



NOV 25 2019

L-2019-206
10 CFR 50.4
EPP 3.2.4

U. S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555


Re: St. Lucie Units 1 and 2
Docket Nos. 50-335 and 50-389
Environmental Protection Plan
IWW Permit No. FL0002208
Minor Permit Revision Request for Chlorine Dioxide

Pursuant to Section 3.2.4 of the St. Lucie
Power & Light Company (FPL) is hereby
minor revision to the Industrial Wastewater
FL0002208).

Environmental Protection Plan, Florida
closed letter proposing a
Permit (Permit Number

Please contact Seth Duston (772) 467-7144 should you have any questions on this
matter.

Sincerely,


Wyatt Godes
Licensing Manager
St. Lucie Plant

WG/rcs

Enclosure



NOV 25 2019

SDPSL-2019-063

Marc Harris, P.E.
Florida Department of Environmental Protection
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Re: Florida Power & Light Company
Plant St. Lucie
Wastewater Permit No. FL0002208
Minor Permit Revision Request for Chlorine Dioxide

Dear Mr. Harris:

FPL St. Lucie Plant requests a Minor Permit Revision to Industrial Wastewater Permit No. FL0002208 Section I.C.9 to include Chlorine Dioxide as a permanently approved biocide. As part of the Chlorine Optimization Study required by Section VI.5 of FL0002208, the plant conducted a pilot trial using the Nalco Purate System to examine the benefit of using Chlorine Dioxide to prevent biofouling in lieu of using Sodium Hypochlorite. Both ATP (Adenosine Triphosphate) and residual chlorine analyses during the study showed improved biocide effectiveness on a microbiological level. Condenser inspections performed during the Unit 1 fall refueling outage in October confirmed that enhanced disinfection and macro biological fouling prevention was achieved with this alternative biocide.

FPL St. Lucie Plant also requests to maintain sodium hypochlorite on the approved chemicals list in conjunction with chlorine dioxide in section I.C.9. Post permanent implementation of this new biocide, the sodium hypochlorite system will be maintained as a backup to guarantee site capability to treat Intake Cooling Water (service water), which affects the health of nuclear safety related heat exchangers.

Use of the Nalco Purate System would involve bulk storage of the following chemicals:

Name	Purpose	CERCLA RQ
Purate (40% Sodium Chlorite, 7% Hydrogen Peroxide)	Biocide Precursor	N/A
78% Sulfuric Acid	Biocide Production Reagent	1000 lbs

The following information is provided in Attachment 1 in support of this request:

1. Nalco Purate process illustration (Figure 1)
2. Projected Dosage
3. Estimated Effluent Residual
4. Applicable byproduct toxicity data
5. Applicable residual chlorine dioxide toxicity data
6. Safety Data Sheets for Nalco Purate (proprietary)
7. Safety Data Sheets for Nalco 78% Sulfuric Acid

This information, along with the effluent toxicity test results submitted during the trial period, adequately demonstrate that use of this new chemical will pose no concerns with toxicity. If you should have any questions or require additional information regarding this request, please feel free to contact Chrissi-Lee Ramsey at (772) 467-7228 or via email at Chrissi-Lee.Ramsey@fpl.com.

Sincerely,



Daniel DeBoer
Site Director
St. Lucie Power Plant

Attachments:

1. Supporting Information
2. Minor Permit Revision Application

cc: FPL – William Nurnberger
FPL – Seth Duston
FPL – Peter Polfleit
FPL – Ron Hix
FDEP – Southeast District Office
FDEP – Siting Coordination Office

