total	0	944	132	122	1198	0	2	3	2	7	588	689	1	0	1278	59	3	56	63	181	2664
Apprch %	0	78.8	11	10.2		0	28.6	42.9	28.6		46	53.9	0.1	0		32.6	1.7	30.9	34.8		
Total %	0	35.4	5	4.6	45	0	0.1	0.1	0.1	0.3	22.1	25.9	0	0	48	2.2	0.1	2.1	2.4	6.8	
Unshifted	0	880	124	119	1123	0	2	3	2	7	568	620	1	0	1189	45	3	48	56	152	2471
% Unshifted																					
Bank 1	0	64	8	3	75	0	0	0	0	0	20	69	0	0	89	14	0	8	7	29	193
% Bank 1	0	6.8	6.1	2.5	6.3	0	0	0	0	0	3.4	10	0	0	7	23.7	0	14.3	11.1	16	7.2

Start Time	Southbound					Westbound					Northbound					Eastbound					Int. Total
	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	
Peak Hour Analysis From 06:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 06:15 AM																					
06:15 AM	0	54	25	34		0	2	2	2	6	125	35	0	0	160	8	1	1	10	20	289
06:30 AM	0	40	31	32	103	0	0	0	0	0	117	52	0	0	169	6	0	8	1	15	323
06:45 AM	0	85	26	28	139	0	0	0	0	0	117	52	0	0	169	6	0	8	1	15	323
07:00 AM	0	89	6	5	100	0	0	1	0	1	68	55	0	0	123	11	0	12	6	29	253
Total Volume	0	268	88	99	455	0	2	3	2	7	392	177	0	0	569	27	1	32	22	82	1113
% App. Total	0	58.9	19.3	21.8		0	28.6	42.9	28.6		68.9	31.1	0	0		32.9	1.2	39	26.8		
PHF	.000	.753	.710	.728	.818	.000	.250	.375	.250	.292	.784	.805	.000	.000	.842	.614	.250	.667	.550	.707	.861
Unshifted	0	244	85	98	427	0	2	3	2	7	386	152	0	0	538	24	1	29	22	76	1048
% Unshifted	0	91.0	96.6	99.0	93.8	0	100	100	100	100	98.5	85.9	0	0	94.6	88.9	100	90.6	100	92.7	94.2
Bank 1	0	24	3	1	28	0	0	0	0	0	6	25	0	0	31	3	0	3	0	6	65
% Bank 1	0	9.0	3.4	1.0	6.2	0	0	0	0	0	1.5	14.1	0	0	5.4	11.1	0	9.4	0	7.3	5.8

A.M. Peak Hour Truck Traffic Volumes

Trans Associates Engineering Consultants, Inc.

Transportation Solutions for Today and Tomorrow

US-19 / US-98 & W Power Line Road
Crystal River, Florida
06:00 A.M. to 09:00 A.M.

File Name : 042507 6-9 am US19-98 & power line
Site Code : 00000003
Start Date : 4/25/2007
Page No : 1

Weather: Clear

Groups Printed- Bank 1

Start Time	Southbound					Westbound					Northbound					Eastbound					Int. Total
	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	
Factor	1.03	1.03	1.03	1.03		1.03	1.03	1.03	1.03		1.03	1.03	1.03	1.03		1.03	1.03	1.03	1.03		
06:00 AM	0	2	0	0	2	0	0	0	0	0	0	9	0	0	9	1	0	1	0	2	13
06:15 AM	0	6	2	0	8	0	0	0	0	0	0	6	0	0	6	0	0	3	0	3	17
06:30 AM	0	3	0	0	3	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	5
06:45 AM	0	7	1	1	9	0	0	0	0	0	1	9	0	0	10	0	0	0	0	0	19
Total	0	18	3	1	22	0	0	0	0	0	1	26	0	0	27	1	0	4	0	5	54
07:00 AM	0	8	0	0	8	0	0	0	0	0	5	8	0	0	13	3	0	0	0	3	24
07:15 AM	0	9	0	0	9	0	0	0	0	0	1	5	0	0	6	0	0	0	0	0	15
07:30 AM	0	3	1	1	5	0	0	0	0	0	2	10	0	0	12	0	0	0	0	0	17
07:45 AM	0	9	2	0	11	0	0	0	0	0	2	2	0	0	4	0	0	0	1	1	16
Total	0	29	3	1	33	0	0	0	0	0	10	25	0	0	35	3	0	0	1	4	72
08:00 AM	0	4	1	0	5	0	0	0	0	0	2	2	0	0	4	5	0	1	3	9	18
08:15 AM	0	5	0	0	5	0	0	0	0	0	0	5	0	0	5	2	0	1	1	4	14
08:30 AM	0	4	1	1	6	0	0	0	0	0	5	5	0	0	10	1	0	2	1	4	20
08:45 AM	0	4	0	0	4	0	0	0	0	0	2	6	0	0	8	2	0	0	1	3	15
Total	0	17	2	1	20	0	0	0	0	0	9	18	0	0	27	10	0	4	6	20	67
Grand Total	0	64	8	3	75	0	0	0	0	0	20	69	0	0	89	14	0	8	7	29	193
Apprch %	0	85.3	10.7	4		0	0	0	0		22.5	77.5	0	0		48.3	0	27.6	24.1		
Total %	0	33.2	4.1	1.6	38.9	0	0	0	0	0	10.4	35.8	0	0	46.1	7.3	0	4.1	3.6	15	

Start Time	Southbound					Westbound					Northbound					Eastbound					Int. Total
	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	
Peak Hour Analysis From 06:15 AM to 07:00 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 06:15 AM																					
06:15 AM	0	6	2			0	0	0	0	0	0	2	0	0	2	0	0	3	0	3	17
06:30 AM	0	3	0	0	3	0	0	0	0	0	1	9	0	0	10	0	0	0	0	0	5
06:45 AM	0	7	1	1	9	0	0	0	0	0	1	9	0	0	10	0	0	0	0	0	
07:00 AM	0	8	0	0	8	0	0	0	0	0	5	8	0	0	13	3	0	0	0	3	24
Total Volume	0	24	3	1	28	0	0	0	0	0	6	25	0	0	31	3	0	3	0	6	65
% App. Total	0	85.7	10.7	3.6		0	0	0	0		19.4	80.6	0	0		50	0	50	0		
PHF	.000	.750	.375	.250	.778	.000	.000	.000	.000	.000	.300	.694	.000	.000	.596	.250	.000	.250	.000	.500	.677

P.M. Peak Hour Total Traffic
Volumes

Trans Associates Engineering Consultants, Inc.

Transportation Solutions for Today and Tomorrow

US-19 / US-98 & W Power Line Road
Crystal River, Florida
03:00 P.M. to 06:00 P.M.

