**FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION**
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**PERMITTEE**

JEA
21 West Church Street
Jacksonville, Florida 32202

Authorized Representative:
Michael J. Brost, V.P. Electric Systems
JEA

Air Permit No. 0310045-040-AC
Northside Generating Station
Byproduct Reuse Project

Expires: December 31, 2015
Duval County

**PROJECT**

This is the final air construction permit to authorize a project to temporarily reintroduce a mixture of bottom ash and fly ash into two boilers at the Northside Generation Station. Northside Generating Station and St. Johns River Power Park comprise an electric power plant categorized under Standard Industrial Classification No. 4911. The existing facility is located in Duval County at 4377 Heckscher Drive in Jacksonville, Florida. The UTM coordinates are Zone 17, 446.90 km East and 3359.15 km North.

This permit authorizes ash byproduct reintroduction to the boilers for a test period of six months, followed by a period of three months for analysis and to prepare a Title V operating permit revision application based on the results of the test. As noted in the Final Determination provided with this final permit, only minor changes and clarifications were made to the draft permit. This final permit is organized into the following sections: Section 1 (General Information); Section 2 (Administrative Requirements); Section 3 (Emissions Unit Specific Conditions); Section 4 (Appendices).

**STATEMENT OF BASIS**

This air pollution construction permit is issued under the provisions of: Chapter 403 of the Florida Statutes (F.S.) and Chapters 62-4, 62-204, 62-210, 62-212, 62-296 and 62-297 of the Florida Administrative Code (F.A.C.). The permittee is authorized to conduct the proposed work in accordance with the conditions of this permit. This project is subject to the general preconstruction review requirements in Rule 62-212.300, F.A.C. and is not subject to the preconstruction review requirements for major stationary sources in Rule 62-212.400, F.A.C. for the Prevention of Significant Deterioration (PSD) of Air Quality.

Upon issuance of this final permit, 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 30 days after this order is filed with the clerk of the Department.

Executed in Tallahassee, Florida

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## CERTIFICATE OF SERVICE

The undersigned duly designated deputy agency clerk hereby certifies that this Air Permit package was sent by electronic mail, or a link to these documents made available electronically on a publicly accessible server, with received receipt requested before the close of business on the date indicated below to the following persons.

Mr. Michael Brost, V.P. Electric Systems, JEA: brosmj@jea.com
Mr. Daniel N. Hlaing., P.E., JEA: hlaidn@jea.com
Mr. Jay Worley, JEA: worlja@jea.com
Mr. Richard Rachal, DEP NED: richard.rachal@dep.state.fl.us
Mr. Justin Green, DEP Siting Office: justin.b.green@dep.state.fl.us
Ms. Heather Ceron, US EPA Region 4: ceron.heather@epa.gov
Ms. Lorinda Shepherd, US EPA Region 4: Shepherd.Lorinda@epa.gov
Alisa Coe, Earth Justice: acoe@earthjustice.org
Ms. Lynn Scearce, DEP OPC: lynn.scearce@dep.state.fl.us

Clerk Stamp

**FILING AND ACKNOWLEDGMENT FILED**, on this date, pursuant to Section 120.52(7), Florida Statutes, with the designated agency clerk, receipt of which is hereby acknowledged.

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## FACILITY DESCRIPTION

The existing facility is an electric power plant, which consists of the following emissions units and activities: The Northside Generating Station (NGS) and St. Johns River Power Park (SJRPP) facilities and the Separations Technology, LLC (ST) facility are considered to be a single air emission "facility" for air permitting purposes. The emissions units (E.U.) associated with the facility are listed below.