Attachment 1 – Supporting Information

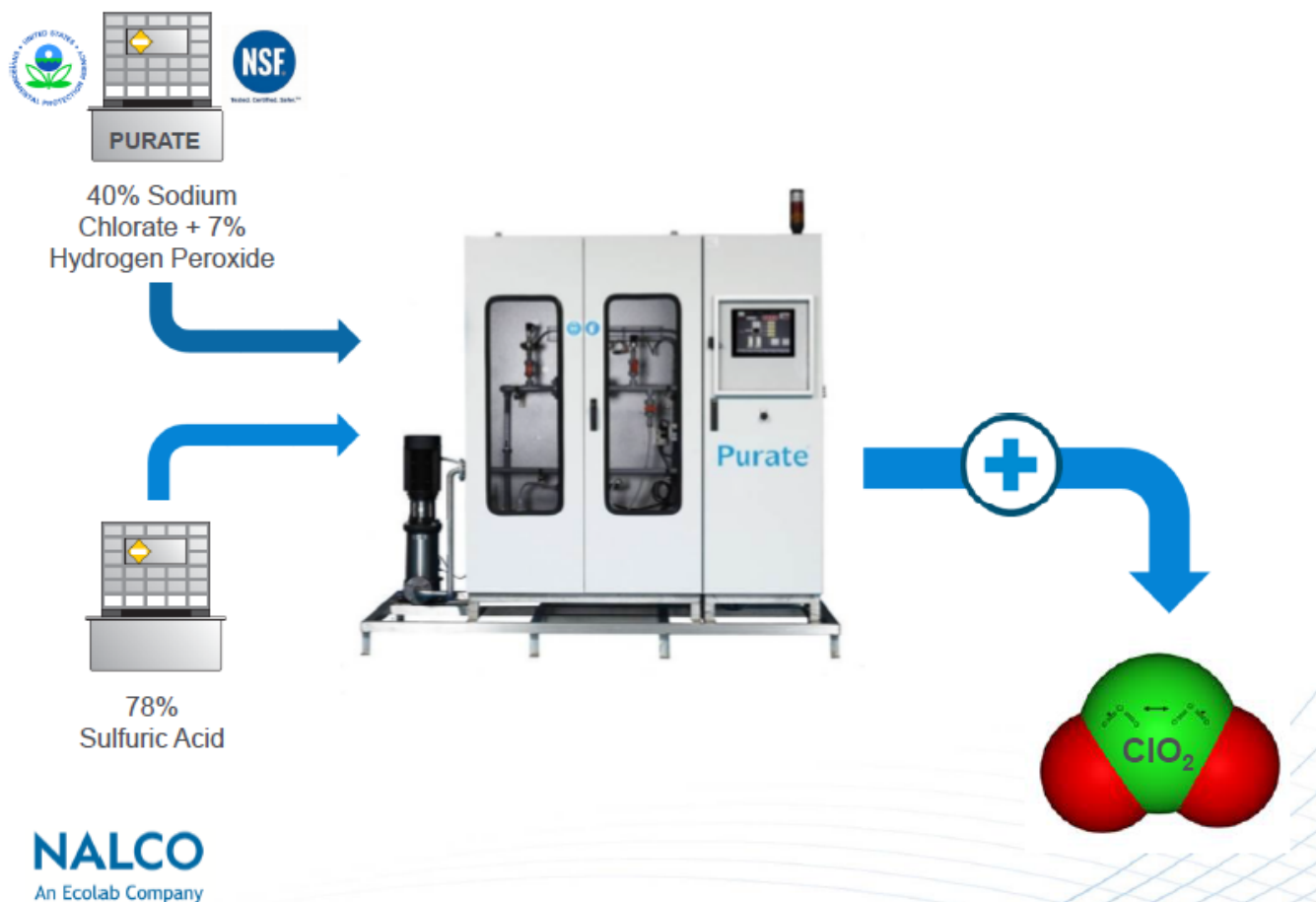


Figure 1: Purate Process Illustration

Estimated Dosage

Assuming pH = 7.6 and $T_{\text{intake}} = 77^{\circ}\text{F}$ (Average intake conditions in the winter)

**Based on Pilot Trial Sample Results*

	Condenser Cooling Water		Intake Cooling Water	
Biocide	NaClO	ClO ₂	NaClO	ClO ₂
Dosage	3.6 ppm	1.12 ppm	3.8 ppm	0.8 ppm
Frequency	30 mins per well, per day (120 mins total)	30 mins per well, per day (120 mins total)	Continuous	Continuous