File Name : 042407 3-6 PM US19-98 & Power Line Rd
Site Code : 00000001
Start Date : 4/24/2007
Page No : 1

Weather: Clear

Groups Printed- Unshifted - Bank 1

Start Time	Southbound					Westbound					Northbound					Eastbound					Int. Total
	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	
Factor	1.03	1.03	1.03	1.03		1.03	1.03	1.03	1.03		1.03	1.03	1.03	1.03		1.03	1.03	1.03	1.03		
03:00 PM	0	84	2	0	86	0	0	0	0	0	4	93	0	0	97	23	4	33	29	89	272
03:15 PM	0	102	2	0	104	1	0	0	0	1	2	106	3	0	111	21	0	40	35	96	312
03:30 PM	0	92	0	0	92	0	0	2	0	2	5	119	0	0	124	18	0	14	32	64	282
03:45 PM	1	92	2	1	96	0	0	0	0	0	4	107	0	0	111	8	0	13	12	33	240
Total	1	370	6	1	378	1	0	2	0	3	15	425	3	0	443	70	4	100	108	282	1106
04:00 PM	0	97	0	0	97	0	0	0	0	0	4	124	0	0	128	10	0	16	26	52	277
04:15 PM	0	81	0	0	81	1	0	0	0	1	8	106	0	0	114	6	0	21	12	39	235
04:30 PM	0	94	1	0	95	0	0	0	0	0	0	95	0	0	95	19	0	31	28	78	268
04:45 PM	0	99	2	0	101	0	0	0	0	0	12	97	0	0	109	8	0	18	35	61	271
Total	0	371	3	0	374	1	0	0	0	1	24	422	0	0	446	43	0	86	101	230	1051
05:00 PM	0	96	1	0	97	0	0	0	0	0	15	114	0	0	129	11	0	19	34	64	290
05:15 PM	0	80	4	0	84	0	0	0	0	0	16	101	0	0	117	29	0	44	22	95	296
05:30 PM	0	95	3	3	101	0	0	0	0	0	6	88	0	0	94	23	1	30	23	77	272
05:45 PM	0	80	2	1	83	0	0	0	0	0	6	87	0	0	93	8	0	10	21	39	215
Total	0	351	10	4	365	0	0	0	0	0	43	390	0	0	433	71	1	103	100	275	1073
Grand Total	1	1092	19	5	1117	2	0	2	0	4	82	1237	3	0	1322	184	5	289	309	787	3230
Apprch %	0.1	97.8	1.7	0.4		50	0	50	0		6.2	93.6	0.2	0		23.4	0.6	36.7	39.3		
Total %	0	33.8	0.6	0.2	34.6	0.1	0	0.1	0	0.1	2.5	38.3	0.1	0	40.9	5.7	0.2	8.9	9.6	24.4	
Unshifted	1	1059	15	5	1080	2	0	2	0	4	68	1214	3	0	1285	179	5	282	300	766	3135
% Unshifted	100	97	78.9	100	96.7	100	0	100	0	100	82.9	98.1	100	0	97.2	97.3	100	97.6	97.1	97.3	97.1
Bank 1	0	33	4	0	37	0	0	0	0	0	14	23	0	0	37	5	0	7	9	21	95
% Bank 1	0	3	21.1	0	3.3	0	0	0	0	0	17.1	1.9	0	0	2.8	2.7	0	2.4	2.9	2.7	2.9

Start Time	Southbound					Westbound					Northbound					Eastbound					Int. Total
	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	
Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:45 PM																					
04:45 PM	0	99	2	0	101	0	0	0	0	0	12	97	0	0	109	8	0	18	35		
05:00 PM	0	96	1	0	97	0	0	0	0	0	15	114	0	0	129	11	0	19	34	64	290
05:15 PM	0	80	4								16					29		44		95	296
05:30 PM	0	95	3	3													1	30	23	77	272
Total Volume	0	370	10	3	383	0	0	0	0	0	49	400	0	0	449	71	1	111	114	297	1129
% App. Total	0	96.6	2.6	0.8		0	0	0	0		10.9	89.1	0	0		23.9	0.3	37.4	38.4		
PHF	.000	.934	.625	.250	.948	.000	.000	.000	.000	.000	.766	.877	.000	.000	.870	.612	.250	.631	.814	.782	.954
Unshifted	0	362	9	3	374	0	0	0	0	0	46	398	0	0	444	70	1	110	111	292	1110
% Unshifted	0	97.8	90.0	100	97.7	0	0	0	0	0	93.9	99.5	0	0	98.9	98.6	100	99.1	97.4	98.3	98.3
Bank 1	0	8	1	0	9	0	0	0	0	0	3	2	0	0	5	1	0	1	3	5	19
% Bank 1	0	2.2	10.0	0	2.3	0	0	0	0	0	6.1	0.5	0	0	1.1	1.4	0	0.9	2.6	1.7	1.7

P.M. Peak Hour Truck Traffic
Volumes

Trans Associates Engineering Consultants, Inc.

Transportation Solutions for Today and Tomorrow

US-19 / US-98 & W Power Line Road
Crystal River, Florida
03:00 P.M. to 06:00 P.M.

File Name : 042407 3-6 PM US19-98 & Power Line Rd
Site Code : 00000001
Start Date : 4/24/2007
Page No : 1

Weather: Clear

Groups Printed- Bank 1

	Southbound					Westbound					Northbound					Eastbound					
Start Time	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Int. Total
Factor	1.03	1.03	1.03	1.03		1.03	1.03	1.03	1.03		1.03	1.03	1.03	1.03		1.03	1.03	1.03	1.03		
03:00 PM	0	1	1	0	2	0	0	0	0	0	2	0	0	0	2	0	0	5	0	5	9
03:15 PM	0	3	0	0	3	0	0	0	0	0	0	1	0	0	1	1	0	1	1	3	7
03:30 PM	0	2	0	0	2	0	0	0	0	0	3	3	0	0	6	0	0	0	2	2	10
03:45 PM	0	3	1	0	4	0	0	0	0	0	2	8	0	0	10	0	0	0	2	2	16
Total	0	9	2	0	11	0	0	0	0	0	7	12	0	0	19	1	0	6	5	12	42
04:00 PM	0	1	0	0	1	0	0	0	0	0	1	2	0	0	3	1	0	0	0	1	5
04:15 PM	0	5	0	0	5	0	0	0	0	0	2	2	0	0	4	0	0	0	1	1	10
04:30 PM	0	9	1	0	10	0	0	0	0	0	0	3	0	0	3	1	0	0	0	1	14
04:45 PM	0	3	0	0	3	0	0	0	0	0	1	1	0	0	2	0	0	0	2	2	7
Total	0	18	1	0	19	0	0	0	0	0	4	8	0	0	12	2	0	0	3	5	36
05:00 PM	0	3	1	0	4	0	0	0	0	0	2	1	0	0	3	1	0	1	1	3	10
*** BREAK ***																					
05:30 PM	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
05:45 PM	0	1	0	0	1	0	0	0	0	0	1	2	0	0	3	1	0	0	0	1	5
Total	0	6	1	0	7	0	0	0	0	0	3	3	0	0	6	2	0	1	1	4	17
Grand Total	0	33	4	0	37	0	0	0	0	0	14	23	0	0	37	5	0	7	9	21	95
Approch %	0	89.2	10.8	0		0	0	0	0		37.8	62.2	0	0		23.8	0	33.3	42.9		
Total %	0	34.7	4.2	0	38.9	0	0	0	0	0	14.7	24.2	0	0	38.9	5.3	0	7.4	9.5	22.1	