| E.U. No. | Brief Description |
|---|---|
| *Regulated Emissions Units* | |
| 003 | NGS: Boiler No. 3 |
| 006 | NGS: Combustion Turbine No. 3 |
| 007 | NGS: Combustion Turbine No. 4 |
| 008 | NGS: Combustion Turbine No. 5 |
| 009 | NGS: Combustion Turbine No. 6 |
| 016 | SJRPP: Boiler No. 1 |
| 017 | SJRPP: Boiler No. 2 |
| 022 | SJRPP: Bottom Ash, Fly Ash and Gypsum Handling and Storage Operations |
| 023 | SJRPP: Fuel and Limestone Handling and Storage Operations |
| 024 | SJRPP: Cooling Towers (2) |
| 026 | NGS: Circulating Fluidized Bed Boiler No. 2 |
| 027 | NGS: Circulating Fluidized Bed Boiler No. 1 |
| 028 | NGS: Materials Handling and Storage Operations |
| 029 | NGS: Crusher House/Building Baghouse Exhaust (DC1) |
| 031 | NGS: Fuel Silos Dust Collectors (DC2 and DC3) |
| 033 | NGS: Limestone Dryer/Mills Building |
| 034 | NGS: Limestone Prep Building Dust Collectors |
| 035 | NGS: Limestone Silos Bin Vent Filters |
| 036 | NGS: Fly Ash Transport Blower Discharge |
| 037 | NGS: Fly Ash Silos Bin Vents |
| 038 | NGS: Bed Ash Silos Bin Vents |
| 042 | NGS: AQCS Pebble Lime Silo Bin Vent |
| 044 | ST: Separator A Filter - Receiver Vent |
| 045 | ST: Separator B Filter - Receiver Vent |
| 046 | ST: Separator Dust Collector Vent |
| 047 | ST: Clean-up Vacuum Vent |
| 048 | ST: Fly Ash Surge Bin Vent |
| 049 | ST: Mineral Additive Storage Bin Vent |
| 050 | ST: Gas-fired Dryer Stack |
| 051 | NGS: Fly Ash Slurry Mix System Vents |
| 052 | NGS: Bed Ash Slurry Mix System Vents |
| 053 | NGS: Bed Ash Surge Hopper Bin Vents |
| 055 | NGS: Two Emergency Generators Supporting NGS Units 1 and 3 (Engines 1 & 2) |
| 056 | NGS: Two Black Start Engines Used Solely to Start Up NGS Units 1 and 3 (Engines 3 & 4) |
| 057 | NGS: Two Emergency Fire Pumps (Engines 5 & 6) |
| 058 | SJRPP: Emergency Generator (Engine 7) |
| 059 | SJRPP: Emergency Fire Pump (Engine 8) |

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NGS and SJRPP:

These operations consist of 5 boilers, NGS existing Boiler No. 3, which is a pre-NSPS boiler with a nominal rating of 564 MW and fired by natural gas, landfill gas, No. 6 residual fuel oil, and used oil; NGS circulating fluidized bed (CFB) Boilers Nos. 1 and 2, which are fired with coal, coal coated with latex, petroleum coke, biomass, natural gas, and landfill gas; SJRPP Boilers Nos. 1 and 2, which are two fossil fuel-fired steam generators (boilers) fired with pulverized coal, a blend of petroleum coke and coal, natural gas, new No. 2 distillate fuel oil (startup and low-load operation), and "on-specification" used oil; and, four pre-NSPS distillate fuel oil-fired combustion turbines with a nominal rating of 52.5 MW each, NGS Nos. 3, 4, 5 and 6. Emissions from the NGS Boiler No. 3 are uncontrolled. Emissions from the NGS combustion turbines Nos. 3, 4, 5 and 6, are controlled by firing low sulfur fuel oil. Each NGS CFB boiler is equipped with a selective non-catalytic reduction (SNCR) system to reduce nitrogen oxides ($NO_x$) emissions, limestone injection to reduce sulfur dioxide ($SO_2$) emissions, fabric filter to reduce particulate matter emissions, while maximizing combustion efficiency and minimizing $NO_x$ formation to limit carbon monoxide (CO) and volatile organic compound (VOC) emissions. Emissions from the SJRPP Boilers Nos. 1 and 2 are controlled with an electrostatic precipitator, a limestone scrubber, low-$NO_x$ burners, and selective catalytic reduction (SCR) systems. The SJRPP and NGS facilities also include coal, petroleum coke, limestone and fly ash handling activities, of which various control devices, control strategies, and control techniques are required.

The material handling and storage operations process ash, limestone, coal, coal coated with latex, and petroleum coke to support the operation of CFB Boilers Nos. 1 and 2. Each materials handling and storage operation employs one or more control strategies to limit emissions of particulate matter to meet specific emission limitations and/or visible emissions limits. The control strategies include the use of best operating/design practices, total or partial enclosures, conditioned materials, wet suppression, water sprays, and dust collection systems.