Assuming pH = 7.6 and $T_{\text{intake}} = 86^{\circ}\text{F}$ (Average intake conditions in the summer)

**Based on Pilot Trial Sample Results*

	Condenser Cooling Water		Intake Cooling Water	
Biocide	NaClO	ClO ₂	NaClO	ClO ₂
Dosage	3.6 ppm	1.00 ppm	3.8 ppm	0.6 ppm
Frequency	30 mins per well, per day (120 mins total)	30 mins per well, per day (120 mins total)	Continuous	Continuous

Estimated Effluent Residual

Pilot trial total residual chlorine data has proven that St. Lucie plant effluent will be below the enforceable limit of 0.1 ppm at EFF-2 during injection.

Byproduct Toxicity

Organism	Test	ClO₂⁻ (Chlorite)	ClO₃⁻ (Chlorate)
Mysid Shrimp	LC ₅₀ (96 hour)	0.576 ppm	>1000 ppm
Sheepshead Minnow	LC ₅₀ (96 hour)	75 ppm	>1000 ppm

EPA-HQ-OPP-2006-0328-0020: Environmental Fate and Ecological Risk Assessment for the Reregistration of Sodium Chlorate as an Active Ingredient in Terrestrial Food/Feed and Non-food/Non-feed uses

Residual Chlorine Dioxide Toxicity

Organism	Test	ClO₂
Sheepshead Minnow	LC ₅₀ (96 hour)	0.02 - 0.17 ppm
Bluegill Sunfish	LC ₅₀ (96 hour)	0.15 ppm

Sourced from Nalco Water Global Regulatory Affairs Department



SAFETY DATA SHEET

Chlorine Dioxide Dissolved in water 4000 ppm max

Section: 1. PRODUCT AND COMPANY IDENTIFICATION

Product name : Chlorine Dioxide Dissolved in water 4000 ppm max

Other means of identification : Not applicable.

Restrictions on use : Refer to available product literature or ask your local Sales Representative for restrictions on use and dose limits.

Company : Nalco Company
1601 W. Diehl Road
Naperville, Illinois 60563-1198
USA
TEL: (630)305-1000

Emergency telephone number : (800) 424-9300 (24 Hours) CHEMTREC

Issuing date : 03/16/2016

Section: 2. HAZARDS IDENTIFICATION

GHS Classification

Not a hazardous substance or mixture.

GHS Label element

Precautionary Statements : **Prevention:**
Wash hands thoroughly after handling.
Response:
Specific measures: consult SDS Section 4.
Storage:
Store in accordance with local regulations.

Other hazards : None known.

Section: 3. COMPOSITION/INFORMATION ON INGREDIENTS

Pure substance/mixture : Mixture

Chemical Name	CAS-No.	Concentration: (%)
Chlorine Dioxide	10049-04-4	<= 0.4

Section: 4. FIRST AID MEASURES

In case of eye contact : Rinse with plenty of water. Get medical attention if symptoms occur.

In case of skin contact : Wash off with soap and plenty of water. Get medical attention if symptoms occur.

If swallowed : Rinse mouth. Get medical attention if symptoms occur.

If inhaled : Get medical attention if symptoms occur.

SAFETY DATA SHEET

Chlorine Dioxide Dissolved in water 4000 ppm max

- Protection of first-aiders : In event of emergency assess the danger before taking action. Do not put yourself at risk of injury. If in doubt, contact emergency responders. Use personal protective equipment as required.
- Notes to physician : Treat symptomatically.
- Most important symptoms and effects, both acute and delayed : See Section 11 for more detailed information on health effects and symptoms.

Section: 5. FIREFIGHTING MEASURES

- Suitable extinguishing media : Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
- Unsuitable extinguishing media : None known.
- Specific hazards during firefighting : Not flammable or combustible.
- Hazardous combustion products : Carbon oxides
- Special protective equipment for firefighters : Use personal protective equipment.
- Specific extinguishing methods : Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.