	Southbound					Westbound					Northbound					Eastbound					
Start Time	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Int. Total
Peak Hour Analysis From 04:45 PM to 05:30 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:45 PM																					
04:45 PM	0	3	0	0	3	0	0	0	0	0	1	1	0	0	2	1	0	1	1	3	10
05:00 PM	0	3	1	0	4	0	0	0	0	0	2	1	0	0	3	1	0	1	1	3	10
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
Total Volume	0	8	1	0	9	0	0	0	0	0	3	2	0	0	5	1	0	1	3	5	19
% App. Total	0	88.9	11.1	0		0	0	0	0		60	40	0	0		20	0	20	60		
PHF	.000	.667	.250	.000	.563	.000	.000	.000	.000	.000	.375	.500	.000	.000	.417	.250	.000	.250	.375	.417	.475

APPENDIX B
GROWTH RATE CALCULATION

GROWTH RATE CALCULATION

Year	AADT	Growth
2002	8,900	
2003	9,100	2.2%
2004	6,900	-24.2%
2005	10,100	46.4%
2006	8,900	-11.9%
Average		3.1%

*Traffic Count Site #0250 – SR 55/US 19, North of CR 488 / Dunellon Road

	2009	2012
Growth Factor =	$(1 + 3.1 / 100)^2$	$(1 + 3.1 / 100)^5$
=	1.063	1.165

Source: 2006 Traffic Counts obtained from FDOT Central Office

2002 – 2005 Traffic Counts obtained from 2005 Florida Traffic Information System CD.

APPENDIX C
SYNCHRO CAPACITY ANALYSIS RESULTS
2007 EXISTING CONDITIONS

Lanes, Volumes, Timings
2: Power Line Rd & US-19/US-98

6/2/2007

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	27	54	392	177	268	187
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	200	250			200
Storage Lanes	1	1	1			1
Taper Length (ft)	25	25	25			25
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Frt		0.850				0.850
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1687	1509	1719	3438	3406	1524
Flt Permitted	0.950		0.950			
Satd. Flow (perm)	1687	1509	1719	3438	3406	1524
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		76				228
Link Speed (mph)	30			30	30	
Link Distance (ft)	333			364	384	
Travel Time (s)	7.6			8.3	8.7	
Peak Hour Factor	0.71	0.71	0.84	0.84	0.82	0.82
Heavy Vehicles (%)	7%	7%	5%	5%	6%	6%
Adj. Flow (vph)	38	76	467	211	327	228
Shared Lane Traffic (%)						
Lane Group Flow (vph)	38	76	467	211	327	228
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	15			9
Number of Detectors	1	1	1	2	2	1
Detector Template	Left	Right	Left	Thru	Thru	Right
Leading Detector (ft)	20	20	20	100	100	20
Trailing Detector (ft)	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0
Detector 1 Size(ft)	20	20	20	6	6	20
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)				94	94	
Detector 2 Size(ft)				6	6	
Detector 2 Type				CI+Ex	CI+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type		pt+ov	Prot			Perm
Protected Phases	4	4 5	5	2	6	
Permitted Phases						6

Lanes, Volumes, Timings
2: Power Line Rd & US-19/US-98

6/2/2007

												
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR						
Detector Phase	4	4 5	5	2	6	6						
Switch Phase												
Minimum Initial (s)	4.0		4.0	4.0	4.0	4.0						
Minimum Split (s)	15.0		8.0	20.0	20.0	20.0						
Total Split (s)	17.0	70.0	53.0	83.0	30.0	30.0						
Total Split (%)	17.0%	70.0%	53.0%	83.0%	30.0%	30.0%						
Maximum Green (s)	13.0		49.0	79.0	26.0	26.0						
Yellow Time (s)	3.5		3.5	3.5	3.5	3.5						
All-Red Time (s)	0.5		0.5	0.5	0.5	0.5						
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0						
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0						
Lead/Lag			Lead		Lag	Lag						
Lead-Lag Optimize?			Yes		Yes	Yes						
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0						
Recall Mode	None		None	Max	Max	Max						
Act Effct Green (s)	7.6	43.8	31.7	80.2	43.6	43.6						
Actuated g/C Ratio	0.08	0.45	0.34	0.86	0.47	0.47						
v/c Ratio	0.28	0.10	0.80	0.07	0.20	0.27						
Control Delay	46.0	2.7	37.8	1.5	17.9	4.1						
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0						
Total Delay	46.0	2.7	37.8	1.5	17.9	4.1						
LOS	D	A	D	A	B	A						
Approach Delay	17.1			26.5	12.2							
Approach LOS	B			C	B							

Intersection Summary

Area Type: Other

Cycle Length: 100

Actuated Cycle Length: 92.8

Natural Cycle: 60

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.80

Intersection Signal Delay: 19.8

Intersection LOS: B

Intersection Capacity Utilization 42.5%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 2: Power Line Rd & US-19/US-98

 ø2	 ø4
83 s	17 s
 ø5	 ø6
56 s	30 s

Lanes, Volumes, Timings
7: Power Line Rd & US-19/US-98

6/2/2007

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	71	225	49	400	370	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	200	250			200
Storage Lanes	1	1	1			1
Taper Length (ft)	25	25	25			25
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Frt		0.850				0.850
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1770	1583	1787	3574	3539	1583
Flt Permitted	0.950		0.950			
Satd. Flow (perm)	1770	1583	1787	3574	3539	1583
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		288				14
Link Speed (mph)	30			30	30	
Link Distance (ft)	347			401	329	
Travel Time (s)	7.9			9.1	7.5	
Peak Hour Factor	0.78	0.78	0.87	0.87	0.95	0.95
Heavy Vehicles (%)	2%	2%	1%	1%	2%	2%
Adj. Flow (vph)	91	288	56	460	389	14
Shared Lane Traffic (%)						
Lane Group Flow (vph)	91	288	56	460	389	14
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	15			9
Number of Detectors	1	1	1	2	2	1
Detector Template	Left	Right	Left	Thru	Thru	Right
Leading Detector (ft)	20	20	20	100	100	20
Trailing Detector (ft)	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0
Detector 1 Size(ft)	20	20	20	6	6	20
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)				94	94	
Detector 2 Size(ft)				6	6	
Detector 2 Type				CI+Ex	CI+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type		pt+ov	Prot			Perm
Protected Phases	4	4 5	5	2	6	
Permitted Phases						6