ST:

ST has constructed, owns and operates a fly ash processing system on a portion of leased property at the JEA facility. The purpose of the equipment is to remove the residual carbon and ammonia from the JEA SJRPP fly ash leaving a saleable product. The fly ash processing system includes two fly ash receiving bins, a carbon separation unit, a clean-up vacuum, a fly ash surge bin, a mineral additive storage bin, and a gas-fired dryer. The particulate emissions generated from handling of the fly ash are collected from each source using pulse jet fabric filters. ST's triboelectric carbon separation technology partitions fly ash into mineral-rich and carbon-rich fractions. The mineral-rich fly ash can then be sold as a usable product. The carbon-rich fly ash is returned to the JEA SJRPP fly ash storage silos for eventual disposal at the onsite landfill.

The two-step beneficiation process consists of (1) removal of the residual carbon from the fly ash using ST's patented electrostatic separation technology, and (2) removal of residual ammonia from the fly ash using ST's ammonia removal technology. In addition to residual carbon, the fly ash at the JEA SJRPP also contains trace amounts of ammonia that makes it unsuitable as a cement replacement. To solve this problem, ST installed an ammonia removal process. The recovered ammonia is subsequently returned to the JEA SJRPP for recycle.

**PROPOSED PROJECT**

JEA applied on August 25, 2014, to the Department for a minor source air construction (AC) permit. The applicant has requested permission to reintroduce a mixture of bottom ash and fly ash into NGS CFB boiler Units 1 and 2 (E.U. Nos. 026 and 027). This bottom ash/fly ash byproduct, all of which was generated and stored on site, contains lime because of the use of limestone in the boilers as a control strategy for $SO_2$ emissions. Therefore, the reintroduction of the byproduct is expected to aid in $SO_2$ control, likely decreasing the amount of limestone needed. The reuse of bottom ash is already permitted, but the reuse of fly ash requires this permit. This project also includes regular testing for mercury in stack emissions and in fly ash and bottom ash. The test period will last for six months, followed by a period of approximately three months for analysis and possible submission of an application to revise the facility's Title V operating permit.

## FACILITY REGULATORY CLASSIFICATION

- The facility is a major source of hazardous air pollutants (HAP).
- The facility operates units subject to the acid rain provisions of the Clean Air Act (CAA).
- The facility is a Title V major source of air pollution in accordance with Chapter 62-213, F.A.C. because the potential emissions of at least one regulated pollutant exceed 100 tons/year. Key regulated pollutants include CO, NOX, PM, PM10, PM2.5, SO2, VOC and SAM.
- The facility is a major stationary source in accordance with Rule 62-212.400(PSD), F.A.C.
- The proposed project includes units subject to the NSPS of 40 CFR 60.
- The proposed project includes units subject to the NESHAP of 40 CFR 63.
- The project is subject to certification under the Florida Power Plant Siting Act, 403.501-518, F.S. and Chapter 62-17, F.A.C.

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## SECTION 2. ADMINISTRATIVE REQUIREMENTS

1. Permitting Authority: The permitting authority for this project is the Office of Permitting and Compliance, Division of Air Resource Management, Florida Department of Environmental Protection (Department). The mailing address for the Office of Permitting and Compliance is 2600 Blair Stone Road (MS #5505), Tallahassee, Florida 32399-2400.

2. Compliance Authority: All documents related to compliance activities such as reports, tests, and notifications shall be submitted to the Department's Northeast District Office at: Waste and Air Resource Management, 8800 Baymeadows Way West, Suite 100, Jacksonville, Florida 32256.

3. Appendices: The following Appendices are attached as a part of this permit: Appendix A (Citation Formats and Glossary of Common Terms); Appendix B (General Conditions); Appendix C (Common Conditions); and, Appendix D (Common Testing Requirements).

4. Applicable Regulations, Forms and Application Procedures: Unless otherwise specified in this permit, the construction and operation of the subject emissions units shall be in accordance with the capacities and specifications stated in the application. The facility is subject to all applicable provisions of: Chapter 403, F.S.; and Chapters 62-4, 62-204, 62-210, 62-212, 62-213, 62-296 and 62-297, F.A.C. Issuance of this permit does not relieve the permittee from compliance with any applicable federal, state, or local permitting or regulations.

5. New or Additional Conditions: For good cause shown 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. [Rule 62-4.080, F.A.C.]

6. Modifications: No emissions unit shall be constructed or modified without obtaining an air construction permit from the Department. Such permit shall be obtained prior to beginning construction or modification. [Rules 62-210.300(1) and 62-212.300(1)(a), F.A.C.]