Section: 6. ACCIDENTAL RELEASE MEASURES

- Personal precautions, protective equipment and emergency procedures : Refer to protective measures listed in sections 7 and 8.
- Environmental precautions : No special environmental precautions required.
- Methods and materials for containment and cleaning up : Stop leak if safe to do so. Contain spillage, and then collect with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and place in container for disposal according to local / national regulations (see section 13). Flush away traces with water. For large spills, dike spilled material or otherwise contain material to ensure runoff does not reach a waterway.

Section: 7. HANDLING AND STORAGE

- Advice on safe handling : For personal protection see section 8. Wash hands after handling.
- Conditions for safe storage : Keep away from strong bases. Keep out of reach of children. Keep container tightly closed. Store in suitable labeled containers.

SAFETY DATA SHEET**Chlorine Dioxide Dissolved in water 4000 ppm max**

Suitable material : The following compatibility data is suggested based on similar product data and/or industry experience: Compatibility with Plastic Materials can vary; we therefore recommend that compatibility is tested prior to use.

Unsuitable material : not determined

Section: 8. EXPOSURE CONTROLS/PERSONAL PROTECTION**Components with workplace control parameters**

Exposure guidelines have not been established for this product. Available exposure limits for the substance(s) are shown below.

Components	CAS-No.	Form of exposure	Permissible concentration	Basis
Chlorine Dioxide	10049-04-4	TWA	0.1 ppm	ACGIH
		STEL	0.3 ppm	ACGIH
		STEL	0.3 ppm 0.9 mg/m ³	NIOSH REL
		TWA	0.1 ppm 0.3 mg/m ³	NIOSH REL
		TWA	0.1 ppm 0.3 mg/m ³	OSHA Z1

Engineering measures : Good general ventilation should be sufficient to control worker exposure to airborne contaminants.

Personal protective equipment

Eye protection : Safety glasses

Hand protection : Wear protective gloves.
Gloves should be discarded and replaced if there is any indication of degradation or chemical breakthrough.

Skin protection : Wear suitable protective clothing.

Respiratory protection : No personal respiratory protective equipment normally required.

Hygiene measures : Wash hands before breaks and immediately after handling the product.

Section: 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance : Liquid

Colour : Light yellow

Odour : Chlorine

Flash point : does not flash

SAFETY DATA SHEET**Chlorine Dioxide Dissolved in water 4000 ppm max**

pH	: no data available
Odour Threshold	: no data available
Melting point/freezing point	: no data available
Initial boiling point and boiling range	: no data available
Evaporation rate	: no data available
Flammability (solid, gas)	: no data available
Upper explosion limit	: no data available
Lower explosion limit	: no data available
Vapour pressure	: 5.0 mm Hg, (25.0 °C),
Relative vapour density	: no data available
Relative density	: no data available
Density	: no data available
Water solubility	: completely soluble
Solubility in other solvents	: no data available
Partition coefficient: n-octanol/water	: no data available
Auto-ignition temperature	: no data available
Thermal decomposition temperature	: no data available
Viscosity, dynamic	: no data available
Viscosity, kinematic	: no data available
Molecular weight	: no data available
VOC	: 0 %, Calculation method

Section: 10. STABILITY AND REACTIVITY

Chemical stability	: Stable under normal conditions.
Possibility of hazardous reactions	: No dangerous reaction known under conditions of normal use.
Conditions to avoid	: None known.
Incompatible materials	: Do not bring in contact with organic materials and reducing agents.
Hazardous decomposition products	: Chlorine, Chlorine dioxide Carbon oxides

Section: 11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure : Inhalation, Eye contact, Skin contact

SAFETY DATA SHEET**Chlorine Dioxide Dissolved in water 4000 ppm max****Potential Health Effects**

Eyes	: Health injuries are not known or expected under normal use.
Skin	: Health injuries are not known or expected under normal use.
Ingestion	: Health injuries are not known or expected under normal use.
Inhalation	: Health injuries are not known or expected under normal use.
Chronic Exposure	: Health injuries are not known or expected under normal use.