Lanes, Volumes, Timings
7: Power Line Rd & US-19/US-98

6/2/2007

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Detector Phase	4	4 5	5	2	6	6
Switch Phase						
Minimum Initial (s)	4.0		4.0	4.0	4.0	4.0
Minimum Split (s)	20.0		8.0	20.0	20.0	20.0
Total Split (s)	37.0	58.0	21.0	63.0	42.0	42.0
Total Split (%)	37.0%	58.0%	21.0%	63.0%	42.0%	42.0%
Maximum Green (s)	33.0		17.0	59.0	38.0	38.0
Yellow Time (s)	3.5		3.5	3.5	3.5	3.5
All-Red Time (s)	0.5		0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Recall Mode	None		None	Max	Max	Max
Walk Time (s)	5.0			5.0	5.0	5.0
Flash Dont Walk (s)	11.0			11.0	11.0	11.0
Pedestrian Calls (#/hr)	0			0	0	0
Act Effct Green (s)	9.2	21.0	7.8	59.1	47.3	47.3
Actuated g/C Ratio	0.12	0.28	0.10	0.77	0.62	0.62
v/c Ratio	0.43	0.45	0.31	0.17	0.18	0.01
Control Delay	37.2	5.1	36.3	2.6	7.0	3.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	37.2	5.1	36.3	2.6	7.0	3.8
LOS	D	A	D	A	A	A
Approach Delay	12.8			6.2	6.9	
Approach LOS	B			A	A	

Intersection Summary

Area Type: Other

Cycle Length: 100

Actuated Cycle Length: 76.3

Natural Cycle: 50

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.45

Intersection Signal Delay: 8.4

Intersection LOS: A

Intersection Capacity Utilization 30.8%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 7: Power Line Rd & US-19/US-98

	
ø2	ø4
63 s	37 s
	
ø5	ø6
21 s	42 s

Lanes, Volumes, Timings
2: Power Line Rd & US-19/US-98

6/2/2007

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	27	54	392	188	285	187
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	200	250			200
Storage Lanes	1	1	1			1
Taper Length (ft)	25	25	25			25
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Frt		0.850				0.850
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1687	1509	1719	3438	3406	1524
Flt Permitted	0.950		0.950			
Satd. Flow (perm)	1687	1509	1719	3438	3406	1524
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		57				197
Link Speed (mph)	30			30	30	
Link Distance (ft)	333			364	384	
Travel Time (s)	7.6			8.3	8.7	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	7%	7%	5%	5%	6%	6%
Adj. Flow (vph)	28	57	413	198	300	197
Shared Lane Traffic (%)						
Lane Group Flow (vph)	28	57	413	198	300	197
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	15			9
Number of Detectors	1	1	1	2	2	1
Detector Template	Left	Right	Left	Thru	Thru	Right
Leading Detector (ft)	20	20	20	100	100	20
Trailing Detector (ft)	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0
Detector 1 Size(ft)	20	20	20	6	6	20
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)				94	94	
Detector 2 Size(ft)				6	6	
Detector 2 Type				CI+Ex	CI+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type		pt+ov	Prot			pm+ov
Protected Phases	4	4 5	5	2	6	4
Permitted Phases						6

Lanes, Volumes, Timings
2: Power Line Rd & US-19/US-98

6/2/2007

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Detector Phase	4	4 5	5	2	6	4
Switch Phase						
Minimum Initial (s)	4.0		4.0	4.0	4.0	4.0
Minimum Split (s)	15.0		9.0	20.0	20.0	15.0
Total Split (s)	19.0	73.0	54.0	81.0	27.0	19.0
Total Split (%)	19.0%	73.0%	54.0%	81.0%	27.0%	19.0%
Maximum Green (s)	14.0		49.0	76.0	22.0	14.0
Yellow Time (s)	4.0		4.0	4.0	4.0	4.0
All-Red Time (s)	1.0		1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag			Lead		Lag	
Lead-Lag Optimize?			Yes		Yes	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Recall Mode	None		None	Max	Max	None
Act Effct Green (s)	7.1	40.7	28.6	76.0	42.4	54.5
Actuated g/C Ratio	0.08	0.44	0.31	0.82	0.46	0.59
v/c Ratio	0.22	0.08	0.78	0.07	0.19	0.20
Control Delay	44.4	3.4	39.5	1.8	17.5	2.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	44.4	3.4	39.5	1.8	17.5	2.5
LOS	D	A	D	A	B	A
Approach Delay	16.9			27.3	11.5	
Approach LOS	B			C	B	

Intersection Summary

Area Type: Other

Cycle Length: 100

Actuated Cycle Length: 93.1

Natural Cycle: 60

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.78

Intersection Signal Delay: 20.0

Intersection LOS: B

Intersection Capacity Utilization 45.4%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 2: Power Line Rd & US-19/US-98

 Ø2	 Ø4
81 s	19 s
 Ø5	 Ø6
54 s	27 s

Lanes, Volumes, Timings
7: Power Line Rd & US-19/US-98

6/2/2007

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	71	225	49	425	393	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	200	250			200
Storage Lanes	1	1	1			1
Taper Length (ft)	25	25	25			25
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Frt		0.850				0.850
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1770	1583	1787	3574	3539	1583
Flt Permitted	0.950		0.950			
Satd. Flow (perm)	1770	1583	1787	3574	3539	1583
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		237				14
Link Speed (mph)	30			30	30	
Link Distance (ft)	347			401	329	
Travel Time (s)	7.9			9.1	7.5	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	2%	2%	1%	1%	2%	2%
Adj. Flow (vph)	75	237	52	447	414	14
Shared Lane Traffic (%)						
Lane Group Flow (vph)	75	237	52	447	414	14
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	15			9
Number of Detectors	1	1	1	2	2	1
Detector Template	Left	Right	Left	Thru	Thru	Right
Leading Detector (ft)	20	20	20	100	100	20
Trailing Detector (ft)	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0
Detector 1 Size(ft)	20	20	20	6	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)				94	94	
Detector 2 Size(ft)				6	6	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type		pt+ov	Prot			pm+ov
Protected Phases	4	4 5	5	2	6	4
Permitted Phases						6