7. Objectionable Odors Prohibited: No person shall 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.]

   *{Note: An objectionable odor is defined in Rule 62-210.200(Definitions), F.A.C., as any odor present in the outdoor atmosphere which by itself or in combination with other odors, is or may be harmful or injurious to human health or welfare, which unreasonably interferes with the comfortable use and enjoyment of life or property, or which creates a nuisance.}*

8. Unconfined Emissions of Particulate Matter: 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. Any permit issued to a facility with emissions of unconfined particulate matter shall specify the reasonable precautions to be taken by that facility to control the emissions of unconfined particulate matter. General 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 re-entrainment, and from buildings or work areas to prevent particulates 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; and h. Enclosure or covering of conveyor systems.
   [Rule 62-296.320(4)(c), F.A.C.]

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## NGS Boilers 1 and 2 (E.U. Nos. 026 and 027)

This section of the permit addresses NGS Boilers 1 and 2 (E.U. Nos. 026 and 027).

### COMPLIANCE WITH EXISTING PERMIT CONDITIONS

1. Existing Permits: This permit supplements all existing valid permits. The permittee shall continue to comply with all applicable conditions from valid air construction and Title V operation permits. [Application No. 0310045-040-AC; Rule 62-4.070(3), F.A.C.]

### BYPRODUCT REINTRODUCTION

2. Permitted Byproducts and Test Duration: The permittee is authorized to reintroduce ash byproduct, consisting of a mixture of bottom ash and fly ash, into NGS circulating fluidized bed Boilers 1 and 2. This byproduct reintroduction shall have a duration of no greater than 180 days. The only fly ash authorized for reintroduction into NGS Boilers 1 and 2 is fly ash that was generated at the NGS/SJRPP/ST facility prior to the commencement of this reintroduction project. The byproduct reinjection rate shall not exceed 80 tons per hour per boiler. [Application No. 0310045-040-AC]

### REQUIRED TESTING OF EMISSIONS AND ASH METALS CONTENT

3. Mercury Stack Testing: The permittee shall measure emissions of mercury from NGS Boilers 1 and 2 using EPA Method 30B (Determination of Total Vapor-Phase Mercury Emissions from Coal-Fired Combustion Sources Using Carbon Sorbent Traps).
   a. Baseline Testing: The permittee shall perform a test of mercury emissions shortly before the commencement of byproduct reintroduction, in order to establish a baseline emissions estimate.
   b. Subsequent Testing: The permittee shall perform at least three subsequent tests of mercury emissions: approximately one month, three months, and six months after the commencement of byproduct reintroduction. The permittee shall report the results of each of these tests to the Department within 14 days of the completion of the testing. The Department may require additional mercury testing, based on the results of these tests.
   c. Termination of Project Due to Increased Mercury Emissions: If the results of any mercury stack test indicate that the facility will exceed its existing permitted mercury emission limits, or that emissions will increase more than the PSD Significant Emission Rate of 0.1 ton/year (or 0.0228 pound/hour) above baseline levels, the permittee shall terminate fly ash byproduct reintroduction as soon as is practicable.

   [Application No. 0310045-040-AC; Rules 62-4.070(3) and 62-210.200(258)(a)(2), F.A.C.]

4. Ash Metals Testing: The permittee shall test the metals content of both bottom ash and fly ash in NGS Boilers 1 and 2 shortly before the commencement of byproduct reintroduction, and monthly while byproduct reintroduction is ongoing. Elements to be measured shall include the following: antimony, arsenic, beryllium, cadmium, chromium, calcium, lead, manganese, mercury, nickel, selenium, strontium and vanadium. Tests shall follow EPA Method 6010C or an equivalent method. The permittee shall report the results of each test to the Department. [Application No. 0310045-040-AC; Rules 62-4.070(3) and 62-210.200(258)(a)(2), F.A.C.]

### TEST REPORT

5. Submitted Test Report: Sixty days after the completion of the ash byproduct testing, the permittee shall submit a test report to the Department. The test report at a minimum shall include the daily and monthly amount of ash byproduct reintroduced to each boiler, all mercury test results and all CEMS data collected during the testing program. In addition, if any problems were encountered during the testing, the problem(s) should be described along with any corrective action taken. [Rules 62-4.070(3) and 62-210.370, F.A.C.]

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