Experience with human exposure

Eye contact	: No symptoms known or expected.
Skin contact	: No symptoms known or expected.
Ingestion	: No symptoms known or expected.
Inhalation	: No symptoms known or expected.

Toxicity**Product**

Acute oral toxicity	: Acute toxicity estimate : > 5,000 mg/kg
Acute inhalation toxicity	: Acute toxicity estimate : > 40 mg/l Exposure time: 4 h Acute toxicity estimate : > 40 mg/l Exposure time: 4 h
Acute dermal toxicity	: no data available
Skin corrosion/irritation	: no data available
Serious eye damage/eye irritation	: no data available
Respiratory or skin sensitization	: no data available
Carcinogenicity	: no data available
Reproductive effects	: no data available
Germ cell mutagenicity	: no data available
Teratogenicity	: no data available

SAFETY DATA SHEET**Chlorine Dioxide Dissolved in water 4000 ppm max**

STOT - single exposure : Based on available data, the classification criteria are not met.
STOT - repeated exposure : no data available
Aspiration toxicity : no data available

Section: 12. ECOLOGICAL INFORMATION**Ecotoxicity**

Environmental Effects : This product has no known ecotoxicological effects.

Product

Toxicity to fish : LC50 Rainbow Trout: 2.2 mg/l
Exposure time: 96 hrs
Test substance: Active Substance

LC50 Bluegill Sunfish: > 100 mg/l
Exposure time: 96 hrs
Test substance: Active Substance

LC50 Inland Silverside: > 0.4 mg/l
Exposure time: 96 hrs
Test substance: Active Substance

Toxicity to daphnia and other aquatic invertebrates : EC50 Daphnia pulex: 1.8 mg/l
Exposure time: 48 hrs
Test substance: Active Substance

Toxicity to fish (Chronic toxicity) : NOEC: 0.15 mg/l
Exposure time: 20 d
Species: Rainbow Trout
Test substance: Active Substance

Persistence and degradability

Greater than 95% of this product consists of inorganic substances for which a biodegradation value is not applicable.

Mobility

The environmental fate was estimated using a level III fugacity model embedded in the EPI (estimation program interface) Suite TM, provided by the US EPA. The model assumes a steady state condition between the total input and output. The level III model does not require equilibrium between the defined media. The information provided is intended to give the user a general estimate of the environmental fate of this product under the defined conditions of the models.

If released into the environment this material is expected to distribute to the air, water and soil/sediment in the approximate respective percentages;

Air : <5%
Water : 30 - 50%
Soil : 50 - 70%

The portion in water is expected to be soluble or dispersible.

SAFETY DATA SHEET

Chlorine Dioxide Dissolved in water 4000 ppm max

Bioaccumulative potential

This preparation or material is not expected to bioaccumulate.

Other information

no data available

Section: 13. DISPOSAL CONSIDERATIONS

If this product becomes a waste, it is not a hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA) 40 CFR 261, since it does not have the characteristics of Subpart C, nor is it listed under Subpart D.

Disposal methods : Where possible recycling is preferred to disposal or incineration. If recycling is not practicable, dispose of in compliance with local regulations. Dispose of wastes in an approved waste disposal facility.

Disposal considerations : Dispose of as unused product. Empty containers should be taken to an approved waste handling site for recycling or disposal. Do not re-use empty containers.

Section: 14. TRANSPORT INFORMATION

The shipper/consignor/sender is responsible to ensure that the packaging, labeling, and markings are in compliance with the selected mode of transport.