Lanes, Volumes, Timings
7: Power Line Rd & US-19/US-98

6/2/2007

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Detector Phase	4	4 5	5	2	6	4
Switch Phase						
Minimum Initial (s)	4.0		4.0	4.0	4.0	4.0
Minimum Split (s)	21.0		9.0	21.0	21.0	21.0
Total Split (s)	36.0	56.0	20.0	64.0	44.0	36.0
Total Split (%)	36.0%	56.0%	20.0%	64.0%	44.0%	36.0%
Maximum Green (s)	31.0		15.0	59.0	39.0	31.0
Yellow Time (s)	4.0		4.0	4.0	4.0	4.0
All-Red Time (s)	1.0		1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag			Lead		Lag	
Lead-Lag Optimize?			Yes		Yes	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Recall Mode	None		None	Max	Max	None
Walk Time (s)	5.0			5.0	5.0	5.0
Flash Dont Walk (s)	11.0			11.0	11.0	11.0
Pedestrian Calls (#/hr)	0			0	0	0
Act Effct Green (s)	8.6	21.3	7.6	59.1	46.4	60.1
Actuated g/C Ratio	0.11	0.27	0.10	0.76	0.60	0.77
v/c Ratio	0.38	0.39	0.30	0.16	0.20	0.01
Control Delay	37.7	5.1	37.1	2.9	8.0	1.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	37.7	5.1	37.1	2.9	8.0	1.2
LOS	D	A	D	A	A	A
Approach Delay	12.9			6.5	7.8	
Approach LOS	B			A	A	

Intersection Summary

Area Type: Other

Cycle Length: 100

Actuated Cycle Length: 77.7

Natural Cycle: 55

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.39

Intersection Signal Delay: 8.5

Intersection Capacity Utilization 33.1%

Analysis Period (min) 15

Intersection LOS: A

ICU Level of Service A

Splits and Phases: 7: Power Line Rd & US-19/US-98

 ø2	 ø4
64 s	36 s
 ø5	 ø6
20 s	44 s

Lanes, Volumes, Timings
2: Power Line Rd & US-19/US-98

6/2/2007

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations				 	 	
Volume (vph)	30	59	401	206	312	191
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	200	250			200
Storage Lanes	1	1	1			1
Taper Length (ft)	25	25	25			25
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Frt		0.850				0.850
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1687	1509	1719	3438	3406	1524
Flt Permitted	0.950		0.950			
Satd. Flow (perm)	1687	1509	1719	3438	3406	1524
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		62				201
Link Speed (mph)	30			30	30	
Link Distance (ft)	333			364	384	
Travel Time (s)	7.6			8.3	8.7	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	7%	7%	5%	5%	6%	6%
Adj. Flow (vph)	32	62	422	217	328	201
Shared Lane Traffic (%)						
Lane Group Flow (vph)	32	62	422	217	328	201
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	15			9
Number of Detectors	1	1	1	2	2	1
Detector Template	Left	Right	Left	Thru	Thru	Right
Leading Detector (ft)	20	20	20	100	100	20
Trailing Detector (ft)	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0
Detector 1 Size(ft)	20	20	20	6	6	20
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)				94	94	
Detector 2 Size(ft)				6	6	
Detector 2 Type				CI+Ex	CI+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type		pt+ov	Prot			pm+ov
Protected Phases	4	4 5	5	2	6	4
Permitted Phases						6

Lanes, Volumes, Timings
2: Power Line Rd & US-19/US-98

6/2/2007

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Detector Phase	4	4 5	5	2	6	4
Switch Phase						
Minimum Initial (s)	4.0		4.0	4.0	4.0	4.0
Minimum Split (s)	15.0		9.0	20.0	20.0	15.0
Total Split (s)	19.0	73.0	54.0	81.0	27.0	19.0
Total Split (%)	19.0%	73.0%	54.0%	81.0%	27.0%	19.0%
Maximum Green (s)	14.0		49.0	76.0	22.0	14.0
Yellow Time (s)	4.0		4.0	4.0	4.0	4.0
All-Red Time (s)	1.0		1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag			Lead		Lag	
Lead-Lag Optimize?			Yes		Yes	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Recall Mode	None		None	Max	Max	None
Act Effct Green (s)	7.3	41.5	29.2	76.0	41.8	54.1
Actuated g/C Ratio	0.08	0.44	0.31	0.81	0.45	0.58
v/c Ratio	0.24	0.09	0.78	0.08	0.21	0.21
Control Delay	44.8	3.2	39.4	1.9	18.2	2.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	44.8	3.2	39.4	1.9	18.2	2.5
LOS	D	A	D	A	B	A
Approach Delay	17.3			26.7	12.2	
Approach LOS	B			C	B	

Intersection Summary

Area Type: Other
Cycle Length: 100
Actuated Cycle Length: 93.3
Natural Cycle: 60
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.78
Intersection Signal Delay: 19.9
Intersection Capacity Utilization 46.7%
Analysis Period (min) 15
Intersection LOS: B
ICU Level of Service A

Splits and Phases: 2: Power Line Rd & US-19/US-98

 ø2	 ø4
81 s	19 s
 ø5	 ø6
54 s	27 s

Lanes, Volumes, Timings
7: Power Line Rd & US-19/US-98

6/2/2007

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	72	230	53	466	431	14
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	200	250			200
Storage Lanes	1	1	1			1
Taper Length (ft)	25	25	25			25
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Frt		0.850				0.850
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1770	1583	1787	3574	3539	1583
Flt Permitted	0.950		0.950			
Satd. Flow (perm)	1770	1583	1787	3574	3539	1583
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		229				15
Link Speed (mph)	30			30	30	
Link Distance (ft)	347			401	329	
Travel Time (s)	7.9			9.1	7.5	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	2%	2%	1%	1%	2%	2%
Adj. Flow (vph)	76	242	56	491	454	15
Shared Lane Traffic (%)						
Lane Group Flow (vph)	76	242	56	491	454	15
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	15			9
Number of Detectors	1	1	1	2	2	1
Detector Template	Left	Right	Left	Thru	Thru	Right
Leading Detector (ft)	20	20	20	100	100	20
Trailing Detector (ft)	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0
Detector 1 Size(ft)	20	20	20	6	6	20
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)				94	94	
Detector 2 Size(ft)				6	6	
Detector 2 Type				CI+Ex	CI+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type		pt+ov	Prot			pm+ov
Protected Phases	4	4 5	5	2	6	4
Permitted Phases						6

Lanes, Volumes, Timings
7: Power Line Rd & US-19/US-98

6/2/2007

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Detector Phase	4	4 5	5	2	6	4
Switch Phase						
Minimum Initial (s)	4.0		4.0	4.0	4.0	4.0
Minimum Split (s)	21.0		9.0	21.0	21.0	21.0
Total Split (s)	35.0	57.0	22.0	65.0	43.0	35.0
Total Split (%)	35.0%	57.0%	22.0%	65.0%	43.0%	35.0%
Maximum Green (s)	30.0		17.0	60.0	38.0	30.0
Yellow Time (s)	4.0		4.0	4.0	4.0	4.0
All-Red Time (s)	1.0		1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag			Lead		Lag	
Lead-Lag Optimize?			Yes		Yes	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Recall Mode	None		None	Max	Max	None
Walk Time (s)	5.0			5.0	5.0	5.0
Flash Dont Walk (s)	11.0			11.0	11.0	11.0
Pedestrian Calls (#/hr)	0			0	0	0
Act Effct Green (s)	8.7	21.5	7.8	60.0	47.2	60.9
Actuated g/C Ratio	0.11	0.27	0.10	0.76	0.60	0.77
v/c Ratio	0.39	0.40	0.31	0.18	0.21	0.01
Control Delay	38.4	5.9	37.7	2.9	8.2	1.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	38.4	5.9	37.7	2.9	8.2	1.3
LOS	D	A	D	A	A	A
Approach Delay	13.6			6.5	7.9	
Approach LOS	B			A	A	

Intersection Summary

Area Type: Other
 Cycle Length: 100
 Actuated Cycle Length: 78.7
 Natural Cycle: 55
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.40
 Intersection Signal Delay: 8.7
 Intersection Capacity Utilization 34.5%
 Analysis Period (min) 15

Intersection LOS: A
 ICU Level of Service A

Splits and Phases: 7: Power Line Rd & US-19/US-98

ø2	ø4
65 s	35 s
ø5	ø6
22 s	43 s

Lanes, Volumes, Timings
2: Power Line Rd & US-19/US-98

6/2/2007

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	66	136	966	188	285	461
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	200	250			200
Storage Lanes	1	1	1			1
Taper Length (ft)	25	25	25			25
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Frt		0.850				0.850
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1687	1509	1719	3438	3406	1524
Flt Permitted	0.950		0.950			
Satd. Flow (perm)	1687	1509	1719	3438	3406	1524
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		18				121
Link Speed (mph)	30			30	30	
Link Distance (ft)	333			364	384	
Travel Time (s)	7.6			8.3	8.7	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	7%	7%	5%	5%	6%	6%
Adj. Flow (vph)	69	143	1017	198	300	485
Shared Lane Traffic (%)						
Lane Group Flow (vph)	69	143	1017	198	300	485
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	15			9
Number of Detectors	1	1	1	2	2	1
Detector Template	Left	Right	Left	Thru	Thru	Right
Leading Detector (ft)	20	20	20	100	100	20
Trailing Detector (ft)	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0
Detector 1 Size(ft)	20	20	20	6	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)				94	94	
Detector 2 Size(ft)				6	6	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type		pt+ov	Prot			pm+ov
Protected Phases	4	4 5	5	2	6	4
Permitted Phases						6

Lanes, Volumes, Timings
2: Power Line Rd & US-19/US-98

6/2/2007

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Detector Phase	4	4 5	5	2	6	4
Switch Phase						
Minimum Initial (s)	4.0		4.0	4.0	4.0	4.0
Minimum Split (s)	9.0		9.0	9.0	9.0	9.0
Total Split (s)	19.0	85.0	66.0	81.0	15.0	19.0
Total Split (%)	19.0%	85.0%	66.0%	81.0%	15.0%	19.0%
Maximum Green (s)	14.0		61.0	76.0	10.0	14.0
Yellow Time (s)	4.0		4.0	4.0	4.0	4.0
All-Red Time (s)	1.0		1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag			Lead		Lag	
Lead-Lag Optimize?			Yes		Yes	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Recall Mode	None		None	Max	Max	None
Act Effct Green (s)	13.4	78.9	60.5	76.0	10.5	28.9
Actuated g/C Ratio	0.13	0.79	0.61	0.76	0.11	0.29
v/c Ratio	0.31	0.12	0.97	0.08	0.83	0.92
Control Delay	42.7	2.2	41.8	3.1	64.6	50.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	42.7	2.2	41.8	3.1	64.6	50.2
LOS	D	A	D	A	E	D
Approach Delay	15.4			35.5	55.7	
Approach LOS	B			D	E	

Intersection Summary

Area Type: Other
 Cycle Length: 100
 Actuated Cycle Length: 99.4
 Natural Cycle: 90
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.97
 Intersection Signal Delay: 40.7
 Intersection Capacity Utilization 90.4%
 Analysis Period (min) 15
 Intersection LOS: D
 ICU Level of Service E

Splits and Phases: 2: Power Line Rd & US-19/US-98

 ø2	 ø4
81 s	19 s
 ø5	 ø6
66 s	15 s

Lanes, Volumes, Timings
7: Power Line Rd & US-19/US-98

6/2/2007

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	175	329	121	425	393	31
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	200	250			200
Storage Lanes	1	1	1			1
Taper Length (ft)	25	25	25			25
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Frt		0.850				0.850
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1770	1583	1787	3574	3539	1583
Flt Permitted	0.950		0.950			
Satd. Flow (perm)	1770	1583	1787	3574	3539	1583
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		169				33
Link Speed (mph)	30			30	30	
Link Distance (ft)	347			401	329	
Travel Time (s)	7.9			9.1	7.5	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	2%	2%	1%	1%	2%	2%
Adj. Flow (vph)	184	346	127	447	414	33
Shared Lane Traffic (%)						
Lane Group Flow (vph)	184	346	127	447	414	33
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	15			9
Number of Detectors	1	1	1	2	2	1
Detector Template	Left	Right	Left	Thru	Thru	Right
Leading Detector (ft)	20	20	20	100	100	20
Trailing Detector (ft)	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0
Detector 1 Size(ft)	20	20	20	6	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)				94	94	
Detector 2 Size(ft)				6	6	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type		pt+ov	Prot			pm+ov
Protected Phases	4	4 5	5	2	6	4
Permitted Phases						6

Lanes, Volumes, Timings
7: Power Line Rd & US-19/US-98

6/2/2007

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Detector Phase	4	4 5	5	2	6	4
Switch Phase						
Minimum Initial (s)	4.0		4.0	4.0	4.0	4.0
Minimum Split (s)	21.0		9.0	21.0	21.0	21.0
Total Split (s)	21.0	34.0	13.0	34.0	21.0	21.0
Total Split (%)	38.2%	61.8%	23.6%	61.8%	38.2%	38.2%
Maximum Green (s)	16.0		8.0	29.0	16.0	16.0
Yellow Time (s)	4.0		4.0	4.0	4.0	4.0
All-Red Time (s)	1.0		1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag			Lead		Lag	
Lead-Lag Optimize?			Yes		Yes	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Recall Mode	None		None	Max	Max	None
Walk Time (s)	5.0			5.0	5.0	5.0
Flash Dont Walk (s)	11.0			11.0	11.0	11.0
Pedestrian Calls (#/hr)	0			0	0	0
Act Effct Green (s)	10.7	23.1	7.4	29.1	16.7	32.4
Actuated g/C Ratio	0.21	0.46	0.15	0.58	0.33	0.65
v/c Ratio	0.48	0.42	0.48	0.21	0.35	0.03
Control Delay	21.4	5.8	27.0	5.9	14.6	1.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	21.4	5.8	27.0	5.9	14.6	1.4
LOS	C	A	C	A	B	A
Approach Delay	11.2			10.5	13.6	
Approach LOS	B			B	B	