Land transport (DOT)

Proper shipping name : PRODUCT IS NOT REGULATED DURING TRANSPORTATION

Air transport (IATA)

Proper shipping name : PRODUCT IS NOT REGULATED DURING TRANSPORTATION

Sea transport (IMDG/IMO)

Proper shipping name : PRODUCT IS NOT REGULATED DURING TRANSPORTATION

Section: 15. REGULATORY INFORMATION

EPCRA - Emergency Planning and Community Right-to-Know Act

CERCLA Reportable Quantity

This material does not contain any components with a CERCLA RQ.

SARA 304 Extremely Hazardous Substances Reportable Quantity

This material does not contain any components with a section 304 EHS RQ.

SARA 311/312 Hazards : Acute Health Hazard

SAFETY DATA SHEET

Chlorine Dioxide Dissolved in water 4000 ppm max

- SARA 302** : No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.
- SARA 313** : This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

California Prop 65

This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.

INTERNATIONAL CHEMICAL CONTROL LAWS :

AUSTRALIA

All substances in this product comply with the National Industrial Chemicals Notification & Assessment Scheme (NICNAS).

CHINA

All substances in this product comply with the Provisions on the Environmental Administration of New Chemical Substances and are listed on or exempt from the Inventory of Existing Chemical Substances China (IECSC).

JAPAN

All substances in this product comply with the Law Regulating the Manufacture and Importation Of Chemical Substances and are listed on the Existing and New Chemical Substances list (ENCS).

KOREA

All substances in this product comply with the Toxic Chemical Control Law (TCCL) and are listed on the Existing Chemicals List (ECL)

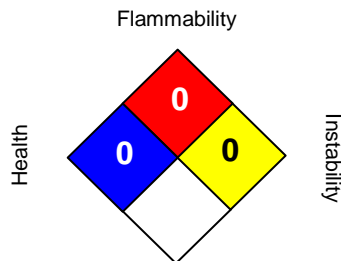
NEW ZEALAND

All substances in this product comply with the Hazardous Substances and New Organisms (HSNO) Act 1996, and are listed on or are exempt from the New Zealand Inventory of Chemicals.

PHILIPPINES

This product contains substance(s) which are not in compliance with the Republic Act 6969 (RA 6969) and may require additional review.

Section: 16. OTHER INFORMATION

SAFETY DATA SHEET**Chlorine Dioxide Dissolved in water 4000 ppm max****NFPA:****HMIS III:**

HEALTH	1
FLAMMABILITY	0
PHYSICAL HAZARD	0

0 = not significant, 1 = Slight,
2 = Moderate, 3 = High
4 = Extreme, * = Chronic

Revision Date : 03/16/2016
Version Number : 0.0
Prepared By : Regulatory Affairs

REVISED INFORMATION: Significant changes to regulatory or health information for this revision is indicated by a bar in the left-hand margin of the SDS.

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text. For additional copies of an SDS visit www.nalco.com and request access.

Attachment 2 - Minor Permit Revision Application
(2 Pages)



APPLICATION FOR A MINOR REVISION TO A WASTEWATER FACILITY OR ACTIVITY PERMIT

1. Instructions

- a. In accordance with Rule 62-620.325, F.A.C., this form must be submitted to the appropriate Department district office or approved local program when requests for minor revisions to a permit or minor modifications to a facility are made by a permittee, except for transfer of a permit to a new permittee and addition of a major user of reclaimed water to a Part III reuse system. Application for transfer of a permit to a new permittee shall be made on DEP Form 62-620.910(11). Application for addition of a major user of reclaimed water shall be made on DEP Form 62-610.300(4)(a)1.
- b. Each applicable item must be completed in full in order to avoid delay in processing of this form. Where attached sheets or other technical documentation are provided, indicate appropriate cross-references.
- c. Three (3) copies of this application with supporting documentation shall be submitted with this form.
- d. All information is to be typed or printed in ink. Dates are to be entered in MM/DD/YR format.
- e. This application and attachments shall be signed in accordance with Rule 62-620.305, F.A.C. Also, as applicable, this application and all attachments shall be signed and sealed by a professional engineer registered in Florida in accordance with Rule 62-620.310, F.A.C.