Intersection Summary

Area Type: Other

Cycle Length: 55

Actuated Cycle Length: 49.9

Natural Cycle: 55

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.48

Intersection Signal Delay: 11.7

Intersection LOS: B

Intersection Capacity Utilization 39.8%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 7: Power Line Rd & US-19/US-98

 ø2	 ø4
34 s	21 s
 ø5	 ø6
13 s	21 s

Lanes, Volumes, Timings
2: Power Line Rd & US-19/US-98

6/2/2007

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	30	59	401	206	312	191
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	200	250			200
Storage Lanes	1	1	1			1
Taper Length (ft)	25	25	25			25
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Frt		0.850				0.850
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1687	1509	1719	3438	3406	1524
Flt Permitted	0.950		0.950			
Satd. Flow (perm)	1687	1509	1719	3438	3406	1524
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		83				233
Link Speed (mph)	30			30	30	
Link Distance (ft)	333			364	384	
Travel Time (s)	7.6			8.3	8.7	
Peak Hour Factor	0.71	0.71	0.84	0.84	0.82	0.82
Heavy Vehicles (%)	7%	7%	5%	5%	6%	6%
Adj. Flow (vph)	42	83	477	245	380	233
Shared Lane Traffic (%)						
Lane Group Flow (vph)	42	83	477	245	380	233
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	15			9
Number of Detectors	1	1	1	2	2	1
Detector Template	Left	Right	Left	Thru	Thru	Right
Leading Detector (ft)	20	20	20	100	100	20
Trailing Detector (ft)	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0
Detector 1 Size(ft)	20	20	20	6	6	20
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)				94	94	
Detector 2 Size(ft)				6	6	
Detector 2 Type				CI+Ex	CI+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type		pt+ov	Prot			pm+ov
Protected Phases	4	4 5	5	2	6	4
Permitted Phases						6

Lanes, Volumes, Timings
2: Power Line Rd & US-19/US-98

6/2/2007



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Detector Phase	4	4 5	5	2	6	4
Switch Phase						
Minimum Initial (s)	4.0		4.0	4.0	4.0	4.0
Minimum Split (s)	15.0		9.0	20.0	20.0	15.0
Total Split (s)	17.0	71.0	54.0	83.0	29.0	17.0
Total Split (%)	17.0%	71.0%	54.0%	83.0%	29.0%	17.0%
Maximum Green (s)	12.0		49.0	78.0	24.0	12.0
Yellow Time (s)	4.0		4.0	4.0	4.0	4.0
All-Red Time (s)	1.0		1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag			Lead		Lag	
Lead-Lag Optimize?			Yes		Yes	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Recall Mode	None		None	Max	Max	None
Act Effct Green (s)	7.9	46.1	33.2	78.0	39.8	52.7
Actuated g/C Ratio	0.08	0.48	0.35	0.81	0.42	0.55
v/c Ratio	0.30	0.11	0.80	0.09	0.27	0.25
Control Delay	47.0	2.4	38.4	2.0	21.4	2.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	47.0	2.4	38.4	2.0	21.4	2.8
LOS	D	A	D	A	C	A
Approach Delay	17.4			26.0	14.3	
Approach LOS	B			C	B	

Intersection Summary

Area Type: Other
Cycle Length: 100
Actuated Cycle Length: 95.9
Natural Cycle: 60
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.80
Intersection Signal Delay: 20.4
Intersection Capacity Utilization 46.7%
Analysis Period (min) 15
Intersection LOS: C
ICU Level of Service A

Splits and Phases: 2: Power Line Rd & US-19/US-98

↑ ø2	83 s	↘ ø4	17 s
↘ ø5	64 s	↓ ø6	29 s

Lanes, Volumes, Timings
7: Power Line Rd & US-19/US-98

6/2/2007

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	72	230	53	466	431	14
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	200	250			200
Storage Lanes	1	1	1			1
Taper Length (ft)	25	25	25			25
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Frt		0.850				0.850
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1770	1583	1787	3574	3539	1583
Flt Permitted	0.950		0.950			
Satd. Flow (perm)	1770	1583	1787	3574	3539	1583
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		210				15
Link Speed (mph)	30			30	30	
Link Distance (ft)	347			401	329	
Travel Time (s)	7.9			9.1	7.5	
Peak Hour Factor	0.78	0.78	0.87	0.87	0.95	0.95
Heavy Vehicles (%)	2%	2%	1%	1%	2%	2%
Adj. Flow (vph)	92	295	61	536	454	15
Shared Lane Traffic (%)						
Lane Group Flow (vph)	92	295	61	536	454	15
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	15			9
Number of Detectors	1	1	1	2	2	1
Detector Template	Left	Right	Left	Thru	Thru	Right
Leading Detector (ft)	20	20	20	100	100	20
Trailing Detector (ft)	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0
Detector 1 Size(ft)	20	20	20	6	6	20
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)				94	94	
Detector 2 Size(ft)				6	6	
Detector 2 Type				CI+Ex	CI+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type		pt+ov	Prot			pm+ov
Protected Phases	4	4 5	5	2	6	4
Permitted Phases						6

Lanes, Volumes, Timings
7: Power Line Rd & US-19/US-98

6/2/2007

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Detector Phase	4	4 5	5	2	6	4
Switch Phase						
Minimum Initial (s)	4.0		4.0	4.0	4.0	4.0
Minimum Split (s)	21.0		9.0	21.0	21.0	21.0
Total Split (s)	37.0	59.0	22.0	63.0	41.0	37.0
Total Split (%)	37.0%	59.0%	22.0%	63.0%	41.0%	37.0%
Maximum Green (s)	32.0		17.0	58.0	36.0	32.0
Yellow Time (s)	4.0		4.0	4.0	4.0	4.0
All-Red Time (s)	1.0		1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag			Lead		Lag	
Lead-Lag Optimize?			Yes		Yes	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Recall Mode	None		None	Max	Max	None
Walk Time (s)	5.0			5.0	5.0	5.0
Flash Dont Walk (s)	11.0			11.0	11.0	11.0
Pedestrian Calls (#/hr)	0			0	0	0
Act Effct Green (s)	10.1	23.1	8.0	58.1	45.1	60.2
Actuated g/C Ratio	0.13	0.30	0.10	0.74	0.58	0.77
v/c Ratio	0.40	0.48	0.33	0.20	0.22	0.01
Control Delay	36.2	9.3	38.1	3.6	9.3	1.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	36.2	9.3	38.1	3.6	9.3	1.3
LOS	D	A	D	A	A	A
Approach Delay	15.7			7.1	9.0	
Approach LOS	B			A	A	

Intersection Summary

Area Type: Other
 Cycle Length: 100
 Actuated Cycle Length: 78.2
 Natural Cycle: 55
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.48
 Intersection Signal Delay: 10.0
 Intersection Capacity Utilization 34.5%
 Analysis Period (min) 15