2. Facility Information

- | | | | |
|---------------------------|---------------------------------------|------------------------------------|-------|
| a. Permit Number: | FL0002208 | b. Facility Identification Number: | _____ |
| c. Project/Facility Name: | Florida Power & Light St. Lucie Plant | | |
| d. Contact Name: | Daniel DeBoer | | |
| Number and Street: | 6501 South Ocean Drive | | |
| City/State/Zip Code: | Jensen Beach, FL 34957 | | |
| Telephone | 772-465-3550 | | |

3. Type of Revision

- ☐ **Correct Typographical Errors¹** - Submit one copy of each page of the permit showing revisions being requested.
- ☐ **Change Improvement Schedule¹** - Provide a description of the improvement, a list of the dates to be revised, and a reason for the proposed change in each date.
- ☐ **Change Expiration Date of Permit¹** - Provide the current and proposed expiration dates for the permit and the reasons for the proposed change.
- ☐ **Change Staffing Requirements²** - Describe the proposed change and submit justification for the change in accordance with Chapter 62-699, F.A.C.

¹A processing fee is not required.

²A processing fee is required with the application in accordance with Rule 62-4.050, F.A.C.

- ☐ **Change Monitoring and Reporting Requirements²** - Describe the proposed change and submit justification for the change in accordance with Chapter 62-601, F.A.C.
- ☐ **Modify Approved Pretreatment Program¹** - Describe the proposed modification and provide the information required by Rule 62-625.540, F.A.C.
- ☐ **Delete Point Source Outfall¹** - Identify the outfall and explain why the outfall is being eliminated.
- ☐ **Modify or Expand Approved Residuals Land Application Sites²** - Attach a new or updated Agricultural Use or Dedicated Site Plan as required by Chapter 62-640, F.A.C.
- ☒ **Minor Modification to the Facility²** - Provide a description of the proposed modification. If applicable, attach any reports, plans, and specifications which have been developed to implement this modification.
- ☐ **Other²** - Provide appropriate documentation. Describe.

4. Certifications

a. Applicant or Authorized Representative

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this application and all attachments and that, based on my inquiry of persons immediately responsible for obtaining the information contained in the application, I believe that the information is true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

Daniel DeBoer (Signature of Applicant or Authorized Representative³) 11/25/19 (Date)

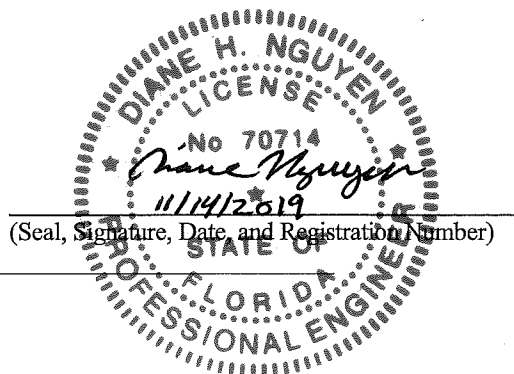
Name (please type) Daniel DeBoer Company Name Florida Power & Light
 Title Site Director Company Address: 6501 South Ocean Drive
 Phone: 772-465-3550 City/State/Zip Code: 34957
 Email (optional): Daniel.DeBoer@fpl.com

b. Professional Engineer Registered in Florida

I certify that the engineering features of this project have been (designed) (examined) by me and found to conform to engineering principles applicable to such projects. In my professional judgement, this facility, when properly constructed, operated, and maintained, will comply with all applicable statutes of the State of Florida and rules of the Department.

Name (please type): Diane H. Nguyen
 Florida Registration Number: 70714
 Company Name: Florida Power & Light
 Company Address: 700 Universe Blvd
 City/State/Zip Code: Juno Beach, FL 33408
 Phone Number: 561-694-3185

Email (optional): diane.nguyen@fpl.com



³If signed by the authorized representative, attach a letter of authorization in accordance Rule 62-620.305, F.A.C.