Intersection LOS: B
 ICU Level of Service A

Splits and Phases: 7: Power Line Rd & US-19/US-98

 ø2	 ø4
63 s	37 s
 ø5	 ø6
22 s	41 s

APPENDIX D
SIMTRAFFIC SIMULATION RESULTS

2: Power Line Rd & US-19/US-98 Performance by movement

Movement	EBL	EBR	NBL	NBT	SBT	SBR	All
Total Delay (hr)	0.9	0.3	137.7	30.0	23.9	39.0	231.8
Delay / Veh (s)	38.8	7.5	604.7	616.9	337.9	335.8	442.2
Total Stops	66	25	490	41	296	640	1558
Travel Dist (mi)	4.2	7.5	51.3	11.0	16.9	27.9	118.7
Travel Time (hr)	1.1	0.6	139.8	30.4	24.6	40.2	236.7
Avg Speed (mph)	4	16	9	20	3	2	5
Vehicles Entered	79	139	821	175	253	420	1887
Vehicles Exited	80	138	820	175	257	417	1887
Hourly Exit Rate	80	138	820	175	257	417	1887
Input Volume	66	136	966	188	285	461	2102
% of Volume	121	101	85	93	90	90	90
Denied Entry Before	0	0	68	6	0	0	74
Denied Entry After	0	0	179	45	36	49	309

Queuing and Blocking Report

6/2/2007

Intersection: 2: Power Line Rd & US-19/US-98

Movement	EB	EB	NB	NB	NB	SB	SB	SB
Directions Served	L	R	L	T	T	T	T	R
Maximum Queue (ft)	115	69	275	392	330	365	403	225
Average Queue (ft)	54	17	273	271	38	145	359	223
95th Queue (ft)	95	53	279	479	137	287	415	226
Link Distance (ft)	274			329	329	351	351	
Upstream Blk Time (%)				4	0	0	49	
Queuing Penalty (veh)				0	0	0	0	
Storage Bay Dist (ft)		200	250					200
Storage Blk Time (%)			12				1	64
Queuing Penalty (veh)			12				4	91

7: Power Line Rd & US-19/US-98 Performance by movement

Movement	EBL	EBR	NBL	NBT	SBT	SBR	All
Total Delay (hr)	0.9	1.0	0.9	0.6	1.1	0.1	4.5
Delay / Veh (s)	18.0	10.5	27.1	5.1	9.9	6.1	10.9
Total Stops	132	176	108	134	206	8	764
Travel Dist (mi)	10.2	19.1	8.3	29.9	21.8	2.1	91.5
Travel Time (hr)	1.4	1.9	1.2	1.7	1.9	0.2	8.2
Avg Speed (mph)	8	14	8	19	12	18	13
Vehicles Entered	183	338	120	430	386	38	1495
Vehicles Exited	184	339	120	430	384	38	1495
Hourly Exit Rate	184	339	120	430	384	38	1495
Input Volume	175	329	121	425	393	31	1474
% of Volume	105	103	99	101	98	123	101
Denied Entry Before	0	0	0	0	0	0	0
Denied Entry After	0	2	0	0	0	0	2

Queuing and Blocking Report

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Intersection: 7: Power Line Rd & US-19/US-98

Movement	EB	EB	NB	NB	NB	SB	SB	SB
Directions Served	L	R	L	T	T	T	T	R
Maximum Queue (ft)	138	108	138	54	96	95	96	31
Average Queue (ft)	61	49	61	29	51	50	64	7
95th Queue (ft)	107	86	106	62	79	84	97	26
Link Distance (ft)	289			366	366	296	296	
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)		200	250					200
Storage Blk Time (%)								
Queuing Penalty (veh)								

2: Power Line Rd & US-19/US-98 Performance by movement

Movement	EBL	EBR	NBL	NBT	SBT	SBR	All
Total Delay (hr)	0.4	0.1	4.0	0.2	1.0	0.7	6.5
Delay / Veh (s)	43.6	7.0	35.0	3.6	12.2	13.3	19.2
Total Stops	32	33	313	17	135	77	607
Travel Dist (mi)	1.8	3.7	25.6	12.6	19.7	13.4	76.8
Travel Time (hr)	0.5	0.3	5.0	0.6	1.7	1.3	9.5
Avg Speed (mph)	4	16	6	26	12	13	9
Vehicles Entered	33	69	410	201	295	202	1210
Vehicles Exited	33	69	410	202	295	202	1211
Hourly Exit Rate	33	69	410	202	295	202	1211
Input Volume	30	59	401	206	312	191	1199
% of Volume	110	117	102	98	95	106	101
Denied Entry Before	0	0	1	2	0	0	3
Denied Entry After	0	0	2	1	0	1	4

Queuing and Blocking Report

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Intersection: 2: Power Line Rd & US-19/US-98

Movement	EB	EB	NB	NB	NB	SB	SB	SB
Directions Served	L	R	L	T	T	T	T	R
Maximum Queue (ft)	69	46	275	344	76	139	117	120
Average Queue (ft)	24	16	205	80	12	49	60	54
95th Queue (ft)	57	37	302	303	46	93	106	107
Link Distance (ft)	274			329	329	351	351	
Upstream Blk Time (%)				2				
Queuing Penalty (veh)				0				
Storage Bay Dist (ft)		200	250					200
Storage Blk Time (%)			4					
Queuing Penalty (veh)			4					

7: Power Line Rd & US-19/US-98 Performance by movement

Movement	EBL	EBR	NBL	NBT	SBT	SBR	All
Total Delay (hr)	0.6	0.6	0.6	0.3	0.7	0.0	2.9
Delay / Veh (s)	33.0	10.2	36.0	2.4	6.1	5.6	8.2
Total Stops	48	153	54	74	139	2	470
Travel Dist (mi)	3.4	12.4	4.2	32.6	24.2	1.2	78.0
Travel Time (hr)	0.7	1.2	0.8	1.4	1.6	0.1	5.9
Avg Speed (mph)	5	14	6	23	15	19	15
Vehicles Entered	61	221	60	468	429	22	1261
Vehicles Exited	62	219	60	468	428	22	1259
Hourly Exit Rate	62	219	60	468	428	22	1259
Input Volume	72	230	53	466	431	14	1266
% of Volume	86	95	113	100	99	157	99
Denied Entry Before	0	1	0	0	0	0	1
Denied Entry After	0	0	0	0	1	1	2

Queuing and Blocking Report

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Intersection: 7: Power Line Rd & US-19/US-98

Movement	EB	EB	NB	NB	NB	SB	SB	SB
Directions Served	L	R	L	T	T	T	T	R
Maximum Queue (ft)	67	110	97	73	94	98	118	31
Average Queue (ft)	34	41	45	19	38	44	63	2
95th Queue (ft)	60	76	96	56	78	89	108	15
Link Distance (ft)	289			366	366	296	296	
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)		200	250					200
Storage Blk Time (%)								
Queuing Penalty (veh)								